HOW TO ACCOMMODATE AND MODIFY SPECIAL EDUCATION STUDENTS IN TODAY'S EDUCATIONAL WORLD!
Principles for Fostering Equity and Excellence in Academically Diverse Learners

1. **Good curriculum comes first.** The teacher’s first job is always to ensure a coherent, important, inviting, and thoughtful curriculum.

2. **All tasks should respect each learner.** Every student deserves work that is focused on the essential knowledge, understanding, and skills targeted for the lesson. Every student should be required to think at a high level and should find his or her work interesting and powerful.

3. **When in doubt, teach up!** Good instruction stretches learners. The best tasks are those that students find a little too difficult to complete comfortably. Be sure there’s a support system in place to facilitate the student’s success at a level that he or she doubted was attainable.

4. **Use flexible grouping.** Find ways and time for the class to work as a whole, for students to demonstrate competence alone, and for students to work with varied groups of peers. Using only one or two types of groups causes students to see themselves and one another in more limited ways, keeps the teacher from “auditioning” students in varied contexts, and limits potentially rich exchanges in the classroom.

5. **Become an assessment junkie.** Everything that a student says and does is a potential source of assessment data. Assessment should be an ongoing process, conducted in flexible but distinct stages, and it should maximize opportunities for each student to open the widest possible window on his or her learning.

6. **Grade to reflect growth.** The most we can ask of any person—and the least we ought to ask—is to be and become their best. The teacher’s job is to guide and support the learner in this endeavor. Grading should, in part, reflect a learner’s growth.
Summary of the Six Principles of Effective Curriculum Design

1. **Big Ideas**: Limit the number of new concepts introduced in a lesson, and focus first on the most basic concepts before advancing to the more complex concepts. Be sure that students understand one concept before introducing the second. For example, reserve teaching synonyms until students are firm on the basic concept. The concepts of comparatives and superlatives should be withheld until the basic concepts are clearly established. When introducing comparatives and superlatives, introduce comparatives first; then, after students consistently use comparatives, introduce superlatives.

2. **Conspicuous Strategies**: Use clear models to teach basic concepts. Use simple language.

3. **Mediated Scaffolding**: Limit the number of concepts introduced, and separate those that are likely to be confused. To reduce the language demands, refrain from introducing two new and unfamiliar labels in one day. It is also important to provide sufficient guided practice for the group before progressing to individual turns.

4. **Strategic Integration**: When the basic concepts are reliably known by learners, introduce comparative and superlative concepts strategically to build higher-order skills. Higher-order skills will not be useful or reliable if the basic concepts are not firm.

5. **Judicious Review**: To really "know" a concept students must use it frequently and in a variety of concepts. Lessons following the initial lesson should apply new concepts to build up the students' ability to remember and recall the concepts.

6. **Primed Background Knowledge**: A frequent limitation of early language programs is using language that learners may not understand. If the objective of the lesson is to introduce the concept big and little, then directions that tell children we will "compare" objects may not be meaningful. Examine the instructional language carefully to determine whether it will need to be simplified. It is also important to ensure that students have the prerequisite knowledge before using that knowledge in more complex contexts.
Encouraging Students with Learning Problems

Students who struggle with learning mathematics may comprise, by very rough estimates, 6 to 25 percent of the K-12 school population. Students with specific disabilities as identified under the Individuals with Disabilities Education Act (IDEA, 2004) include those with specific learning disabilities in mathematics, cognitive or developmental dis-abilities, emotional disabilities, communication disorders, traumatic brain injuries, and some severe health impairments such as attention deficit hyperactivity disorder (ADHD). Other students with disabilities who do not qualify under IDEA but may need individual provisions for learning include students with physical disabilities and health impairments (such as ADHD). Students who are learning English as a second or other language (ELL, English Language Learners) may have related mathematics learning problems. Other students, such as those with cultural differences, scarce resources at home, or highly mobile families, may also have significant learning problems.

For these students with challenges learning mathematics, positive dispositions are a critical foundation for achievement. Teachers have the responsibility for creating classroom contexts that foster positive dispositions. Some concrete methods for promoting positive dispositions in students towards mathematics include:

- Seek out student interests and plan activities that make connections with those interests. For example, one entire class was interested in playing softball. They challenged other fourth-grade classrooms and kept statistics on every aspect of their games.
- Personalize math lessons by using student interests, names, real events, and student-created problems. Some teachers name classroom "discoveries" after students: "the Sally Brown proof."
- Allocate just two or three minutes at the beginning of each mathematics class to warm-up activities with familiar material. Begin with success!
- Create classroom procedures that allow students to take risks and make mistakes without punishment or humiliation.
- Encourage students to set personal goals in mathematics and keep track of their progress through individual portfolios or graphs.
- Check for student understanding when introducing new concepts and adjust explanations and examples until students demonstrate strong understanding. Check understanding by watching students work and by listening to their explanations, not through testing at this initial learning phase.
- Analyze students' mathematics knowledge and understanding for gaps that will hinder new learning. Plan remedial instruction that will fill those gaps by connecting concepts, not with isolated skills.
- Communicate clearly with students the "why" of mathematics for the year. What new learning will they accomplish? Why will it seem they are working on some of the same topics as last year? How will this learning be beneficial in the long run? Listen to students' explanations of their views of mathematics.
- When students have accomplishments, guide them in making explicit connections with their efforts.
- When students hit roadblocks, teach specific strategies for learning skills or procedures.
- Model positive dispositions-about mathematics and about working collaboratively with other teachers for student learning.

The combination of positive teacher and student dispositions towards mathematics learning will provide a critical component for success with mathematics instruction.
High-Stakes Testing & Implications for Students with Learning Problems

Today's elementary and secondary students are undergoing more mandated assessments than any group in the history of education in the United States. In 2001, forty-nine states required statewide assessments in mathematics, as compared with forty-five in 1994 and thirty-four states in 1984 (CCSSO, 2002). The outcomes of these measures have more implications for the students, teachers, schools, and districts than ever before. Some high-stakes assessments are used to determine student placement, promotion, and graduation; teacher assignments and bonuses; and overall school ratings and benefits. Perhaps the most serious effect may be the "teaching to the test" syndrome that is occurring in many classrooms.

What are the implications for students with specific disabilities and other learning problems? According to the 1999 regulations of IDEA (and reauthorized in 2004), students with disabilities must have the necessary supports to "be involved and progress in the regular curriculum" and to participate in state and district assessments of student achievement (§300.347). These regulations were adopted because too many students with disabilities were being excluded from testing programs and therefore not provided the same access to the general education curriculum as their peers. Often these students weren't expected to meet the general education mathematics standards, so they couldn't enroll in courses required for college or technical training, although they may have had the ability. The No Child Left Behind Act of 2001 also required the "participation in such assessments (high-quality, yearly student academic assessments) of all students." (Section 1111 (3) (C ) (i))

Now with new opportunities for participation come the challenges. What testing accommodations are fair for students with disabilities or language differences that adhere to the same performance standards? Can a student who is working on standards one or two grade levels behind his peers be expected to take a grade-level test? How can districts apply standardized scores to students who have taken off-grade level tests? Are standard-ized tests the best measure of student understanding and skill? Should teachers and schools be penalized for differences in student performance that are disability or language related? The questions are endless, but the issues are found in every town's newspapers.

For teachers responsible for preparing students with disabilities for mandated assessments, the most important considerations will be understanding the assessment requirements and determining needed accommodations. Assessment requirements include administration dates, formats, and conditions, in addition to the test content emphasis. Most state and district assessments are administered in the late spring and may take an entire week. If the mathematics portion is last or is scheduled later in the day, students may not do as well. Some tests allow and even encourage calculator use for portions of mathematics tests, but students should have been using the same calculators throughout the year if this is the case. For test content, teachers should ask to review test development materials and, if permitted, previous forms of tests.

Test accommodations are changes in the way tests are administered or changes in the testing environment, not in the construct being measured. Modifications usually are not allowed on high-stakes tests because they change the construct being measured (National Center on Educational Outcomes, 2005).

Formats for mathematics assessments vary considerably from state to state and may even differ from formats within the state's adopted textbooks. In recent years, more states have incorporated open-ended and performance items into their assessments in addition to multiple-choice items (CCSSO, 2002). In the 2003-2004 academic year, states gave a total of ten norm-referenced mathematics tests, sixty-six criterion-referenced tests, and five augmented norm-referenced tests that included mathematics subtests (some states admin-istering more than one statewide test each year or different tests for different grade levels). The NCLB Act requirements have caused criterion-referenced tests to be much more prevalent (CCSSO, 2005). For example, in 2001, Arizona students in grades 2 through 8 were given the Stanford Achievement Test (ninth edition), a norm-referenced test of multiple-choice items. Students in grades 3, 5, 8, and 10 were also given the Arizona Instrument to Measure Standards (AIMS), a criterion-referenced test with multiple-choice, short response, and extended response items. Now Arizona administers only the AIMS. Teachers should expose students...
to the question formats that will be required on these summative assessments throughout the school year when specific, corrective feedback can be provided.

Different testing accommodations are permitted in different states. In addition to students with IEPs, accommodations are provided in many states for students with 504 plans (for students who are disabled, but do not qualify under IDEA), students with limited proficiency in English (ELL), and an emerging group of students with "emotional anxiety" about test taking. A few states make accommodations available for all students as needed (Thurlow, Lazarus, Thompson, & Robey, 2002). The most common accommodations for mathematics assessments are extended time, separate setting, and portions read aloud. Since these state-level assessments are now required for all students, state policies on accommodations have become more specific, but educators are not always trained in implementing them. It is important for the accommodations selected to actually match student needs, not be applied to all eligible students. Inappropriate accommodations may actually cause lower performance. And like the use of calculators, accommodations used on high-stakes tests should have been used for other assessments throughout the school year.
Students with Exceptionalities

Educators at all levels refer to special needs students as those with exceptionalities. In general, exceptionalities fall in six broad categories:

Most educators prefer not to use the term handicapped because of its negative implications. You'll more often see terms like challenged and exceptionality—both of which have more positive implications.

- **Intellectual.** This includes students who have superior intelligence as well as those who are slow to learn.
- **Communicative.** These students have special learning disabilities or speech or language impairments.
- **Sensory.** Sensory-grouped students have auditory or visual disabilities.
- **Behavioral.** These students are emotionally disturbed or socially maladjusted.
- **Physical.** This includes students with orthopedic or mobility disabilities.
- **Multiple.** These students have a combination of conditions, such as orthopedically challenged and visually impaired.

Although statistics are difficult to obtain, it has been estimated that between 10 and 13 percent of the school-age population has exceptionalities. Thus, in an average-size classroom of 25 students, it is conceivable that 3 or 4 individuals will exhibit one or more exceptionalities.

**Tips For Working With Exceptionalities**

Students (and even some teachers) may view the extra attention special needs students receive as unfair. However, according to long-time special education teacher Deb Watkins, “Fairness isn't about treating everyone the same; it's giving everyone what they need.”

It is quite likely that you will have a diversity of students in your classroom—representing a variety of talents and abilities. With this in mind, I suggest some generalized strategies for you to consider as you work with all special needs students:

- Be aware that special needs students may not want to be singled out for any special treatment. To do so may identify their disability for other students and cause them to receive some form of attention they may not be able to handle.
- Ensure that your attitude and responses to special needs students are identical to those to other students. View all students as contributing students.
- Consider learning over a long period of time. Special needs students may require extended periods of time to master a concept or learn a specific skill. You may need to repeat information several times and reinforce it in many ways.
- It is quite easy to fall into the trap of focusing on the weaknesses of special needs students. Yet it is vitally important that you be aware of and seek to identify the individual strengths of each and every student in your classroom.
- Help students understand that grading, evaluation, and assessment is based on identifiable objectives in accordance with individual potential. Evaluation should not be coupled with the limitations of students but rather to their expectations.
- Provide significant opportunities for students of all abilities to learn from each other. Structure a variety of learning activities in which the social climate of the classroom is both promoted and enhanced. It is important that everyone feels like he or she is contributing.
- Do not make inappropriate assumptions based on students' exceptionalities. For example, don't assume that a student who is confined to a wheelchair is an unhappy child. Don't assume that a learning disabled student is not gifted in the visual arts. Also, don't assume that children with disabilities are disabled in all areas.
There are nine basic types of curriculum modifications/adaptations (Adapted from *Adapting Curriculum & Inclusive Classrooms: A Teachers Desk Reference*). They are listed below along with examples.

1. **Quantity**-Adapt the number of items to learn or the number of activities to complete:
   1. Reduce or limit the use of scan sheets for test answers;
   2. Reduce the number of items for assigned tasks;
   3. Reduce the amount of copying;
   4. Reduce the number of problems;
   5. Reduce the number of concepts and expectations introduced at any given time;
   6. Reduce the number of terms the student must learn at one time;
   7. Reduce length of assignments;
   8. Have student learn 2-3 concepts from each chapter.

2. *Time*-Adapt the time allotted and allowed for learning, task completion, or testing:
   1. Create a timeline for completing a task;
   2. Allow student to take assignment home;
   3. Allow extra time in class to complete assignments;
   4. Review frequently;
   5. Allow additional time to complete tests;

3. *Level of support*-Increase the amount of personal assistance to keep the student on task or to reinforce or prompt use of specific skills.
   1. Peer buddies;
   2. Check for comprehension;
   3. Read tests aloud;
   4. Use groups to write together;
   5. Peer tutor.
   6. Starting a computer for a student;
   7. Guiding a hand during handwriting;

4. *Input*-Adapt the way instruction is delivered to the learner:
   1. Cooperative groups;
   2. Visual aides;
   3. Concrete examples;
   4. Hands-on activities.

5. **Difficulty**-Adapt the skill level, problem type, or the rules on how the student may approach the work:
   1. Calculator for Math problems;
   2. Simplify task directions;
   3. Outline with blanks;
   4. Word banks;
   5. Provide page number and paragraph to help student find answers;
   6. Number the handouts for reference during lecture;
   7. Supply a study guide with key concepts and vocabulary in advance;
8. Give alternate test;
9. Vary format of tests;
10. Grading spelling separately from content;
11. Open book tests;
12. Change rules to accommodate learner’s needs;
13. Use high interest/low-level books to motivate students to read;
14. Focus on mastery of more functional math concepts;
15. Provide alternative books with similar concepts but at an easier reading level;
16. Provide partial grade based on individual progress or effort;
17. Rework missed problems for a better grade;

6. **Output**- Adapt how the student can respond to instruction:
   1. Verbal vs. written response;
   2. Communication book;
   3. Allow students to show knowledge with hands-on material.

7. **Participation**-Adapt the extent to which a learner is actively involved in the task:
   1. Have student turn pages on book that the teacher is reading;
   2. Hold globe in geography;
   3. Listen to a taped story while others are engaged in reading aloud;
   4. Color map while other students label the map;
   5. Find related pictures in magazines of concepts presented while other use resource material to research information;
   6. Some learners will discuss concepts while others use selected computer programs for reinforcement;

8. ***Alternate Goals***- Adapt the goals or outcome expectations while using the same materials. This is only for students with moderate to severe disabilities.
   1. In a social studies lesson, except a student to be able to locate the colors of the states on a map, while other students learn to locate each state and name the capital.

9. ***Substitute Curriculum*** (Functional Curriculum)- Provide different instruction and materials to meet a learner’s individual goals. This is only for students with moderate to severe disabilities.
   1. During a language lesson a student is learning toileting skills with an aide.
   2. Community-based instruction;
   3. Learning how to use a communication device;
   4. Learning how to do laundry;
   5. Learning cooking/grooming skills.
What are accommodations and modifications and how do they apply to my child?

Kori Hamilton and Elizabeth Kessler in Accommodations and Modifications: Wait, they’re not the same, describe accommodations as a change that helps a student to overcome or work around the disability and a modification as a change in what is being taught or expected from the student. They state that, “an easy way to remember the difference between the two is to think of an accommodation as leveling the playing field for students by changing “how” they work through the general education curriculum. Modifications go beyond that, and alter the field (game) entirely. Modifications change “what” is learned and therefore changes the content of the grade-specific curriculum.”

If your child’s disability is preventing him or her from accessing grade level content then your child may need accommodations and/or modifications written into his or her Individualized Education Plan (IEP) or 504 Plan documents. The accommodations or modifications your child receives will depend on your child’s age, disability, classroom placement, and whether your child has an IEP or 504 Plan. The accommodations and/or modifications that your child receives on state assessments will be slightly different from the ones your child receives in the classroom. Visit your state education agency’s website or call them for a list of what accommodations and/or modifications they allow on state assessments.

The Council of Chief State School Officers released the second edition of their Accommodations Manual in 2005. In it they list the following questions for the IEP or 504 Plan team to consider when selecting accommodations for your child:

1. What are the student’s learning strengths and areas of further improvement?
2. How does the student’s learning needs affect the achievement of grade-level content standards?
3. What accommodations will increase the student’s access to instruction and assessment by addressing the student’s learning needs and reducing the effect of the student’s disability? These may be new accommodations or accommodations the student is currently using.
4. What accommodations are regularly used by the student during instruction and assessments?
5. What are the results for assignments and assessments when accommodations were used and not used?
6. What is the student’s perception of how well an accommodation “worked”?
7. Are there effective combinations of accommodations?
8. What difficulties did the student experience when using accommodations?
9. What are the perceptions of parents, teachers, and specialists about how the accommodations worked?
10. Should the student continue to use an accommodation, are changes needed, or should the use of the accommodation be discontinued?
11. Of the accommodations that match the student’s need, consider:
   1. The student’s willingness to learn to use the accommodation;
   2. Opportunities to learn how to use the accommodation in classroom settings; and
   3. Conditions for use on state assessments.

When choosing appropriate accommodations for your child you want to make sure that you are not over accommodating and thus creating a learned helplessness in your child.
There are several different types of accommodations: accommodations in presentation, accommodations in response, accommodations in setting, and accommodations in timing/scheduling. Drs. Stephen D. Luke and Amanda Schwartz in *Assessment and Accommodations* describe the different types of accommodations and give examples of accommodations for each type:

- **Accommodations in Presentation** are for students with hearing, visual, or learning disabilities. They change how the student receives information.
  - Oral reading (adult, audio tape, JAWS);
  - Large print;
  - Magnification devices;
  - American sign language;
  - Braille;
  - Tactile graphics;
  - Manipulatives;
  - Audio amplification devices (hearing aids, FM system)

- **Accommodations in Response** are for students with visual or hearing impairments, physical disabilities, and organizational problems. They offer different ways for students to respond.
  - Using a computer/typewriter or a scribe to record answers;
  - Using an argumentative communication device or other assistive technology;
  - Using a brailler;
  - Responding directly in the test booklet rather than on an answer sheet;
  - Using organizational devices, including calculation devices, spelling and grammar assistive devices, visual organizers, or graphic organizers.

- **Accommodations in Setting** are for students who are easily distracted. They affect where a test is taken or the way in which an environment is set up.
  - Administering the test individually;
  - Testing in a separate room;
  - Testing in a small group;
  - Adjusting the lighting;
  - Preferential seating;
  - Providing noise buffers such as headphones, earphones, or earplugs,

- **Accommodations in Timing/Scheduling** are for students who may need more time to process information, help managing time, or may need breaks throughout the class or test. They offer flexibility in timing:
  - Extended time on assignments or tests;
  - Multiple or frequent breaks;
  - Checklists;
  - Predictable routines and procedures;
  - Timelines;
  - Checklists;
  - Planners;
  - Change in testing schedule or class schedule
  - Testing over multiple days.
Your child’s teacher should be given the list of the accommodations that is in your child’s IEP or 504 Plan document and should keep them in mind as lessons plans are developed. Ask your child’s teacher if he or she uses the principles of Universal Design for Learning when developing lesson plans. Teachers who use Universal Design for Learning principles have greater options to help meet the instructional needs of all students including those with accommodations.

Many teachers may complain that it takes too much work to implement accommodations and that they have several students who require different accommodations. These accommodations are not for the teacher, they are for your child. They allow your child to access the same grade level material that is available to their non-disabled peers and help them become independent. Your child has a right to accommodations. Section 504 of the Rehabilitation Act of 1973 requires school districts to provide a free appropriate education to each student with a disability. If your child requires accommodations in order to receive a free appropriate education, then the school district is required to provide them.

Many times the right accommodations are all a student needs to be able to access grade level curriculum and be successful in the general education classroom. Your child’s accommodations should be evaluated from time to time to see if they are still working for your child. As your child learns new skills you may be able to remove some accommodations. Just be sure to keep in mind that you do not want to hinder their independence or access to grade level curriculum by removing an accommodation.
Teaching Students with Special Needs

It is inevitable that you will have the opportunity (and pleasure) of working with special needs students in your classroom. You may need to make accommodations for some and modifications for others. Providing for the needs of special education students will certainly be one of your greatest challenges as a professional educator. Consider these tips and strategies.

When working with special needs students, two terms you are sure to encounter are accommodation and modification. An accommodation is a device, material, or support process that will enable a student to accomplish a task more efficiently. Modification refers to changes to the instructional outcomes; a change or decrease in the course content or outcome.

Students with Learning Disabilities

Learning disabled students are those who demonstrate a significant discrepancy, which is not the result of some other handicap, between academic achievement and intellectual abilities in one or more of the areas of oral expression, listening comprehension, written expression, basic reading skills, reading comprehension, mathematical calculation, mathematics reasoning, or spelling.

Following is a list of some of the common indicators of learning disabled students. These traits are usually not isolated ones; rather, they appear in varying degrees and amounts in most learning disabled students. A learning disabled student ...

- Has poor auditory memory—both short term and long term.
- Has a low tolerance level and a high frustration level.
- Has a weak or poor self-esteem.
- Is easily distractible.
- Finds it difficult, if not impossible, to stay on task for extended periods of time.
- Is spontaneous in expression; often cannot control emotions.
- Is easily confused.
- Is verbally demanding.
- Has some difficulty in working with others in small or large group settings.
- Has difficulty in following complicated directions or remembering directions for extended periods of time.
- Has coordination problems with both large and small muscle groups.
- Has inflexibility of thought; is difficult to persuade otherwise.
- Has poor handwriting skills.
- Has a poor concept of time.
Teaching learning disabled youngsters will present you with some unique and distinctive challenges. Not only will these students demand more of your time and patience; so, too, will they require specialized instructional strategies in a structured environment that supports and enhances their learning potential. It is important to remember that learning disabled students are not students who are incapacitated or unable to learn; rather, they need differentiated instruction tailored to their distinctive learning abilities. Use these appropriate strategies with learning disabled students:

- Provide oral instruction for students with reading disabilities. Present tests and reading materials in an oral format so the assessment is not unduly influenced by lack of reading ability.
- Provide learning disabled students with frequent progress checks. Let them know how well they are progressing toward an individual or class goal.
- Give immediate feedback to learning disabled students. They need to see quickly the relationship between what was taught and what was learned.
- Make activities concise and short, whenever possible. Long, drawn-out projects are particularly frustrating for a learning disabled child.
- Learning disabled youngsters have difficulty learning abstract terms and concepts. Whenever possible, provide them with concrete objects and events—items they can touch, hear, smell, etc.
- Learning disabled students need and should get lots of specific praise. Instead of just saying, “You did well,” or “I like your work,” be sure you provide specific praising comments that link the activity directly with the recognition; for example, “I was particularly pleased by the way in which you organized the rock collection for Karin and Miranda.”
- When necessary, plan to repeat instructions or offer information in both written and verbal formats. Again, it is vitally necessary that learning disabled children utilize as many of their sensory modalities as possible.
- Encourage cooperative learning activities (see Teaching with Cooperative Learning) when possible. Invite students of varying abilities to work together on a specific project or toward a common goal. Create an atmosphere in which a true “community of learners” is facilitated and enhanced.

Offer learning disabled students a multisensory approach to learning. Take advantage of all the senses in helping these students enjoy, appreciate, and learn.
Students Who Have Higher Ability

Students of high ability, often referred to as gifted students, present a unique challenge to teachers. They are often the first ones done with an assignment or those who continually ask for more creative and interesting work. They need exciting activities and energizing projects that offer a creative curriculum within the framework of the regular classroom program.

Characteristics of Gifted Students

Gifted students exhibit several common characteristics, as outlined in the following list. As in the case of learning disabled students, giftedness usually means a combination of factors in varying degrees and amounts. A gifted student ...

- Has a high level of curiosity.
- Has a well-developed imagination.
- Often gives uncommon responses to common queries.
- Can remember and retain a great deal of information.
- Can not only pose original solutions to common problems but can also pose original problems, too.
- Has the ability to concentrate on a problem or issue for extended periods of time.
- Is capable of comprehending complex concepts.
- Is well organized.
- Is excited about learning new facts and concepts.
- Is often an independent learner.

Teaching Gifted Students

If there's one constant about gifted students it's the fact that they're full of questions (and full of answers). They're also imbued with a sense of inquisitiveness. Providing for their instructional needs is not an easy task and will certainly extend you to the full limits of your own creativity and inventiveness. Keep some of these instructional strategies in mind:

- Allow gifted students to design and follow through on self-initiated projects. Have them pursue questions of their own choosing.
- Provide gifted students with lots of open-ended activities—activities for which there are no right or wrong answers or any preconceived notions.
- Keep the emphasis on divergent thinking—helping gifted students focus on many possibilities rather than any set of predetermined answers.
- Provide opportunities for gifted youngsters to engage in active problem-solving. Be sure the problems assigned are not those for which you have already established appropriate answers but rather those that will allow gifted students to arrive at their own conclusions.
- Encourage gifted students to take on leadership roles that enhance portions of the classroom program (Note: gifted students are often socially immature.)
- Provide numerous opportunities for gifted students to read extensively about subjects that interest them. Work closely with the school librarian and public librarian to select and provide trade books in keeping with students' interests.
- Provide numerous long-term and ex- tended activities that allow gifted students the opportunity to engage in a learning project over an extended period of time.
**Students Who Have Hearing Impairments**

Other students can be responsible for taking notes (on a rotating basis) for a hearing impaired student.

Hearing impairment may range from mildly impaired to total deafness. Although it is unlikely that you will have any deaf students in your classroom, it is quite possible that you will have one or more who will need to wear one or two hearing aids. Here are some teaching strategies:

- Provide written or pictorial directions.
- Physically act out the steps for an activity. You or one of the other students in the class can do this.
- Seat a hearing impaired child in the front of the classroom and in a place where he or she has a good field of vision of both you and the chalkboard.
- Many hearing impaired youngsters have been taught to read lips. When addressing the class, be sure to enunciate your words (but don't overdo it) and look directly at the hearing impaired student or in his or her general direction.
- Provide a variety of multisensory experiences for students. Allow students to capitalize on their other learning modalities.
- It may be necessary to wait longer than usual for a response from a hearing impaired student. Be patient.
- Whenever possible, use lots of concrete objects such as models, diagrams, realia, samples, and the like. Try to demonstrate what you are saying by using touchable items.

**Students Who Have Visual Impairments**

All students exhibit different levels of visual acuity. However, it is quite likely that you will have students whose vision is severely hampered or restricted. These students may need to wear special glasses and require the use of special equipment. Although it is unlikely that you will have a blind student in your classroom, it is conceivable that you will need to provide a modified instructional plan for visually limited students. Consider these tips:

- Tape-record portions of textbooks, trade books, and other printed materials so students can listen (with earphones) to an oral presentation of necessary material.
- When using the chalkboard, use white chalk and bold lines. Also, be sure to say out loud whatever you write on the chalkboard.
- As with hearing impaired student, it is important to seat the visually impaired student close to the main instructional area.
- Provide clear oral instructions.
- Be aware of any terminology you may use that would demand visual acuity the student is not capable of. For example, phrases such as “over there” and “like that one” would be inappropriate.
- Partner the student with other students who can assist or help.
**Students Who Have Physical Impairments**

Physically challenged students include those who require the aid of a wheelchair, canes, walkers, braces, crutches, or other physical aids for getting around. As with other impairments, these youngsters' exceptionalities may range from severe to mild and may be the result of one or more factors. What is of primary importance is the fact that these students are no different intellectually than the more mobile students in your classroom. Here are some techniques to remember:

- Be sure there is adequate access to all parts of the classroom. Keep aisles between desks clear, and provide sufficient space around demonstration tables and other apparatus for physically disabled students to maneuver.
- Encourage students to participate in all activities to the fullest extent possible.
- Establish a rotating series of “helpers” to assist any physically disabled students in moving about the room. Students often enjoy this responsibility and the opportunity to assist whenever necessary.
- Focus on the intellectual investment in an activity. That is, help the child use his or her problem-solving abilities and thinking skills in completing an assignment without regard to his or her ability to get to an area that requires object manipulation.
- When designing an activity or constructing necessary equipment, be on the lookout for alternative methods of display, manipulation, or presentation.
- Physically impaired students will, quite naturally, be frustrated at not being able to do everything the other students can accomplish. Be sure to take some time periodically to talk with those students and help them get their feelings and/or frustrations out in the open. Help the child understand that those feelings are natural but also that they need to be discussed periodically.

**Students Who Have Emotional Problems**

Students with emotional problems are those who demonstrate an inability to build or maintain satisfactory interpersonal relationships, develop physical symptoms or fears associated with personal or school problems, exhibit a pervasive mood of unhappiness under no normal circumstances, or show inappropriate types of behavior under normal circumstances.

Although you will certainly not be expected to remediate all the emotional difficulties of students, you need to understand that you can and do have a positive impact on students’ ability to seek solutions and work in concert with those trying to help them. Here are some guidelines for your classroom:

- Whenever possible, give the student a sense of responsibility. Put the student in charge of something (operating an overhead projector, cleaning the classroom aquarium, re-potting a plant), and be sure to recognize the effort the student put into completing the assigned task.
- Provide opportunities for the student to self-select an activity or two he or she would like to pursue independently. Invite the student to share his or her findings or discoveries with the rest of the class.
- Get the student involved in activities with other students—particularly those students who can serve as good role models for the child. It is important that the emotionally disturbed child has opportunities to interact with fellow students who can provide appropriate behavioral guidelines through their actions.
- Discuss appropriate classroom behavior at frequent intervals. Don't expect students to remember in May all the classroom rules that were established in September. Provide “refresher courses” on expected behavior throughout the year.
- Emotionally disabled students benefit from a highly structured program—one in which the sequence of activities and procedures is constant and stable. You will certainly want to consider a varied academic program for all your students, but you will also want to think about an internal structure that provides the support emotionally impaired youngsters need.
- Be sure to seat an emotionally impaired child away from any distractions (highly verbal students, equipment, tools, etc.).
- Whenever possible, keep the activities short and quick. Provide immediate feedback, reinforcement, and a sufficient amount of praise.
Students Who Have ADHD

Students with Attention-Deficit/Hyperactivity Disorder (ADHD) offer significant and often perplexing challenges for many teachers. However, it is interesting to note that the IDEA's definition of students with disabilities does not include students with ADHD. For this reason, ADHD students are not eligible for services under IDEA unless they fall into other disability categories (hearing impairment, learning disability, etc.). However, they can receive services under Section 504 of the Rehabilitation Act of 1973.

ADHD students comprise approximately 3 to 5 percent of the school-age population. This may be as many as 35 million children under the age of 18. Significantly more boys than girls are affected, although reasons for this difference are not yet clear. Students with ADHD generally have difficulties with attention, hyperactivity, impulse control, emotional stability, or a combination of those factors.

As you consider this list of signs of ADHD, know that several of these traits must be present in combination before a diagnosis of ADHD can be made. A student who has ADHD ...

Section 504 of the Rehabilitation Act of 1973 is a civil rights law requiring that institutions not discriminate against people with disabilities in any way if they want to receive federal funds. It requires that a school create a special plan to accommodate students' learning needs. However, the law provides no funding to do so.

- Has difficulty following directions.
- Has difficulty playing quietly.
- Talks excessively.
- Fidgets or squirms when sitting.
- Blurs out things.
- Is easily distracted.
- Often engages in dangerous play without thinking about the consequences.
- Has difficulty awaiting turns.
- Interrupts or intrudes.
- Doesn't seem to listen.
- Has difficulty paying attention.
- Has difficulty remaining seated.
- Often shifts from one activity to another.

When working with ADHD students in your classroom, keep the following in mind:

- Make your instructions brief and clear, and teach one step at a time.
- Be sure to make behavioral expectations clear.
- Carefully monitor work, especially when students move from one activity to another.
- Make frequent eye contact. Interestingly, students in the second row are more focused than those in the first.
- Adjust work time so it matches attention spans. Provide frequent breaks as necessary.
- Provide a quiet work area where students can move for better concentration.
- Establish and use a secret signal to let students know when they are off task or misbehaving.
- Use physical contact (a hand on the shoulder) to focus attention.
- Combine both visual and auditory information when giving directions.
- Ease transitions by providing cues and warnings.
- Teach relaxation techniques for longer work periods or tests.
- Each day be sure students have one task they can complete successfully.
- Limit the amount of homework.
- Whenever possible, break an assignment into manageable segments.
You are not alone when you're working with special needs students. Often specialists, clinicians, and other experts are available in the school as part of an educational team. Included on the team may be special education teachers, diagnosticians, parents, social workers, representatives from community agencies, administrators, and other teachers. By working in concert and sharing ideas, you can provide a purposeful education plan for each special needs student.
Autism, Social & Emotional Development & Strategies to Implement in the Classroom
By Julie Christensen

For most kids with autism, the emotional and social aspects of daily living are the most difficult. Children with autism may have trouble regulating their emotions. Frequent, unpredictable outbursts can alienate them from friends and teachers, which further exacerbates feelings of sadness, anxiety and frustration. Fortunately, the classroom environment offers ample opportunities for learning these skills. Pull-out sessions to deliberately teach social and emotional skills are helpful, but the real-life experiences of the classroom are just as important.

1. Making Friends
   - Some kids with autism don't feel a need to develop close relationships, while others crave them but lack the skills necessary to sustain them. Either way, a teacher can foster social relationships in the classroom. Help your child's teacher understand your child's deficits. For example, perhaps she doesn't make eye contact or she talks obsessively about her special interests. Kids with autism need explicit instruction to learn the basic social skills that most children intuitively learn, according to Sally Ozonoff, co-author of "A Parent's Guide to Asperger Syndrome & High-Functioning Autism." Encourage the teacher to offer direct instruction on making friends. She can say things like, "Say hi to Carrie and tell her your name," or "When you are talking to your friends, look at their faces." The teacher can also place a time limit on the discussion of one topic. She can say something like, "Brian is going to talk about dinosaurs for two minutes and then we'll let someone else have a turn."

Self-Regulation

   - Kids with autism struggle with self-regulation, especially in a busy classroom setting. They may lose track of their homework, have difficulty listening to directions or experience meltdowns because of sensory overload. They may have intense emotional outbursts and have difficulty calming down. Kids with autism are often described as "emotionally brittle." Teachers can help by setting up a calm, predictable environment. Let your child's teacher know about your child's triggers and signs of sensory overload, such as hand-flapping, pacing or grumbling. Create visual schedules so your child knows exactly what to expect throughout the day. When your child doesn't know what to do, suggest the following sequence of steps, according to Michael D. Powers, co-author of "Asperger Syndrome & Your Child: A Parent's Guide": Watch other kids to figure out what to do, ask another child for help or ask a teacher for help. Encourage your child's teacher to help your child recognize when she's becoming upset and offer strategies to calm down.

Communication

   - Communication difficulties are one of the three hallmarks of autism disorders, and they play a big role in your child's social and emotional development. Some children with autism have very limited oral language, while others have highly developed vocabularies, but might not understand the pragmatics of language. Help your child's teacher understand your child's particular communication challenges. The pre-verbal child can use signs or visuals to express her needs and wants. Verbal children might need encouragement to ask for help. They might also need directions repeated. You might wonder how communication plays into social and emotional development. One of the basic requirements for self-esteem is the ability to understand others and express needs and wants.
Perspective Taking

Most kids with autism have difficulty understanding and empathizing with another person's feelings or behaviors. They may also negatively misinterpret someone's actions. If your child experiences these challenges, suggest a few structured activities about reading body language and facial expressions, as well as ongoing casual experiences. For example, the teacher could display a poster of facial expressions or have a group discussion on the topic. Games, such as charades, that require kids to read body language can also help. Board games help kids with autism learn the art of turn taking. Kids with autism don’t understand jokes or sarcasm. They often take teasing literally and become offended. Teach your child to ask for clarification when he assumes someone is being mean to him. Questions such as, "Are you trying to tease me," can help kids clarify another child's intent, suggests Powers.
HOW AND WHAT

Adaptations and Modifications for Students with Special Needs
Adapt Lessons to Reach All Students

<table>
<thead>
<tr>
<th>Principle</th>
<th>Criteria/Feature</th>
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| I. Big Ideas  
Concepts, or principles that facilitate the most efficient and broad acquisition of knowledge | • Focus on essential learning outcomes  
• Capture rich relationships among concepts  
• Enable learners to apply what they learn in varied situations  
• Involve ideas, concepts, principles, and rules central to higher-order learning  
• Form the basis for generalization and expansion |

The first and most essential adaptation is determining what information is most critical for students to learn and adjusting the instructional emphasis of the program. These instructional priorities are big ideas. For students in general and students with disabilities in particular, the sheer amount of information in the general education curriculum imposes extraordinary demands on learning. The growing amount of information to be learned is a heavy pressure on educators.

As Longstreet and Shane (1993) reported in their book *Curriculum for a New Millennium*, it is estimated that by the late 1990s the quantity of available information will double every 24 months. In effect, this means that learners in today's schools will be exposed to more information in a year than their grandparents were in a lifetime.

Although educators cannot make major overhauls in instructional materials, they can (a) identify big ideas and (b) evaluate lessons to determine the degree of adaptation necessary to ensure adequate instruction and practice of those big ideas.

**Approach**

To determine the big ideas in a subject, educators must rely on two primary sources: (1) the curriculum content standards of their respective educational agency and (2) research-based areas of convergence. It is not teachers' responsibility to identify big ideas, but it is their duty to be thoroughly familiar with the skills, strategies, and knowledge that students are expected to demonstrate at specific grades.

For example, in the area of beginning reading there are clear and consistent skills students should accomplish in their development of beginning reading (Committee on the Prevention of Reading Difficulties in Young Children, 1998).

By the end of first grade, students should be able to segment three- to four-phoneme words auditorily, read three- to four-letter regular words accurately and fluently, answer literal comprehension questions, and retell simple stories including basic elements of story grammar.

Once the big ideas or instructional priorities are identified, an analysis must be conducted of the alignment between learning expectations and the quality and quantity of instruction and practice in the instructional materials.

Essentially, the focus of the analysis is this: Will the instruction and practice of the curricular materials result in students being able to demonstrate the target skill or strategy? To answer this question, select a representative lesson from a curricular program and consider the evaluative questions when evaluating or adapting curricular materials.
Evaluative Questions

1. Quantity of objectives: How many objectives are introduced in the lesson?
2. Coverage: Is the number of objectives reasonable for the full range of learners?
3. Importance: Rate each objective. Are they central and fundamental to later learning?
4. Time: How much time do you devote to the most important objectives?
II. Conspicuous Strategies
Useful steps for accomplishing a goal or task

- Planned
- Purposeful
- Explicit
- Of medium-level application
- Most important in initial teaching of concept

Assess whether instruction is conspicuous. That is, does it communicate clearly and explicitly the steps the learner must employ to perform the strategy and complete the task?

To solve problems, students follow a set of steps or strategies. A strategy is a series of steps students use to achieve a goal. In instruction, it is important that these steps initially be made overt and conspicuous for students. As students learn a strategy, the steps should become more covert. Many students develop their own strategies, but a considerable amount of time may be required for the student to identify the optimum strategy. For students with disabilities and diverse learning needs, such an approach is highly problematic because instructional time is precious and these learners may never figure out an effective or efficient strategy.

Learning is most efficient when a teacher can make it conspicuous or explicit. In addition, strategies are most effective when they are of medium breadth and generalizable. When applied to a process such as reading comprehension or to a specific skill such as determining the main idea in a paragraph or a story, a conspicuous strategy is the set of steps that leads students to comprehend and identify the main idea effectively and efficiently.

Unfortunately, many students with diverse learning needs are unable to intuit or figure out the relationship of the main idea to the whole paragraph or story before the opportunities for learning have been exhausted. Moreover, the curriculum may not provide the strategic steps necessary for teachers to communicate the process adequately.

Teachers, then, must devise ways to make clear to the students the strategies proficient readers use to

1. determine whether the main idea is explicitly or implicitly stated,
2. discriminate most important from less important information,
3. summarize ideas, and
4. come to a reasonable conclusion.

Evaluative Questions
Find instructions from an objective identified by your Big Ideas work and answer these questions.

1. Do the directions require the teacher to (check the one that applies)
   o Model the skill/strategy? (Demonstrate before asking students to apply the strategy.)
   o Explain the skill/strategy? (Describe.)
   o Reference/note the skill/strategy?
2. Is the instruction sufficiently conspicuous to enable the full range of learners to demonstrate/perform the skill?
3. Are the directions clear and sufficient for you to know how to teach the skill?
4. Is the strategy useful, and will it lead to efficient/generalizable learning for the full range of learning?
5. Does the lesson apply the strategy to many examples of the target skill/objective? Based on your analysis, identify the modifications necessary to accommodate the full range of learners:
   o Change or add a strategy.
   o Modify language/teaching to make more explicit.
   o Add examples to which the strategy applies.
### III. Mediated Scaffolding

| Instructional guidance provided by teachers, peers, materials, or tasks | • Varied according to learner needs or experiences  
• Based on task (not more than learner needs)  
• Provided in the form of tasks, content, and materials  
• Removed gradually according to learner proficiency |

In cognitive scaffolding, the goal is for students to "get it," or understand the first step in the learning process. The role of the scaffolding, however, is to eliminate the problems that could block students from getting it: not understanding or remembering the sound meaning correspondence in learning to read, for example, or developing a dislike for the activity and giving up.

Scaffolding is temporary. Students acquiring knowledge should learn to become as self-regulated and independent as possible. To accomplish this, teachers should gradually remove the scaffolding. On new or difficult tasks, scaffolding may be substantial at first and then be systematically removed as learners acquire knowledge and skills. For example, scaffolding can be accomplished through multiple formats, including the careful selection of examples that progress from less difficult to more difficult, the purposeful separation of highly similar and potentially confusing facts and concepts (e.g., mitosis and meiosis; /p/ and /b/ in early letter-sound correspondence learning), the strategic sequencing of tasks that require learners to recognize and then produce a response, or the additional information that selected examples provide, such as highlighting the digits used in a division problem.

Scaffolding is not a static, predetermined instructional condition. The degree of scaffolding changes with the abilities of the learner, the goals of instruction, and the complexities of the task. Educators must determine the level and degree of scaffolding necessary. Nonetheless, the more built-in support structures contained in curricular materials, the easier it is for teachers to provide the scaffolding that learners require.

Do the amount, sequence, and selection of information enhance the probability that information will be learned?

#### Evaluative Questions

1. Does the sequence of instruction move from teacher-directed to student-directed activities?
2. Does the sequence of instruction provide multiple examples of the target strategy prior to asking the learner to perform the skill?
3. Does the sequence begin with easy tasks and progress to more difficult ones?
4. Does the sequence of instruction separate potentially confusing information? Does the lesson introduce concepts or ideas that the learner may confuse?
5. Does the sequence introduce a manageable amount of information for the range of learners?
6. Count the number of modeled examples prior to learner practice.
7. Count the number of guided examples prior to independent work.
8. Do the requirements in instruction parallel requirements in independent practice? Examine the teaching component of the lesson and compare it with the expectations of practice/independent work. Based on your analysis, identify the modifications necessary to accommodate the full range of learners:
   - o Add explicit models designed by the teacher prior to student application.
   - o Add more examples of the skill/strategy in the guided practice phase.
   - o Reduce the amount of information in the lesson.
   - o Separate potentially confusing information/skills.
   - o Sequence tasks to progress from easy to more difficult.
   - o Change independent activities to parallel instructional activities.
IV. Strategic Integration

Integrating knowledge as a means of promoting higher-level cognition

- Combines cognitive components of information
- Results in a new and more complex knowledge structure
- Aligns naturally with information (i.e., is not “forced”)
- Involves meaningful relationships among concepts
- Links essential big ideas across lessons within a curriculum

For new information to be understood and applied, it should be carefully combined (strategically integrated) with what the learner already knows and understands to produce a more generalizable, higher-order skill. Integrating new information with existing knowledge increases the likelihood that new information will be understood at a deeper level.

But it must be done strategically and the critical connections made clear so that the new information does not become confused with what the learner already knows.

For example, in teaching students how to compose narratives, a teacher can move from activities based on reading comprehension, such as identification and application of narrative elements (e.g., setting, main characters, initiating event, resolution to the problem), to generation of those elements. Similarly, in beginning reading, once learners can hear sounds in words and recognize letter-sound correspondences fluently, those skills can be integrated to recognize words. These powerful and oftentimes logical connections comprise strategic integration.

Strategic integration is the carefully controlled combination of what the student already knows with what he or she has to learn so that the relationship between these two elements is clear and results in new or more complete knowledge.

Examples of strategic integration include:

- Using text structure to enhance reading comprehension and then as a basis for narrative writing.
- Integrating letter-sound correspondence knowledge to form words.
- Using the strategy for solving proportions as a basis for word problem solving.

Evaluative Questions

1. Does the lesson make explicit the connections between prior learning and new skills?
2. Where appropriate, does the lesson explain the relationship among its components/parts?
3. Does the lesson result in the learner being able to demonstrate a higher-order concept/strategy based on integration of prior learning and new learning?
4. Identify the modifications necessary to accommodate the full range of learners.
   o Make explicit the connections between prior learning and new learning.
   o Make explicit the connections between the components within a lesson.
   o Indicate how the new objective results in a higher-order skill or strategy.
V. Judicious Review
Structured opportunities to recall or apply previously taught information

- Sufficient
- Distributed over time
- Cumulative
- Varied
- Judicious, not haphazard

Simple repetition of information does not necessarily ensure efficient learning; it must be carefully considered. Successful learning depends on a review process to reinforce the essential building blocks of information within a subject area.

Dixon, Camine, and Kamehnui (1992) identified four critical dimensions of judicious review:

1. It should be sufficient to enable a student to perform a task without hesitation.
2. It should be distributed over time.
3. It should be cumulative, and the information should be integrated into more complex tasks.
4. It should be varied to illustrate the wide application of a student's understanding of the information.

So how does a teacher select information for review, schedule review to ensure retention, and design activities to extend a learner's understanding of the skills, concepts, or strategies?

According to Dempster (1991), "spaced repetitions," in which a learner is asked to recall a learning experience, are more effective than "massed repetition," if the "spacing between occurrences is relatively short" (p. 73). As early as 1917, Edward (cited in Dempster, 1991) observed that elementary school children who studied academic information once for 4 minutes and again for 2 1/2 minutes several days later retained about 30% more information than students receiving one continuous 6 1/2 minute session. Repeated presentations of shorter time increments distributed over time should, therefore, be considered when scheduling instruction.

To develop retention, students must be given opportunities to practice and review skills and strategies. Minimally, these review opportunities must be sufficiently frequent to facilitate automatic application of the skill/strategy and sufficiently distributed to ensure that students retain the skill/strategy over time.

**Evaluative Questions**

1. Is there adequate review of the new skill/strategy within the introductory lesson?
2. Examine the next three lessons and document the lessons in which the information from the current lesson is reviewed.
3. Analyze the skill/strategy horizontally; that is, identify the lesson in which the skill is initially introduced and the lesson schedule in which it is reviewed.

The essence of judicious review is that new information and associated tasks are reviewed regularly and systematically. To conduct this analysis, examine the current lesson and a minimum of three to four subsequent lessons to determine whether the concept is reviewed, practiced, and applied in different tasks and contexts. When there is very little systematic review across lessons serious difficulties arise for students who have difficulty retaining new and unfamiliar information.
**VI. Primed Background Knowledge**

Preexisting information that affects new learning

- Aligns with learner knowledge and expertise
- Considers strategic and proximal preskills
- Readies learner for successful performance

Successful acquisition of new information depends largely on (a) the knowledge the learner brings to a task, (b) the accuracy of that information, and (c) the degree to which the learner accesses and uses that information.

For students with disabilities and diverse learning needs, priming background knowledge is critical to success because it addresses the memory and strategy deficits they bring to certain tasks. In effect, priming is a brief reminder or prompt that alerts the learner to task dimensions or to retrieve known information.

Instructional materials can acknowledge the importance of background knowledge in two ways. First, students can be pretested for important background knowledge. Such tests can be used to determine placement within an instructional program or to alert teachers to the need for allocating time to background topics. It is often useful to assess the background knowledge of students with learning difficulties using formats other than reading and writing because these students frequently understand more than they can express through reading or writing.

Second, instructional programs can include important background knowledge in the scope of topics taught. Ideally, such background topics would be taught or reviewed a few days before the introduction of new strategies that depend upon those topics. If background topics are introduced earlier than that, students may forget some relevant aspects by the time the new strategy is introduced. If background topics are introduced in the same lesson as the new strategy, some students are likely to be overwhelmed by the quantity of new knowledge.

Clearly, the concept of strategic integration is closely related to essential background knowledge. The focus on strategic integration, however, emphasized increasing depth of understanding of important concepts. Here, the focus is on the prerequisites for learning important concepts so that they might be integrated meaningfully.

**Evaluative Questions**

1. **Identify the language background knowledge required of the task.**
   - Does the lesson adequately explain or access this knowledge?
2. **Identify the component background knowledge.**
   - Does the lesson adequately explain or access this knowledge?
3. **Identify the modifications necessary to accommodate the full range of learners.**
   - Identify and access knowledge of language that is prerequisite to the objective.
   - Identify and access knowledge of components that are prerequisites for the objective.
Designing Lessons for Diverse Learners

by Natalie Olinghouse 2008

**Who deserves accommodations? Everyone!**

Instructional accommodations are not just for students who are struggling. When accommodations are made, all students benefit.

Accommodations do not fundamentally alter or lower expectations or standards in instructional level (conceptual difficulty), content, or performance criteria. Instead, changes are made in the instructional delivery method, assessment method, or both to enable the student to have access to the same learning and equal opportunity to demonstrate learning.

Accommodations fall under four major categories:

**Content:** What the student needs to learn. The instructional concepts should be broad based, and all students should be given access to the same core content. However, the content’s complexity should be adapted to students’ learner profiles. Teachers can vary the presentation of content, (e.g., textbooks, lecture, demonstrations, taped texts) to best meet students’ needs.

**Process:** Activities in which the student engages to make sense of or master the content. Examples of differentiating process activities include scaffolding, flexible grouping, interest centers, manipulatives, varying the length of time for a student to master content, and encouraging an advanced learner to pursue a topic in greater depth.

**Products:** The culminating projects that ask students to apply and extend what they have learned. Products should provide students with different ways to demonstrate their knowledge as well as various levels of difficulty, group or individual work, and various means of scoring.

**Learning Environment:** The way the classroom works and feels. The differentiated classroom should include areas in which students can work quietly as well as collaborate with others, materials that reflect diverse cultures, and routines that allow students to get help when the teacher isn’t available (Tomlinson, 1995, 1999; Winebrenner, 1992, 1996).

**Use the following steps to providing accommodations:** (cec.sped.org)

**Step 1. Create a Plan for Adapting Materials**

Effective adaptations require sustained development and support. They must be made within the framework of a larger plan that includes consideration of (a) basic and strategic skills instruction and (b) the roles of people involved in the adaptation process. In some cases, it is important to involve your administrator and curriculum or program coordinator from the beginning, and identify exactly who will be responsible for making, implementing, supporting and evaluating the adaptation over the course of the year. As much as possible, involve students, parents, paraprofessionals, and others. Adaptations that can benefit an entire class or several classes are more likely to be supported and maintained.
**Step 2. Identify and Evaluate the Demands that Students Are Not Meeting**

The purpose of this step is to define the problem to be addressed by the adaptation. Observe students’ performance when they use typical instructional materials. They may have difficulty acquiring or getting the important information from written materials, storing or remembering the information presented in the materials, or expressing the information or demonstrating competence on written tests. If students have difficulty with a given task, different solutions may be required depending on the level of difficulty and the student’s individual needs.

**Step 3. Develop Goals for Teaching Strategies and Making Adaptations**

Some problems can be solved by adaptations; other problems may signal the need for intensive instruction in skills or strategies. Often, teachers may need to provide adaptations while simultaneously teaching the student the learning strategies he or she needs in order to perform the work. All adaptations lead students to become dependent on the person who makes them. Before an adaptation is made for an individual student, educators must carefully consider the best approach to addressing the student's difficulty and promoting success. Adaptations should be approached as short-term solutions within a long-term plan for teaching skills and strategies that will promote the student's independence as a learner and ultimately reduce the need for adaptations.

**Step 4. Determine Whether Content or Format Adaptations Are Needed**

Content adaptations may be made only when the student's Individualized Educational Program (IEP) notes that the general curriculum is inappropriate for this student. Content adaptations must also meet local and state education standards. In some cases, the IEP may address the degree to which the requirements associated with meeting state standards and taking assessments may be modified. The teacher must decide which parts of the curriculum the student will be required to learn and will constitute mastery of the course content.

When the curriculum is considered appropriate for the student, adaptations may focus on format rather than content. Again, the teacher must identify the critical elements of course content that students must learn: First, identify the critical course ideas or concepts. Then identify the information that must be mastered in each unit to ensure that the critical course ideas are mastered. Finally, determine how students will demonstrate their mastery at the end of each unit and at the end of the course. Format adaptations are made to compensate for mismatches between the presentation or design of the materials and the skills and strategies of the student. In format adaptations, the content is not altered.

**Step 5. Identify the Features of the Materials that Need To Be Adapted**

The design of materials can present many different types of problems for students who struggle. Teachers adapting materials should examine each curricular unit for features that might cause a learning problem. For example, the content may be very abstract, complex, or poorly organized, or it might present too much information. It may not be relevant to students or it may be boring. Further, it may call for skills or strategies or background information that the student does not possess. It may present activities that do not lead to mastery, or it may fail to give students cues about how to think about or study the information. Materials also may not provide a variety of flexible options through which students can demonstrate competence. Guidelines for identifying these and other problems in the design of instructional materials may be found in resources like those listed at the end of this article.
Step 6. Determine the Type of Adaptation That Will Enable the Student To Meet the Demand

Once the materials have been evaluated and possible problem areas identified, the type of format adaptation must be selected. Format adaptations can be made by

- **Altering existing materials**: Rewrite, reorganize, add to, or recast the information so that the student can access the regular curriculum material independently, e.g., prepare a study guide and audiotape.

- **Mediating existing materials**: Provide additional instructional support, guidance, and direction to the student in the use of the materials. Alter your instruction to mediate the barriers presented by the materials so that you directly lead the student to interact with the materials in different ways. For example, have students survey the reading material, collaboratively preview the text, and create an outline of the material to use as a study guide.

- **Selecting alternate materials**: Select new materials that are more sensitive to the needs of students with disabilities or are inherently designed to compensate for learning problems. For example, use an interactive computer program that cues critical ideas, reads text, inserts graphic organizers, defines and illustrates words, presents and reinforces learning in smaller increments, and provides more opportunities for practice and cumulative review.

Step 7. Inform Students and Parents About the Adaptation

Adaptations are more successful when they are offered and introduced to students at the beginning of the year. Parents should also be informed about them at the beginning of the year. Students should be taught explicit strategies to use any adaptation effectively and how to process the information received through the adaptation. As students’ progress, they should be taught how to recognize the need for and request materials adaptations.

Step 8. Implement, Evaluate, and Adjust the Adaptation

As the adaptation is implemented, the teacher should evaluate its effects to determine whether the desired outcomes are being achieved. If not, adjustments will need to be made either in the adaptation or the instructions to the student in its use. Adaptations should significantly reduce failure and learning difficulties.

Step 9. Fade the Adaptation When Possible

Adaptations usually are short-term solutions to allow classroom learning and participation until the needed skills and strategies can be taught. Once the adaptation is in place, the teacher should begin to plan with other teachers how to teach the needed skills and strategies. Once the student has learned the necessary skills and strategies, the adaptation should be faded. The adaptation should not be removed until the student possesses the skills and strategies to learn and complete tasks independently. For some students, an adaptation may be required for several months, while for others; it may be maintained for years.

The remaining part of this article presents suggestions for adaptations and accommodations for students, along with suggestions for instruction. Each section is organized around specific learning problems that students may exhibit. For each learning problem, a series of questions are listed that teachers can ask to learn more specifics about the student who is struggling. Adaptations and accommodations should be matched to specific skill deficits within each learning problem. For example, there are several causes of word reading difficulties. A student who has deficits in phonological awareness will need different adaptations and accommodations than a student who is able to read single syllable words but struggles with multisyllabic words. Additionally, these students require different instruction to remediate their skill deficits (see the Suggestions for Instruction column).

It is important to note that teachers should pair instruction along with the use of adaptations or accommodations in two areas. First, sometimes students need instruction in how to use and apply the adaptation or accommodation to their learning. The teacher should not assume that the student will be able to benefit from the adaptation or accommodation without this instruction. Second, as mentioned previously, adaptations or accommodations increase dependence in the
student. Instruction in the learning deficit ensures that the student builds his or her abilities while being supported, and then the support is reduced or removed as the student’s skills improve. While the specific instruction will vary depending on individual student needs, all instruction for struggling students should be explicit (directly taught), systematic (sequenced so that skills build on one another, not left to incidental learning), scaffolded (supported instruction that is gradually withdrawn as students become more proficient) and modeled (teacher models both the task/skill and the thought processes to complete the task/skill).

In many cases, students will require adaptations or accommodations in several areas. The teacher should determine the most effective and efficient package of adaptations or accommodations for the student. Other students in the class also may benefit from these adaptations or accommodations.
<table>
<thead>
<tr>
<th>Learning Problem: Reading (Assignments and Assessments)</th>
<th>Questions:</th>
<th>Accommodations:</th>
<th>Suggestions for Instruction (Explicit, systematic, scaffolded, and modeled)</th>
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| **Students have difficulty reading the words**         | -Does the student have difficulty in perceiving or producing complex sounds?  
-Does the student have a deficiency in awareness of sounds (phonological awareness)?  
-Does the student have difficulty reading one/two/multisyllabic words?  
-Does the student have difficulty reading words with affixes? | -Provide tape-recorded versions of material  
-Use videotape or movie that presents the same information  
-Use assistive technology to transfer printed words to speech  
-Have a reading buddy read aloud textbooks or other printed material  
-Provide opportunities for several re-readings of the same text  
-Reduce the amount of required reading  
-Reduce the complexity of the required reading  
-Provide a glossary of content-related terms  
-Allow for extra time | -Teach phonemic awareness skills  
-Teach word reading strategies (e.g., letter-sound relationships, reading by analogy, variable vowels sounds, affixes)  
-Use flexible grouping strategies so that students can work on key skills in small groups |
| **Students have difficulty finding the main idea or identifying important information in the text (either listening or reading comprehension)** | -Does the student have difficulty reading the words (see Word reading difficulties)?  
-Does the student have appropriate reading fluency (see Fluency difficulties)?  
-Does the student have the relevant background knowledge? | -Highlight important ideas and have the student read those first  
-Provide a study guide for the student to follow when reading independently  
-Let the student use books written slightly below their reading level  
-Provide visual/audio support for ideas in text | -Teach pre-reading strategies (e.g., activate prior knowledge, identify text structure, set purpose for reading)  
-Teach vocabulary strategies (e.g., how to determine meaning of unfamiliar words,)  
-Teach comprehension strategies (e.g., summarization, prediction, clarification, inferences, questioning) |
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| Continued Students have difficulty finding the main idea or identifying important information in the text (either listening or reading comprehension) | -Can the student make connections between prior knowledge and new information?  
-Can the student identify inconsistencies between prior knowledge and new information?  
-Does the student know the essential vocabulary?  
-Can the student formulate appropriate/relevant questions about the text?  
-Can the student make inferential connections?  
-Can the student identify and differentiate several types of text structures?  
-Does the student have familiarity with text features (e.g., table of contents, headings, glossary)?  
-Can the student paraphrase or summarize what he or she has just read?  
-Is the student aware when he or she is experiencing difficulties understanding the text? | -Provide relevant background knowledge through multiple avenues  
-Structure brainstorming activities so that relevant knowledge is activated and inaccurate knowledge is revised  
-Use pre-designed graphic organizers to document prior and new knowledge  
-Revisit predictions  
-Use alternative forms of expression (e.g., story boards, pictures)  
-Pre-teach vocabulary  
-Provide advanced/graphic organizers based on text structure (may need to fill in information for some students)  
-Provide the student with generic question prompts to use while reading (e.g., what did the character just do? How does this new information fit with what I already know?)  
-Reduce the amount of information presented at one time | -Teach note taking skills  
-Provide examples and teach names of different text structures  
-Compare/contrast different text structures  
-Teach students how to identify main ideas  
-Teach visual imagery of ideas in text  
-Teach self-monitoring of comprehension  
-Use flexible grouping strategies so that students can work on key skills in small groups |
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| **Continued** Students have difficulty finding the main idea or identifying important information in the text (either listening or reading comprehension) |            | - Allow the student to reread material or practice skills/strategies on previously read text rather than on new text  
- Allow the student to take notes, highlight, or write in the text, or provide a copy of the text so that the student can mark directly on the text  
- Have students draw images from text  
- Provide self-monitoring checklists for comprehension  
- Use simple written instructions, or provide visuals  
- Provide study guides that feature the most important content  
- Block out extraneous stimuli (cover all text except section being read)  
- Use consumable materials so that students can highlight or mark on text  
- Reduce the complexity of the reading material  
- Provide a glossary of content-related terms |

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| **Students have poor reading fluency**                 | -Does the student have difficulty reading the words (see Word reading difficulties)?  
-Does the student have difficulty understanding what he or she reads (see Reading comprehension difficulties)?  
-Does the student read with prosody (inflection)?  
-Does the student have adequate reading speed? | -Reread the same text multiple times  
-Pair good and poor readers for activities  
-Let the student use books written slightly below their reading level  
-See supports for poor word reading or reading comprehension, if appropriate  
-Reduce the amount of required reading  
-Allow for extra time | -Model appropriate reading speed and prosody  
-Provide multiple interactions with the same text  
-Encourage repeated readings using motivating and interesting activities  
-Use flexible grouping strategies so that students can work on key skills in small groups |
| **Students have difficulty understanding what they should learn from a lecture or discussion.** | Does the student have a short attention span?  
-Is the student frequently off-task?  
-Does the student have problems with listening comprehension (see Reading comprehension difficulties)? | Use visual aids, such as whiteboard, overhead, PowerPoint, or charts  
-Provide an overview of the content at the beginning of the lesson  
-Introduce new vocabulary and concepts before the lesson  
-Provide a summary of important information from the lecture with a list of questions to be answered  
-Provide study guides that feature the most important content  
-Review previously learned content prior to the activity  
-Provide a glossary of content-related terms | Teach note taking skills and strategies  
-Teach students how to identify main ideas and important information; teach summarization skills  
-Teach students how to ask clarification questions  
-Teach self-regulation strategies  
-Use flexible grouping strategies so that students can work on key skills in small groups |
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| Students have difficulty following the ideas during the lecture or discussion. | Does the student have a short attention span?  
Is the student frequently off-task?  
Does the student have problems with listening comprehension (see Reading comprehension difficulties)? | - Keep students involved by encouraging them to ask questions or by breaking up the lecture with small group activities or discussions  
- Identify the main steps or key components of the information  
- Write important ideas down on the board/chart. Use colored chalk or markers for emphasis  
- Give students copies of lecture notes  
- Let students use a tape recorder to record lectures and class discussions  
- Repeat, use other words, and summarize all key points. This is particularly important at the end of the lecture or discussion  
- Provide study guides that feature the most important content  
- Provide help for note taking, such as giving a copy of overheads, an outline of a lecture, or a diagram  
- Introduce new vocabulary and concepts before the lesson  
- Use pictures, written words, charts, or diagrams to reinforce what is presented orally  
- Use visual aids, such as whiteboard, overhead, PowerPoint, or charts  
- Provide an overview of the content at the beginning of the lesson  
- Provide a summary of important information from the lecture with a list of questions to be answered |
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<td>Students have difficulty taking notes and remembering the ideas.</td>
<td>Does the student use shorter and less complex sentences for their age (see Writing suggestions)? Does the student have difficulty understanding what should be written? Does the student have difficulty understanding sentences that express relationships? Does the student frequently use the same sentence structures (see Writing suggestions)? Does the student have difficulty with handwriting or spelling (see Fine Motor control or Spelling suggestions)</td>
<td>-Identify the main steps or key components of the information  -Write important ideas down on the board/chart. Use colored chalk or markers for emphasis  -Provide study guides that feature the most important content  -Give the student copies of lecture notes  -Let the student use a tape recorder to record lectures and class discussions  -Introduce new vocabulary and concepts before the lesson  -Repeat, use other words, and summarize all key points. This is particularly important at the end of the lecture or discussion  -Provide help for note taking, such as giving a copy of overheads, an outline of a lecture, or a diagram  -Use pictures, written words, charts, or diagrams to reinforce what is presented orally  -Use visual aids, such as whiteboard, overhead, PowerPoint, or charts  -Provide an overview of the content at the beginning of the lesson  -Provide a summary of important information from the lecture with a list of questions to be answered  -Provide a pre-designed graphic organizer that the student can fill in throughout the lesson</td>
<td>-Repeat, use other words, and summarize all key points. This is particularly important at the end of the lecture or discussion  -Provide help for note taking, such as giving a copy of overheads, an outline of a lecture, or a diagram  -Use pictures, written words, charts, or diagrams to reinforce what is presented orally  -Use visual aids, such as whiteboard, overhead, PowerPoint, or charts  -Provide an overview of the content at the beginning of the lesson  -Provide a summary of important information from the lecture with a list of questions to be answered  -Provide a pre-designed graphic organizer that the student can fill in throughout the lesson</td>
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| Students have trouble with fine motor control and handwriting. | ![Box](1) Does the student have large handwriting that doesn’t stay within the lines?  
![Box](1) Does the student have small, cramped handwriting?  
![Box](1) Is the student’s handwriting legible?  
![Box](1) Does the student have difficulty with cursive handwriting?  
![Box](1) Is the student’s handwriting slow and labored? | ![Box](1) Let the student write directly in the workbook or on a copy of the workbook page  
![Box](1) Provide an outline where students have less to write  
![Box](1) Reduce the amount of written work  
![Box](1) Grade content and mechanics separately in written assignments.  
![Box](1) Let students use a word processor  
![Box](1) Let students dictate their work to a teaching assistant or classmate who will write the ideas down  
![Box](1) Let students tape record their ideas before writing them down  
![Box](1) Allow the student to respond orally  
![Box](1) Let the student use adaptive devices: pencil grips or special pen or pencil holders, erasable pens, small papers with raised or color coded lines  
![Box](1) Allow the student to write in either print or cursive when writing for an extended time  
![Box](1) Reduce the amount of copying  
![Box](1) Allow for extra time | ![Box](1) Consider a referral for Occupational Therapy services  
![Box](1) Teach handwriting skills to improve legibility, fluency, or letter retrieval  
![Box](1) Teach handwriting skills both separately and within writing assignments  
![Box](1) Teach word processing skills  
![Box](1) Use flexible grouping strategies so that students can work on key skills in small groups |
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| Students have difficulty with spelling.               | ① Does the student have difficulty spelling predictable spelling patterns?  
② Does the student have difficulty spelling irregular or multisyllabic words?  
③ Does the student have difficulty spelling words while writing? | ① Let the student use a word processor  
② Let the student use a spelling dictionary or electronic spelling aid  
③ Grade content and mechanics separately in written assignments.  
④ Give the student a chance to correct spelling errors  
⑤ Provide a glossary of content-related terms  
⑥ Allow for extra time | ① Teach specific spelling skills to improve word spelling, fluency, and retrieval  
② Use flexible grouping strategies so that students can work on key skills in small groups  
③ Teach word processing skills (keyboarding, use of spell check*) |
| Students have difficulty expressing their ideas in writing. | Does the student write only a few sentences?  
Does the student complain of not knowing what to write?  
Does the student have difficulty with handwriting (see Handwriting suggestions)?  
Does the student have difficulty with spelling (see Spelling suggestions)?  
Does the student frequently write on the same topic?  
Does the student’s writing lack detail? | ① Let the student use a thesaurus to find words to write or say  
② Provide brainstorming activities before writing  
③ Provide graphic organizers that prompt the student in specific areas before writing  
Let the student tape record their ideas before writing them down  
Provide a glossary of content-related terms  
Allow for extra time | Teach brainstorming or prewriting skills and strategies  
Use flexible grouping strategies so that students can work on key skills in small groups |
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| Students have difficulty keeping track of their assignments. | ① Does the student have a short attention span?  
② Is the student frequently off-task?  
③ Does the student frequently lose assignments and belongings (see appropriate area)?  
④ Is the student’s desk frequently disorganized? | ① Provide a specific, consistent location for each subject’s assignments  
② Use predictable, consistent routines for assignment submission and return  
③ Use color-coding to help the student identify different kinds of tasks or materials  
④ Let the student use a special folder or binder to keep subjects organized and use a different color for each unit or subject.  
⑤ Break a long assignment into parts. Set a separate due date for each part.  
⑥ Reduce or eliminate redundant work  
⑦ Have the student mark assignments in an assignment notebook or personal planner  
⑧ Reduce the total amount of work. Be sure to select the tasks or items that are needed to accomplish all of the learning objectives.  
⑨ Give partial credit for late assignments or incomplete work until students are able to complete work on time.  
⑩ Allow for extra time | ① Provide time each week for students to organize desk and materials  
② Teach students organizational skills  
③ Teach students to monitor their behavior  
④ Teach self-regulation strategies  
⑤ Use flexible grouping strategies so that students can work on key skills in small groups |
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| Students work slower than classmates.               | -Is the problem due to difficulties in word reading, comprehension, handwriting, spelling, or writing skills (see appropriate area for suggestions)?  
-Does the student have a short attention span?  
-Is the student frequently off-task? | -Present a smaller amount of work at one time  
-Reduce or eliminate redundant work  
-Give partial credit for late assignments or incomplete work until students are able to complete work on time.  
-Let students use resources and instructional materials outside of class  
-Allow for extra time | -Use flexible grouping strategies so that students can work on key skills in small groups  
-Teach students to monitor their behavior  
-Teach self-regulation strategies |
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| Students are confused by complex instructions and materials. | -Does the student have a short attention span?  
-Is the student frequently off-task?  
-Does the student have difficulty following multiple step directions?  
-Does the student understand the material?  
-Is the problem due to difficulties in word reading, comprehension, handwriting, spelling, or writing skills (see appropriate area for suggestions)? | -Use color-coding to help the student identify different kinds of tasks or materials  
-Use uncluttered materials. Arrange problems or work so that it is easy to know where to start and how to proceed.  
-Let the student use a special folder or binder to keep subjects organized and use a different color for each unit or subject.  
-Underline or highlight important directions in the assignment  
-Avoid cluttered or crowded worksheets or materials  
-Give students a checklist for common instructional routines  
-Reduce the complexity of the material or present one at a time  
-Write down or illustrate multiple step directions  
-Present multiple step directions one at a time | -Teach students how to organize and approach complex assignments  
-Teach self-regulation strategies  
-Use flexible grouping strategies so that students can work on key skills in small groups |
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<td>Students have difficulty keeping materials and belongings organized.</td>
<td>-Does the student have a short attention span? -Is the student frequently off-task? -Does the student frequently lose materials?</td>
<td>-Provide a specific, consistent location for each subject’s assignments -Use predictable, consistent routines for assignment submission and return -Use color-coding to help the student identify different kinds of tasks or materials -Let students use a special folder or binder to keep subjects organized and use a different color for each unit or subject. -Give students a checklist of materials needed for each class. --- -Provide a consistent place to keep the checklist.</td>
<td>-Develop consistent and predictable routines in your classroom for managing materials and belongings -Keep the classroom organized so that students always know where to find materials. Do not rearrange the room frequently. If the room has been rearranged, take time to reorient students. -Provide time each week for students to organize desk and materials -Teach students organizational skills -Use flexible grouping strategies so that students can work on key skills in small groups -Teach self-regulation strategies -Teach students to monitor their behavior</td>
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Adapting Reading and Math Materials in the Inclusive Classroom

Access to the mainstream reading and mathematics curriculum is not about place. Simply placing students with mild disabilities in the general education classroom and issuing them a grade-level textbook is not enough. **To ensure the individual student’s the basic right to learn, teachers need to provide appropriate and reasonable adaptations.** But how can this be accomplished? How can the busy professional implement adaptations for the individual children while maintaining the equilibrium of the class as a whole? The answer is flexibility.

Listed below are eight principles for making adaptations in the elementary classroom. These principles are derived from years of research in general education classrooms that included students with disabilities. The principles have been organized using the acronym **FLEXIBLE.** Each principal is accompanied by a set of questions in the Making Adaptations for Disabled Students chart for the teacher to consider.

1. **Feasible**

Successful adaptations must be feasible for classroom teachers to implement.

The first principle of making adaptations is that adaptations must be feasible to use. Although teachers may recognize the desirability of an adaptation for promoting student learning, if the adaptation is not “doable,” it is less likely to be implemented on an ongoing basis. For example, rewriting mathematics word problems using more readable terminology and bullets to highlight key steps may be desirable in helping a student read and understand, but the feasibility of the teacher’s being able to rewrite texts week in and week out is not very high.

Some adaptations are naturally more practical to implement than others. Adaptations such as establishing appropriate routines, providing reinforcement and encouragement, and establishing reasonable expectations are relatively easy to accomplish. Others, such as regularly rewriting materials, using alternative materials, and individualizing instruction, require some consideration of logistics. View the Making Adaptations for Disabled Students chart to see a list of questions to consider before selecting potential adaptations.

2. **Lively**

Successful adaptations must be lively, engaging, and fun.

The more lively, engaging, and fun the adaptation, the more likely it is that students will like it and will tolerate its continued use. One common criticism of remedial teaching practices is that they are dull, repetitive, and uninviting, and that they cause students to become disengaged and discouraged. The same holds true for adaptations for students with disabilities in the general education classroom. View the Making Adaptations for Disabled Students chart while searching for lively adaptations.
3. Eliminated

Successful adaptations must be developed with the goal of working toward independence, with a gradual fading and eventual elimination of the adaptation.

Ideally, an adaptation should serve as a temporary scaffold to support student learning. If the scaffold is not gradually removed, the student does not have the opportunity to work toward independence. Adaptations should be thought of as a temporary support—a support that will eventually be faded and eliminated with supplemental instruction. The Making Adaptations for Disabled Students chart has questions to guide you in thinking about eliminating adaptations.

4. Explicit

Successful adaptations must have a definite purpose—a purpose that is made explicit to students, other professionals in the classroom, parents, and, if necessary, the student’s peers.

Adaptations are most effective when they are purposeful. If students understand how the adaptation will help them learn and are aware of its potential benefits, the adaptation is more likely to be well received and sustained. The purpose also should be made clear to other professionals working in the classroom and to parents. The more key stakeholders who are informed and supportive of the additional help, the better.

Explaining an adaptation to a student’s peers can be a sticky matter. At the elementary-school level, adaptations can be implemented without taunting and discord if the teacher maintains a positive classroom climate in which individual differences are tolerated and even appreciated.

At times some students think that getting extra help, extra time to take a test, or less difficult homework is simply not fair to the students whose work is expected to meet a different standard. In such cases, a simple, direct explanation may be needed. For the most part, students tolerate adaptations and appreciate teachers who take the time to implement them. Questions to consider related to the issues of explicitness can be found in the Making Adaptations for Disabled Students chart.
Successful adaptations should be part of a comprehensive plan for the student with disabilities.

Classroom observations reveal that general education teachers do make some adaptations for students with mild disabilities. Most frequently, adaptations are made during a lesson when a student doesn’t seem to be grasping a concept or mastering a skill. However, such adaptations tend to be idiosyncratic, incidental, and not part of a comprehensive plan for the student. While some on-the-spot adaptations are warranted, successful adaptations should be used routinely and be part of a larger plan to help students grow toward independence.

Adaptations should also be planned in light of the goals set in the student’s Individualized Education Plan (IEP). A makeshift adaptation may be “overkill” or inadequate when considered in this longer-range context. Also, an adaptation should consider the goals set by the state or district, as well as the assessment process for students with disabilities. View the Making Adaptations for Disabled Students chart to see a list of questions to use in creating intentional adaptations.

Successful adaptations should benefit the student with disabilities and enhance, or at least not detract from, the learning of other students in the classroom.

An adaptation should provide an educational benefit for the student with disabilities. However, some adaptations are just good teaching techniques that can be used with all students in the classroom. For example, study guides to help students read difficult information can benefit students at all achievement levels.

When considering the selection of an adaptation, the teacher should also bear in mind the needs of students with language differences. If teachers have to make separate adaptations for students with disabilities and for students with language differences, they may be tempted not to make adaptations at all. Students with disabilities and those with language differences have unique learning needs, and teachers should not lump those differential needs into one package. However, many adaptations, such as graphic organizers, are recommended for both groups of students. To the degree that it is possible, teachers should implement adaptations that meet a wide array of student needs.

Finally, a common issue confronting teachers is the “Robin Hood” effect. Some parents, teachers, administrators, and even students are concerned that adaptations require stealing time and resources from the “rich” (higher-achieving students) to give to the “poor” (lower-achieving students). The Making Adaptations for Disabled Students chart is helpful in selecting and implementing beneficial adaptations.
Successful adaptations do not place undue attention on the student with disabilities or put the student in a potentially embarrassing situation.

Parents, teachers, and students are all concerned about a child appearing different from other students. As much as possible, the adaptation should be a normal part of the classroom activities. Thus, it is important to think of the questions in the Making Adaptations for Disabled Students chart when planning for implementation of an adaptation.

Successful adaptations are continually evaluated.

Once an adaptation is implemented, it needs to be evaluated periodically. The teacher should evaluate the adaptation to see whether desired results are being obtained. If the adaptation is helping the students achieve the desired results, then fading or perhaps elimination the adaptation may be appropriate. If it is not, then adjustments and alternatives need to be considered.

The evaluation process should also engage parents, students, and, when possible, administration and support personnel. In some districts, support team and IEP meetings include the parents, teacher, resource teacher, administrator, school psychologist, speech pathologist, and others. During parent conferences the adaptation can be explained and reviewed to obtain parental input about the academic and social impact of the adaptation. Even very young students have definite opinions about what helps them learn and what does not.

From time to time student evaluations of an adaptation can be conducted to find out what students think. Questions to guide thinking about evaluation can be found in the Making Adaptations for Disabled Students chart.
THE “FLEXIBLE” ACRONYM

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FIGURE 1
The FLEXIBLE Principal:
Questions to Ask Before Selecting Potential Adaptations

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| 1. FEASIBLE | Successful adaptations must be feasible for classroom teachers to implement. | • When can I fit the adaptation into the daily schedule?  
• What human and/or material resources do I have to implement the adaptation?  
• What human and/or material resources do I need to implement the adaptation? |
| 2. LIVELY | Success adaptations must be lively, engaging, and/or fun | • How can I use the adaptation to promote active learning?  
• How can I plan this adaptation to be interesting and fun?  
• What strategies can I use to motivate the student(s) so that I can continue to use the adaptation over a period of time? |
| 3. ELIMINATED | Successful adaptations must be developed with the goal of working towards independence with a gradual fading and eventual elimination of the adaptation. | • What steps are needed to fade the adaptation over a period of time?  
• What additional instruction do I need to provide to work toward the eventual elimination of the adaptation?  
• How will the student use this adaptation as a step to another skill or as a regular part of his or her repertoire? |
| 4. EXPLICIT | Successful adaptations must have a definite purpose – a purpose that is made explicit to students, other professionals in the classroom, parents, and, if necessary, the student’s peers? | • What is the intent or purpose of this adaptation?  
• How will I communicate the purpose of the adaptation to the student?  
• What other people need to know about the adaptation (e.g., parents, other professionals, other students)?  
• How will I communicate the purpose of the adaptation to others? |
| 5. INTENTIONAL | Successful adaptations should be part of a comprehensive plan for the student with disabilities. | • How does this adaptation fit with goals on the student’s IEP?  
• How does this adaptation fit with goals and objectives set by district and/or state guidelines? |
|   | BENEFICIAL | Successful adaptations should benefit the student with disabilities and either enhance or at least not detract from the learning of other students in the classroom. | How does the adaptation benefit the student with disabilities?  
Can other students benefit from the adaptation as well?  
How can I implement the adaptation so that it enhances and does not detract from the learning of other students in the classroom? |
|   | LIMELIGHT | Successful adaptations do not place undue attention on the student with disabilities or put the student in a potentially embarrassing situation. | How and when can I implement the adaptation so that it does not put the student with disabilities in an unfavorable position? |
|   | EVALUATED | Successful adaptations are evaluated on an ongoing basis. | How effective is the adaptations in promoting learning for the student?  
What impact does the adaptation have on the social adjustment of the student?  
What does the student like and dislike about the adaptation?  
What do the parents like and dislike about the adaptation?  
What do I need to change about the adaptation?  
Is the student ready to take on a higher level of independence? |
DIFFERENTIATED INSTRUCTION
INTRODUCTION

Not all students are alike. Based on this knowledge, differentiated instruction applies an approach to teaching and learning that gives students multiple options for taking in information and making sense of ideas. Differentiated instruction is a teaching theory based on the premise that instructional approaches should vary and be adapted in relation to individual and diverse students in classrooms (Tomlinson, 2001). The model of differentiated instruction requires teachers to be flexible in their approach to teaching and adjust the curriculum and presentation of information to learners rather than expecting students to modify themselves for the curriculum. Many teachers and teacher educators have recently identified differentiated instruction as a method of helping more students in diverse classroom settings experience success. This report examines information on the theory and research behind differentiated instruction and the intersection with Universal Design for Learning (UDL), a curriculum designed approach to increase flexibility in teaching and decrease the barriers that frequently limit student access to materials and learning in classrooms (Rose & Meyer, 2002). We begin with an introduction to differentiated instruction by defining the construct, then identifying components and features; additionally, we provide a sampling of applications. Next, we introduce UDL and the linkages with differentiated instruction both in theory and with specific lesson examples. The report concludes with a listing of web resources for further information and explicit examples.

This report on differentiated instruction and UDL begins with an introduction to differentiated instruction in which we provide the definition, a sampling of considerations and curriculum applications, and research evidence for effectiveness. The second part of the paper, the discussion moves to UDL applications of differentiated instruction. UDL is a theoretical approach that is based on research from the neurosciences and effective teaching practices. This portion develops an understanding of UDL and proceeds to identify the theoretical and teacher practice levels. Our document concludes with general guidelines for the implementation of UDL and a list of web resources that provide further information about differentiated instruction.

The literature review in this paper is also available as a stand alone document, with annotated references. Look for it on the Effective Classrooms Practices page of the National Center for Accessing the General Curriculum’s web site http://www.cast.org/publications/ncac/ncac_diffinstruc.html.
**DEFINITION**

To differentiate instruction is to recognize students’ varying background knowledge, readiness, language, preferences in learning and interests; and to react responsively. Differentiated instruction is a process to teaching and learning for students of differing abilities in the same class. The intent of differentiating instruction is to maximize each student’s growth and individual success by meeting each student where he or she is and assisting in the learning process.

![Diagram](image)

(adapted from Oaksford, L. & Jones, L., 2001)

**FIGURE 1. LEARNING CYCLE AND DECISION FACTORS USED IN PLANNING AND IMPLEMENTING DIFFERENTIATED INSTRUCTION**

**IDENTIFYING COMPONENTS/FEATURES**

According to the authors of differentiated instruction, several key elements guide differentiation in the education environment. Tomlinson (2001) identifies three elements of the curriculum that can be differentiated: Content, Process, and Products (Figure 1). These are described in the following three sections, which are followed by several additional guidelines for forming an understanding of and developing ideas around differentiated instruction.

- **Several elements and materials are used to support instructional content.** These include acts, concepts, generalizations or principles, attitudes, and skills. The variation seen in a differentiated classroom is most frequently in the manner in which students gain access to important learning. Access to the content is seen as key.
• **Align tasks and objectives to learning goals.** Designers of differentiated instruction view the alignment of tasks with instructional goals and objectives as essential. Goals are most frequently assessed by many state-level, high-stakes tests and frequently administered standardized measures. Objectives are frequently written in incremental steps resulting in a continuum of skills-building tasks. An objectives-driven menu makes it easier to find the next instructional step for learners entering at varying levels.

• **Instruction is concept-focused and principle-driven.** The instructional concepts should be broad-based, not focused on minute details or unlimited facts. Teachers must focus on the concepts, principles and skills that students should learn. The content of instruction should address the same concepts with all students, but the degree of complexity should be adjusted to suit diverse learners.

**Process**

• **Flexible grouping is consistently used.** Strategies for flexible grouping are essential. Learners are expected to interact and work together as they develop knowledge of new content. Teachers may conduct whole-class introductory discussions of content big ideas followed by small group or paired work. Student groups may be coached from within or by the teacher to complete assigned tasks. Grouping of students is not fixed. As one of the foundations of differentiated instruction, grouping and regrouping must be a dynamic process, changing with the content, project, and ongoing evaluations.

• **Classroom management benefits students and teachers.** To effectively operate a classroom using differentiated instruction, teachers must carefully select organization and instructional delivery strategies. In her text, *How to Differentiate Instruction in Mixed-Ability Classrooms* (Chapter 7), Carol Tomlinson (2001), identifies 17 key strategies for teachers to successfully meet the challenge of designing and managing differentiated instruction.

**Products**

• **Initial and on-going assessment of student readiness and growth are essential.** Meaningful pre-assessment naturally leads to functional and successful differentiation. Incorporating pre- and on-going assessment informs teachers so that they can better provide a menu of approaches, choices, and scaffolds for the varying needs, interests and abilities that exist in classrooms of diverse students. Assessments may be formal or informal, including interviews, surveys, performance assessments, and more formal evaluation procedures.
• **Students are active and responsible explorers.** Teachers respect that each task put before the learner will be interesting, engaging, and accessible to essential understanding and skills. Each child should feel challenged most of the time.

• **Vary expectations and requirements for student responses.** Items to which students respond may be differentiated so that different students can demonstrate or express their knowledge and understanding in different ways. A well-designed student product allows varied means of expression and alternative procedures and offers varying degrees of difficulty, types of evaluation, and scoring.

*Additional Guidelines That Make Differentiation Possible for Teachers to Attain*

• **Clarify key concepts and generalizations.** Ensure that all learners gain powerful understandings that can serve as the foundation for future learning. Teachers are encouraged to identify essential concepts and instructional foci to ensure that all learners comprehend.

• **Use assessment as a teaching tool to extend rather than merely measure instruction.** Assessment should occur before, during, and following the instructional episode, and it should be used to help pose questions regarding student needs and optimal learning.

• **Emphasize critical and creative thinking as a goal in lesson design.** The tasks, activities, and procedures for students should require that they understand and apply meaning. Instruction may require supports, additional motivation, varied tasks, materials, or equipment for different students in the classroom.

• **Engaging all learners is essential.** Teachers are encouraged to strive for the development of lessons that are engaging and motivating for a diverse class of students. Vary tasks within instruction as well as across students. In other words, an entire session for students should not consist of all drill and practice, or any single structure or activity.

• **Provide a balance between teacher-assigned and student-selected tasks.** A balanced working structure is optimal in a differentiated classroom. Based on pre-assessment information, the balance will vary from class-to-class as well as lesson-to-lesson. Teachers should ensure that students have choices in their learning.
Evidence of Effectiveness as a Classroom Practice

Differentiation is recognized to be a compilation of many theories and practices. Based on this review of the literature of differentiated instruction, the “package” itself is lacking empirical validation. There is an acknowledged and decided gap in the literature in this area and future research is warranted.

According to the proponents of differentiation, the principles and guidelines are rooted in years of educational theory and research. For example, differentiated instruction adopts the concept of “readiness.” That is, the difficulty of skills taught should be slightly in advance of the child’s current level of mastery. This is grounded in the work of Lev Vygotsky (1978), and the zone of proximal development (ZPD), the range at which learning takes place. The classroom research by Fisher et al., (1980), strongly supports the ZPD concept. The researchers found that in classrooms where individuals were performing at a level of about 80% accuracy, students learned more and felt better about themselves and the subject area under study (Fisher, 1980 in Tomlinson, 2000).

Other practices noted as central to differentiation have been validated in the effective teaching research conducted from the mid 1980’s to the present. These practices include effective management procedures, grouping students for instruction, and engaging learners (Ellis and Worthington, 1994).

While no empirical validation of differentiated instruction as a package was found for this review, there are a generous number of testimonials and classroom examples that authors of several publications and web sites provide. Tomlinson reports individual cases of settings in which the full model of differentiation was very promising and teachers using differentiation have written about improvements in their classrooms. (See the links to learn more about differentiated instruction).

APPLICATIONS TO GENERAL EDUCATION CLASSROOM SETTINGS

The design and development of differentiated instruction as a model began in the general education classroom. The initial application came to practice for students considered gifted but whom perhaps were not sufficiently challenged by the content provided in the general classroom setting. As classrooms have become more diverse, differentiated instruction has been applied at all levels for students of all abilities.

Many authors of publications about differentiated instruction, strongly recommend that teachers adapt the practices slowly, perhaps one content area at a time. Additionally, these experts agree that teachers should share the creative load by working together to develop ideas and menus of options for students. A number of web sites have been created in that include lessons to illustrate what teachers have created for instruction using the model of differentiated instruction. Several web sites are listed in a later section of this report.

Differentiated instruction is an instructional process that has excellent potential to positively impact learning by offering teachers a means to provide instruction to a range of students in today’s classroom situations. The next section of this report introduces the
reader to the theory and research behind Universal Design for Learning (UDL). We then investigate the links and connections between UDL and differentiated instruction. Additionally, we identify methods and materials that may be implemented to support the implementation of differentiated instruction in concert with the principles of UDL. Finally, a set of guidelines for UDL implementation are provided including a listing of web resources to provide further information on the concepts presented in this report.

An Introduction to Universal Design for Learning Applications

Universal Design for Learning is a theoretical framework developed by CAST to guide the development of curricula that are flexible and supportive of all students (Dolan & Hall, 2001; Meyer & Rose, 1998; Pisha & Coyne, 2001; Rose, 2001; Rose & Dolan, 2000; Rose & Meyer, 2000a, 2000b, 2002; Rose, Sethuraman, & Meo, 2000). The concept of UDL was inspired by the universal design movement in architecture. This movement calls for the design of structures that anticipate the needs of individuals with disabilities and accommodate these needs from the outset. Universally designed structures are indeed more usable by individuals with disabilities, but in addition they offer unforeseen benefits for all users. Curb cuts, for example, serve their intended use of facilitating the travel of those in wheelchairs, but they are also beneficial to people pushing strollers, young children, and even the average walker. And so, the process of designing for individuals with disabilities has led to improved usability for everyone.

Similarly, but uniquely, UDL calls for the design of curricula with the needs of all students in mind, so that methods, materials, and assessment are usable by all. Traditional curricula present a host of barriers that limit students’ access to information and learning. Of these, printed text is particularly notorious. In a traditional curriculum, a student without a well-developed ability to see, decode, attend to, or comprehend printed text is compelled to adapt to its ubiquity as best as he or she can. In contrast, a UDL curriculum is designed to be innately flexible, enriched with multiple media so that alternatives can be accessed whenever appropriate. A UDL curriculum takes on the burden of adaptation so that the student doesn’t have to, minimizing barriers and maximizing access to both information and learning.

The UDL framework guides the development of adaptable curricula by means of 3 principles (Figure 2). These 3 principles parallel 3 fundamentally important learning components and 3 distinct learning networks in the brain: recognition, strategy, and affect (Rose & Meyer, 2002). The common recommendation of these 3 principles is to select goals, methods, assessment, and materials in a way that will minimize barriers and maximize flexibility. In this manner, the UDL framework structures the development of curricula that fully support every student’s access, participation, and progress in all 3 essential facets of learning.
The three UDL principles call for flexibility in relation to three essential facets of learning, each one orchestrated by a distinct set of networks in the brain.

Critical to successfully implementing UDL theory is the use of digital materials. Digital materials, unlike the conventional pedagogical mainstays, speech, printed text, and printed images, have an inherent flexibility. They can be modified in a host of ways, depending on the needs of the student. This flexibility makes it feasible to customize learning materials and methods to each individual.

For teachers wondering how to customize the curriculum, CAST has devised three sets of broad teaching methods that support each of the 3 UDL principles (Figure 3, Rose & Meyer, 2002). These teaching methods draw on knowledge of the qualities of digital media and how recognition, strategic, and affective networks operate. For example, the first Teaching Method to support recognition learning is to provide multiple examples. This teaching method takes advantage of the fact that recognition networks can extract the defining features of a pattern and differentiate it from similar patterns simply by viewing multiple examples. Although presentation of multiple examples might be challenging in a classroom limited to printed text and hard copy images, digital materials enable the assembly, storage, and maintenance of a large collection of examples in the form of digital text, images, sound, or video—all in the modest space of a classroom. This is one example of how digital materials and UDL Teaching Methods can facilitate the successful implementation of UDL.

The UDL Teaching Methods will anchor the upcoming discussion where we will highlight the ways in which computer simulations align with each of the 3 UDL principles. Within the context of these teaching methods, we’ll show how computer simulations can support individualized instruction of recognition, strategic, and affective learning.
To support diverse recognition networks:

- Provide multiple examples
- Highlight critical features
- Provide multiple media and formats
- Support background context

To support diverse strategic networks:

- Provide flexible models of skilled performance
- Provide opportunities to practice with supports
- Provide ongoing, relevant feedback
- Offer flexible opportunities for demonstrating skill

To support diverse affective networks:

- Offer choices of content and tools
- Offer adjustable levels of challenge
- Offer choices of rewards
- Offer choices of learning context

FIGURE 3. TO HELP TEACHERS SUPPORT LEARNERS’ DIVERSE RECOGNITION, STRATEGIC, AND AFFECTIVE NETWORKS, CAST HAS DEVELOPED THREE SETS OF UDL TEACHING METHODS. THESE TEACHING METHODS CAN BE USED TO MAKE THE CURRICULUM MORE FLEXIBLE AND BROADLY SUPPORTIVE.
Differentiated Instruction and the Three Universal Design for Learning Principles

Differentiated instruction is well received as a classroom practice that may be well suited to the three principles of UDL. The following section looks at the three network appropriate teaching methods, recognition, strategic, and affective, in order to address the ways in which differentiated instruction coordinates with UDL theory. Certain instructional techniques have been found to be very effective in supporting different skills as students learn. Differentiated instruction is designed to keep the learner in mind when specifying the instructional episode.

Recognition learning. The first UDL principle focuses on pattern recognition and the importance of providing multiple, flexible methods of presentation when teaching patterns—no single teaching methodology for pattern recognition will be satisfactory for every learner. The theory of differentiated instruction incorporates some guidelines that can help teachers to support critical elements of recognition learning in a flexible way and promote every student’s success. Each of the three key elements of differentiated instruction, content, process, and product, supports an important UDL Teaching Method for individualized instruction of pattern recognition.

The content guidelines for differentiated instruction support the first UDL Teaching Method for recognition networks, provide multiple examples, in that they encourage the use of several elements and materials to support instructional content. A teacher following this guideline might help students in a social studies class to understand the location of a state in the union by showing them a wall map or a globe, projecting a state map, or describing the location in words. Also, while preserving the essential content, a teacher could vary the difficulty of the material by presenting smaller or larger, simpler or more complex maps. For students with physical or cognitive disabilities, such a diversity of examples may be vital in order for them to access the pattern being taught. Other students may benefit from the same multiple examples by obtaining a perspective that they otherwise might not. In this way, a range of examples can help to ensure that each student’s recognition networks are able to identify the fundamental elements identifying a pattern.

This same use of varied content examples supports a second recommended practice in UDL methodology, provide multiple media and formats. A wide range of tools for presenting instructional content are available digitally, thus teachers may manipulate size, color contrasts, and other features to develop examples in multiple media and formats. These can be saved for future use and flexibly accessed by different students, depending on their needs and preferences.

The content guidelines of differentiated instruction also recommend that content elements of instruction be kept concept-focused and principle-driven. This practice is consistent with a third UDL Teaching Method for recognition, highlight critical features. By avoiding any focus on extensive facts or seductive details and reiterating the broad concepts, a goal of differentiated instruction, teachers are highlighting essential components, better supporting recognition.

The fourth UDL Teaching Method for recognition is to support background knowledge, and in this respect, the assessment step of the differentiated instruction learning cycle is instrumental. By evaluating student knowledge about a construct before designing instruction teachers can better support students’ knowledge base, scaffolding instruction in a very important way.

Strategic learning. People find for themselves the most desirable method of learning strategies; therefore, teaching methodologies need to be varied. This kind of flexibility is key for teachers to help meet the needs of
their diverse students, and this is reflected in the 4 UDL Teaching Methods. Differentiated instruction can support these teaching methods in valuable ways.

Differentiated instruction recognizes the need for students to receive flexible models of skilled performance, one of the four UDL Teaching Methods for strategic learning. As noted above, teachers implementing differentiated instruction are encouraged to demonstrate information and skills multiple times and at varying levels. As a result, learners enter the instructional episode with different approaches, knowledge, and strategies for learning.

When students are engaged in initial learning on novel tasks or skills, supported practice should be used to ensure success and eventual independence. Supported practice enables students to split up a complex skill into manageable components and fully master these components. Differentiated instruction promotes this teaching method by encouraging students to be active and responsible learners, and by asking teachers to respect individual differences and scaffold students as they move from initial learning to practiced, less supported skills mastery.

In order to successfully demonstrate the skills that they have learned, students need flexible opportunities for demonstrating skill. Differentiated instruction directly supports this UDL Teaching Method by reminding teachers to vary requirements and expectations for learning and expressing knowledge, including the degree of difficulty and the means of evaluation or scoring.

Affective learning. Differentiated instruction and UDL Teaching Methods bear another important point of convergence: recognition of the importance of engaging learners in instructional tasks. Supporting affective learning through flexible instruction is the third principle of UDL and an objective that differentiated instruction supports very effectively.

Differentiated instruction theory reinforces the importance of effective classroom management and reminds teachers of meeting the challenges of effective organizational and instructional practices. Engagement is a vital component of effective classroom management, organization, and instruction. Therefore teachers are encouraged to offer choices of tools, adjust the level of difficulty of the material, and provide varying levels of scaffolding to gain and maintain learner attention during the instructional episode. These practices bear much in common with UDL Teaching Methods for affective learning: offer choices of content and tools, provide adjustable levels of challenge, and offer a choice of learning context. By providing varying levels of scaffolding when differentiating instruction, students have access to varied learning contexts as well as choices about their learning environment.

Examples of UDL and Differentiated Instruction

The focus of the previous sections was to describe ways in which differentiated instruction supports the three principles of UDL and aligns with UDL teaching practices. Here, we present actual lesson plans employing differentiated instruction. The first is a product of a school that is working with CAST, and the second is from work outside of CAST. Each exemplifies applications of UDL in differentiated instruction. In the example from CAST,
we highlight the ways that differentiated instruction is used to implement UDL teaching methods. In the second, we identified UDL features implemented in a well designed differentiated instruction lesson in mathematics and recommend ways in which UDL could be applied to make an even more accessible, more flexible lesson.

CAST gathering evidence: The Life Cycle of Plants from the Planning for All Learners (PAL) toolkit. This lesson is a two-day instructional plan that is a part of a larger unit designed by a first grade teacher for a diverse class of students. Before teaching the lessons presented on this web site, the teacher introduced students to science concepts around the growth of seeds through oral presentation and in-class experiments. This lesson enabled the teacher to discuss, display, and increase student understanding of the science content and concepts.

The lesson plan addresses McRel, Massachusetts State and local District standards in Science and English Language Arts, by teaching students the necessary environmental variables about growth in plants, and the tools, skills and strategies required to do so. Student choice and access flexibility in the lesson exemplify applications of UDL. Table 1 contains a listing of UDL features made possible by elements of differentiated instruction employed in this lesson.

<table>
<thead>
<tr>
<th>UDL Teaching Method</th>
<th>Supportive Differentiated Instruction Feature(s)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Provide multiple examples.</td>
<td>In preparation for this lesson, the teacher created multiple examples of finding and identifying seeds. Additionally, the teacher provided several examples of finding appropriate texts to complete the assignment. Students have multiple examples of texts from which to find information about the life cycle of seeds. As another example, fast growing seeds were planted in the classroom, giving students the opportunity to observe the seed life cycle.</td>
</tr>
<tr>
<td>Highlight critical features.</td>
<td>Teacher provides critical information for the lesson through oral presentation and highlights critical features in written form, then monitors students to check their focus on important features of the lesson. Additionally, by having texts available in digital format, the teacher or students may literally highlight critical features of the text in preparation of lesson assignments.</td>
</tr>
</tbody>
</table>
Provide multiple media and formats. The teacher located several (4–5) resources, in this case books of different reading difficulty, containing the same science constructs on seed life cycles. The books were then made available digitally as well as in audio format for flexible accessibility. Thus, materials were available in a variety of media and formats.

Support background context. Several levels of preparation were designed to support background context:

- Before this assignment the teacher and students found seeds in a variety of vegetables and fruits. In this way, the concept of seeds was brought out of the abstract; students had experiences seeing and finding seeds from a range of plants.
- Careful instruction was organized to teach students the concept of finding a book that is “just right,” helping students to find a book that is challenging, yet not too difficult. This, helped keep students work and learn in their “zone of proximal development” when obtaining background information for the lesson.

Provide opportunities to practice with support.

- Students had the option to work in selected pairs as they search for answers to the science questions.
- During guided practice and independent practice portions of each lesson, the teacher provides supports by checking and prompting.

Offer flexible opportunities for demonstrating skill.

The design of this lesson allows students varied approaches throughout the lesson. Students may select their best or preferred type of working situation and means for responding.

Offer choices of content and tools.

The teacher organized the lesson at multiple points for choice of tools:

- choice of resource materials,
- choice of access (text, digital, audio), and
- choice of response style.
Offer adjustable levels of challenge. The teacher offers multiple texts, representing a range of difficulty levels, and different means to access these texts. This helps to ensure that researching the answers to science questions is appropriately challenging for each student. For example, if decoding were challenging, the student could use a simpler text and/or access the information via audio or digital read-aloud.

Offer choices of learning contexts. Throughout the lesson the teacher has organized several choices that help diversify the available learning contexts:

- students can select from a variety of methods to respond to the science questions (written, scribed, recorded),
- students can opt to work independently or with a partner during the assignment completion portion of the lesson, and
- students can select the “right book” based on difficulty and/or interest.

Association for Supervision and Curriculum Development differentiating instruction web site Differentiated Instruction Lesson Example, grade 6 mathematics. This web site hosted by the Association for Supervision and Curriculum Development (ASCD) contains a number of lessons that illustrate different teachers’ examples of how to use the principles of differentiated instruction. We have selected a mathematics lesson for 6th grade focusing on the concept of patterns.

This instructional approach to teaching mathematics patterns has several exciting UDL features (see Table 2). Through the use of clearly stated goals and the implementation of flexible working groups with varying levels of challenge, this lesson helps to break down instructional barriers. We have identified additional ways to reduce barriers in this lesson even further by employing the principles of UDL teaching methods and differentiated instruction. We provide Table 3 with recommendations of employing teaching methods of UDL to support this lesson. Please note that we are not making generalized recommendations for making this lesson more UDL, but instead are focusing on ways that differentiated instruction, specifically, can help achieve this goal.
**TABLE 2 -**
UDL Elements in a Differentiated Instruction Mathematics Lesson

<table>
<thead>
<tr>
<th>UDL Teaching Method</th>
<th>Differentiated Instruction Features</th>
</tr>
</thead>
<tbody>
<tr>
<td>Provide multiple examples.</td>
<td>The teacher provides multiple examples through the story of <em>The King’s Chessboard</em> and other math problems.</td>
</tr>
<tr>
<td>Highlight critical features.</td>
<td>The teacher highlights critical features of the mathematics in the story by stopping and calculating the amount of rice accumulating and using a t-table to do so.</td>
</tr>
<tr>
<td>Provide multiple media and formats.</td>
<td>The teacher reads the story aloud and students have the story to read. The numbers are represented in the story and on the t-table.</td>
</tr>
<tr>
<td>Support background context.</td>
<td>Teachers analyze or pre-test students for key pre-skills and background knowledge.</td>
</tr>
<tr>
<td>Provide ongoing, relevant feedback.</td>
<td>In cooperative groups, students may receive feedback from the teacher and from peers.</td>
</tr>
<tr>
<td>Offer choices of content and tools.</td>
<td>Students are assigned to one of three groups tiered by difficulty; all students are working on the same task but with varying supports.</td>
</tr>
<tr>
<td>Offer adjustable levels of challenge.</td>
<td>Varied supports in the working groups alter the level of independence and difficulty in solving the task.</td>
</tr>
<tr>
<td>Barrier</td>
<td>UDL Strategy</td>
</tr>
<tr>
<td>-------------------------------------</td>
<td>------------------------------------------------------------------------------</td>
</tr>
<tr>
<td>Deducting/constructing numeric functions.</td>
<td>Provide different demonstrations or models of how to use the tools employed in the lesson. Scaffold how to use the t-table and visualize the chessboard.</td>
</tr>
<tr>
<td>Students write an exit card to explain the mathematical story.</td>
<td>Provide alternative formats for students to express their interpretation of the story and the mathematical implications. For example, speaking, creating a diagram, numerical representations.</td>
</tr>
<tr>
<td>The Locker Problem.</td>
<td>Consider background knowledge for students entering this mathematical problem. What range of supports could be made available to provide the informational knowledge so that students can focus on the problem solving component?</td>
</tr>
</tbody>
</table>
Recommendations for Implementation at the Classroom Level

Although UDL applications of differentiated instruction already exist, they are admittedly hard to come by. Even with such models available, teachers face challenges in implementing them: the challenges of shifting away from traditional views of intelligence and traditional reliance on print media, the challenge of acquiring and mastering new technology, and the challenge of garnering support from the school system. The following sections offer recommendations that can help teachers overcome each one of these challenges.

Learn about Universal Design for Learning. The first and most basic step toward successfully implementing UDL is self-education. Although UDL has been more than a decade in the making, it is an approach that challenges many traditional educational perspectives and practices. Before teachers can implement UDL effectively, they may need to learn a different way of looking at their students and the materials that they use in the classroom. CAST has been working to disseminate UDL widely, and, consistent with the framework itself, have developed multiple avenues (direct and indirect, self-driven and trainer-taught, through text, speech, and interactive activities) through which individuals can learn about UDL and develop the skills necessary to put it into practice.

- **Visit the CAST web site.** The CAST web site devotes a large section to Universal Design for Learning. Here visitors will find an articulation of UDL, discussions of its core concepts, descriptions of UDL research projects, a listing of tools and resources that support UDL, and ideas and examples for implementing UDL.

- **Read CAST publications.** CAST has a range of publications highlighting UDL and UDL practice, including Teaching Every Student in the Digital Age (Rose & Meyer, 2002). The companion web site to the book provides an evolving set of resources and classroom examples, including interactive activities and an online community where visitors can ask questions and engage in discussion about UDL.

- **Enroll in an institute.** Professional development institutes by CAST teach professionals about the challenges of improving access to and progress participation in the general education curriculum and how to make the curriculum accessible for all learners.

- **Talk to others.** The Teaching Every Student section of the CAST web site includes an online community where teachers can communicate, collaborate, and obtain support from other educators who are exploring and teaching with UDL.

- Find more information and to engage in discussion about universal design and increasing access for students with disabilities at the web site for the Access Center (www.k8accesscenter.org) a national technical assistance center that is funded by the U.S. Department of Education, Office of Special Education Programs to make elementary and middle school curriculum more accessible to students with disabilities.

Inventory and build technology support. Technology, in particular digital media, makes UDL implementation practical and achievable in a diverse classroom. Digital materials make it possible for the same material to be flexibly presented and accessed—even adapted on a student-to-student basis.

Although we recommend that teachers try to build a library of digital materials, it is important to point out that UDL implementation can proceed successfully across a range
of technology availability. The amount of technology available to teachers varies extensively—limited by district and school resources, both monetary and otherwise. Fortunately, a fairly simple step such as digitizing print materials can greatly ease UDL implementation. The 1996 United States copyright additions (Chapter 1 of Title 17 Section 121 of the United States Code), the Chafee Amendment, gives authorized entities the freedom to digitize otherwise proprietary materials for individuals that have disabilities that impede access to the printed version. An authorized entity is a nonprofit organization or governmental agency that has a primary mission to provide specialized services relating to training, education, or adaptive reading or information access needs of blind or other persons with disabilities. This provision makes special education teachers eligible to digitize printed text materials, a step that can help to diversify the presentation of materials for students with disabilities.

Another inexpensive but instrumental option for supplying a classroom with digital materials is the World Wide Web—a tremendous source of free digital material and much of this material is in a multimedia format, which can greatly improve access to students.

Having more digital media unquestionably enables teachers to implement UDL in a more extensive way. Teachers who have greater financial resources and district support can supplement their materials with innovative products such as multimedia composition tools (e.g., HyperStudio5, Kid Pix Deluxe 3X, PowerPoint), graphic organizer software (e.g., Inspiration, Kidspiration), text-to-speech and text-to-image programs (e.g., Universal Reader, Read&Write GOLD, Kurzweil 3000, JAWS, Intellitalk II), CD-ROM storybooks (e.g., Reader Rabbit’s Reading Development Library), and learning software (e.g., funbrain.com, Edmark’s various learning games).

Whether teachers are able to invest in the purchase of a lot of technology or not, UDL can proceed effectively. But taking inventory is an important step toward setting a realistic course of action. By inventorying the resources they have available to them, teachers can determine the level of UDL implementation appropriate to their classroom. For example, survey your classroom and your school media center for a clear idea of computer and projection systems and other technology hardware available to teachers and students. Check into scheduling issues around shared equipment. Additionally, test out web accessibility in your school computer lab(s) and media center(s) as appropriate. If the web is a tool you may use and ask students to access, how available is it? Ask for or take an inventory of your school or district software, find out what’s available and if there are available licenses for computers in your classroom.

Effectively working with and managing technology can be a challenging process, so it is important as well to assess the available technology support. This may come in the form of a school or district help desk, computer teacher, computer resource specialist, technology integration teacher, etc., or one’s own technology training. Find out what policies your school or district may have regarding the tools you may adopt for use in your planning and teaching. Installation of software and hardware on computers may be time consuming, plan for issues of timing in your implementation and installation of software and hardware. When you are ready to teach a lesson using some technologies new to you or your students, consider notifying your technology support person, to be at hand to help problem solve any unforeseen challenges with implementation.
Curriculum planning and delivery. Another important step in implementation of UDL in instruction is curriculum planning and delivery. To begin, we recommend that teachers have a basic understanding of and a commitment to make the curriculum and learning accessible for all learners. While keeping in mind the principles of UDL, based on the three networks recognition, strategic and affective, we have found the following process useful in designing lessons. The process includes four steps, based upon the principles concepts of UDL, proven professional development strategies, and effective teaching practices; (a) Set Goals, (b) Analyze Status, (c) Apply UDL, and (d) Teach the UDL Lesson.

In the Set Goals stage of curriculum planning, we recommend that teachers establish the context for instruction. Context is usually driven or based on state standards, followed by the design of goals for the instructional episode. We recommend that all teachers closely evaluate these to assure alignment and assure that the means for attaining the goals are separated from the goals and standards.

Next, when designing a UDL lesson, teachers should Analyze the Current Status of the instructional episode. What are the current methodologies, assessments, and materials used to teach the lesson? Analyze these teaching procedures in relation to potential barriers of learners in the classroom. Do all students have access to the materials? Are students able to express themselves with the current methods and materials? There are a number of resources and tools available from CAST to analyze lessons in the Planning for All Learners Toolkit located on the TES web site.

The third recommended step of the planning process is to Apply UDL to the Lesson/Unit. This includes the goals, methods, assessments and materials used to implement the lesson. Create the UDL lesson plan, grounded in the learning goals, classroom profile, methods and assessment, and materials and tools. Then, collect and organize materials that support the UDL lesson.

In the final step, Teach the UDL Lesson/Unit, minimize barriers and realize the strengths and challenges each student brings to learning, rely on effective teaching practices, and apply challenges appropriate for each learner. In this way, instructors can engage more students and help all students progress. When teaching and evaluating students work, also evaluate and revise the lesson/unit to assure student access and success. You may obtain additional information about designing UDL methods, assessments, and materials, in Teaching Every Student in the Digital Age, Chapter 4.

Secure administrative support. School districts and administrations can be powerful sources of support—financial and otherwise. Administrative commitment to UDL can strengthen a teacher’s sense of mission and self-satisfaction and lead to important funding. A case in point is the town of Gloucester, Massachusetts. The principal for the school system is so convinced of the importance of digitized materials that he has set a mandate that teachers use only those textbooks that have a digitized version. Teachers will use a text-to-speech reader to further improve the accessibility of the text. Clearly, this kind of change would have happened much more slowly in the absence of such tremendous administrator-level support.

Administrator support can also help to facilitate funding, which although not a prerequisite for UDL, can create important opportunities. Funding might enable the purchase of equipment, professional development, and the launching of new UDL teaching projects. Districts vary widely concerning the types and level of funding that they offer teachers, but teachers who can convince their administrators of the value of UDL may be able to
secure district-level grants, professional development awards, and sabbaticals. For example, in a North Shore Massachusetts school district, the Technology Program Manager and Special Education Director teamed with two teachers using UDL, were awarded a state-level technology grant to implement UDL. This is just one example of how support at the administrative level can facilitate the acquisition of materials that support UDL efforts in the classroom.

**Parent education and involvement.** Parents are another valuable resource for teachers building a UDL curriculum. There are at least two important ways that parents can be a resource: as advocates and as volunteers.

By educating parents about the UDL activities going on in the classroom, teachers can develop a support system of informed individuals who can assist with and advocate for UDL instruction. Teachers should think about ways to inform parents about classroom activities. Notes sent home, parent night presentations, and IEP meetings are all excellent opportunities to engage in this kind of communication. Once parents are educated about UDL they may wish to become involved themselves. There are many ways that parents can do this, including volunteering in the classroom and lending support at home. A few possibilities are helping to prepare materials, monitoring kids during UDL lessons, helping with technology, donating equipment, and supporting homework assignments.

**Conclusion**

Differentiated instruction, although somewhat still developing in educational settings, has received significant recognition. When combined with the practices and principles of UDL, differentiated instruction can provide teachers with both theory and practice to appropriately challenge the broad scope of students in classrooms today. Although educators are continually challenged by the ever-changing classroom profile of students, resources, and reforms, practices continue to evolve and the relevant research base should grow. And along with them grows the promise of differentiated instruction and UDL in educational practices.
http://www.ascd.org/publications/books/198186.aspx
Initially published in 1985, *Marching to Different Drummers* was one of the first sources to pull together information on what was a newly-flourishing topic in education. Part I defines style and looks at the history of style research; Part II describes applications of style in seven areas; Part III identifies common questions and discusses implementation and staff development.

The Access Center
http://www.k8accesscenter.org/
This web site belongs to the Access Center, a national technical assistance center, funded by the U.S. Department of Education’s Office of Special Education Programs. The purpose of the K12 Access Center is to make elementary and middle school curricula more accessible to students with disabilities. The web site hosts chats and discussions and offers publications and presentations on topics related to accessing the general education curriculum, including Universal Design for Learning.

To meet the needs of diverse student populations, many teachers differentiate instruction. This digest describes differentiated instruction, discusses the reasons for differentiated instruction, what makes it successful, and suggests how teachers may begin implementation.

The ability to differentiate instruction for middle school aged learners is a challenge. Responding to the diverse students needs found in inclusive, mixed-ability classrooms is particularly difficult. This digest provides an overview of some key principles for differentiating instruction, with an emphasis on the learning needs of academically advanced students.

http://www.ascd.org/publications/books/100216.aspx
This web site contains two chapters from Tomlinson’s recent publication: *Leadership for differentiating schools and classrooms, Association for Supervision and Curriculum Development*. This book is designed for those in leadership positions to learn about differentiated instruction.

Web Article: Mapping a route toward differentiated instruction.
http://www.ascd.org/publications/educational-leadership/sept99/vol57/num01/Mapping-a-Route-Toward-Differentiated-Instruction.aspx
Carol Ann Tomlinson, an Associate Professor of Educational Leadership, Foundations and Policy at the Curry School of Education, University of Virginia, Charlottesville, VA provides an article entitled: Mapping a route toward differentiated instruction. *Educational Leadership, 57*(1).

Based on the concept that “one size does not fit all” the authors describe the teaching philosophy of differentiated instruction. More teachers are determined to reach all learners, to challenge students who may be identified as gifted as well as students who lag behind grade level. This article excerpt describes the essential components of differentiated instruction beginning with three aspects of curriculum: content, process, and products.

The Association for Supervision and Curriculum Development (ASCD) Web Site
http://www.ascd.org/research-a-topic/differentiated-instruction-resources.aspx

A site by ASCD (2000) which discusses differentiated instruction. Page links to other pages with examples from a high school and elementary school, key characteristics of a differentiated classroom, benefits, related readings, discussion, and related links to explore.

Preparing Teachers for Differentiated Instruction
http://www.ascd.org/publications/educational-leadership/sept00/vol58/num01/-Preparing-Teachers-for-Differentiated-Instruction.aspx

This web site, provided by Educational Leadership, links the reader to a brief summary of an article by Holloway. The author has provided a bulleted summary regarding the principles and theories that drive differentiated instruction.


http://web.uvic.ca/~jdurkin/edd401/Differentiated.html

This site is from an education course by Dr. John Durkin. It includes a diagram with suggestions for approaches to differentiated instruction. It also includes a listing of what differentiated instruction is and is not, rules of thumb on how to instruct, and management strategies.

Web Site: for Teachers, Administrators, and Higher Education
www.teach-nology.com/litined/dif_instruction/

This web site is designed for educators and uses technology to inform teachers about current practices, literature, the law in education, as well as professional development. Additionally, links to articles including research on educational practices including links to information on differentiated instruction are included.

Strategies and Accommodations for All Learners
(Instructional & Environmental)
How to Adapt Your Teaching Strategies to Student Needs

By: Kathleen Bulloch

Teachers are often asked to modify instruction to accommodate special needs students. In fact, all students will benefit from the following good teaching practices. The following article takes the mystery out of adapting materials and strategies for curriculum areas.

If the student has difficulty learning by listening, then try...

Before the lesson:
- Pre-teach difficult vocabulary and concepts
- State the objective, providing a reason for listening
- Teach the mental activities involved in listening — mental note-taking, questioning, reviewing
- Provide study guides/worksheets
- Provide script of film
- Provide lecture outlines

During the lesson:
- Provide visuals via the board or overhead
- Use flash cards
- Have the student close his eyes and try to visualize the information
- Have the student take notes and use colored markers to highlight
- Teach the use of acronyms to help visualize lists (Roy G. Biv for the colors of the spectrum: red, orange, yellow, green, blue, indigo, violet)
- Give explanations in small, distinct steps
- Provide written as well as oral directions
- Have the student repeat directions
- When giving directions to the class, leave a pause between each step so student can carry out the process in his mind
- Shorten the listening time required
- Provide written and manipulative tasks
- Be concise with verbal information: "Jane, please sit." instead of "Jane, would you please sit down in your chair."
If the student has difficulty expressing himself verbally, then try...

- To accept an alternate form of information sharing, such as the following:
  - Written report
  - Artistic creation
  - Exhibit or showcase
  - Chart, graph, or table
  - Photo essay
  - Map
  - Review of films
  - Charade or pantomime
  - Demonstration
  - Taped report
- Ask questions requiring short answers
- Provide a prompt, such as beginning the sentence for the student or giving a picture cue
- Give the rules for class discussion (e.g., hand raising)
- Give points for oral contributions and preparing the student individually
- Teach the student to ask questions in class
- Specifically teach body and language expression
- Wait for students to respond — don't call on the first student to raise his hand
- First ask questions at the information level — giving facts and asking for facts back; then have the student break in gradually by speaking in smaller groups and then in larger groups

If the student has difficulty reading written material, then try...

- Find a text written at lower level
- Provide highlighted material
- Rewrite the student's text
- Tape the student's text
- Allow a peer or parent to read text aloud to student
- Shorten the amount of required reading
- Look for same content in another medium (movie, filmstrip, tape)
- Provide alternative methods for student to contribute to the group, such as role playing or dramatizing (oral reading should be optional)
- Allow extra time for reading
- Omit or shortening the reading required
- Substitute one-page summaries or study guides which identify key ideas and terms as the reading assignment
- Motivate the student, interesting him
- Provide questions before student reads a selection (include page and paragraph numbers)
- Put the main ideas of the text on index cards which can easily be organized in a file box and divided by chapters; pre-teaching vocabulary
- Type material for easier reading
- Use larger type
- Be more concrete-using pictures and manipulatives
- Reduce the amount of new ideas
- Provide experience before and after reading as a frame of reference for new concepts
- State the objective and relating it to previous experiences
- Help the student visualize what is read
If the student has difficulty writing legibly, then try...

- Use a format requiring little writing
  - Multiple-choice
  - Programmed material
  - True/false
  - Matching
- Use manipulatives such as letters from a Scrabble™ game or writing letters on small ceramic tiles
- Reduce or omit assignments requiring copying
- Encourage shared note-taking
- Allow the use of a tape recorder, a typewriter, or a computer
- Teach writing directly
  - Trace letters or writing in clay
  - Verbalize strokes on tape recorder
  - Use a marker to space between words
  - Tape the alphabet to student's desk
  - Provide a wallet-size alphabet card
  - Provide courses in graph analysis or calligraphy as a motivator
- Use graph paper to help space letters and numbers in math
- Use manuscript or lined ditto paper as a motivation technique (brainstorm the advantages of legibility with the class)

If the student has difficulty expressing himself in writing, then try...

- Accepting alternate forms of reports:
  - Oral reports
  - Tape-recorded report
  - Tape of an interview
  - Collage, cartoon, or other art
  - Maps
  - Diorama, 3-D materials, showcase exhibits
  - Photographic essay
  - Panel discussion
  - Mock debate
  - Review of films and presentation of an appropriate one to the class
- Have the student dictate work to someone else (an older student, aide, or friend) and then copy it himself
- Allow more time
- Shorten the written assignment (preparing an outline or summary)
- Provide a sample of what the finished paper should look like to help him organize the parts of the assignment
- Provide practice using:
  - Story starters
  - Open-ended stories
  - Oral responses (try some oral spelling tests)
If the student has difficulty spelling, then try...

- Dictate the work and then asking the student to repeat it (saying it in sequence may eliminate errors of omitted syllables)
- Avoid traditional spelling lists (determine lists from social needs and school area needs)
- Use mnemonic devices ("A is the first capital letter," "The capitol building has a dome")
- Teach short, easy words in context:
  - On and on
  - Right on!
  - On account of
- Have students make flashcards and highlight the difficult spots on the word
- Give a recognition level spelling test (asking the student to circle correct word from three or four choices)
- Teach words by spelling patterns (teach "cake," "bake," "take," etc. in one lesson)
- Use the Language Master for drill
- Avoid penalizing for spelling errors
- Hang words from the ceiling during study time or posting them on the board or wall as constant visual cues
- Provide a tactile/kinesthetic aid for spelling (sandpaper letters to trace or a box filled with salt or cereal to write in)
Activities for Multiple Learning Styles

At a glance:

Logical/mathematical (analytical, concept-oriented)
Visual/spatial (image, picture-oriented)
Naturalist (enjoys organizing natural patterns)
Bodily/kinesthetic (excels at physical movement, both gross and fine motor)
Musical/rhythmic (oriented to tonal and rhythmic patterns)
Interpersonal (good person-to-person skills)
Intrapersonal (inner-directed, reflective)
Verbal/linguistic (oriented to words, language)

Activities

**Logical/mathematical:** **Enjoys working with numbers, doing experiments**

Teaching tip: Use "science thinking": Ask students to identify scientific principles in areas other than science.
Fun activity (grades 4-6): Find three random things (for example, a blade of grass, the word "long," and the process "jumping") and ask your students to invent an object that uses all three.
Fun activity (grades 6-8): Ask students to reinvent or improve upon the designs of everyday objects.

**Visual/spatial:** **Enjoys drawing and painting**

Teaching tip: Use colors as visual cues: Use a variety of colors of chalk and markers when writing in front of the class. Students can use different colored markers to "color code" materials they are studying.
Fun activity (grades 4-6): Draw an unusual shape and have each student include it in a drawing of his or her own.
Fun activity (grades 6-8): Play drawing games such as *Pictionary* or *Win, Lose or Draw*. Have students make rapid drawings to capture key points being discussed in a class lesson.

**Naturalist:** **Enjoys studying things in nature, such as rocks, dinosaurs, insects, plants**

Teaching tip: Noticing patterns: Encourage students to form their own systems for sorting and categorizing information.
Fun activity (grades 4-6): Show pictures of various animals or plants and ask students to figure out what they have in common.
Fun activity (grades 6-8): Given certain basic guiding principles, ask students to describe an animal, ecosystem, or other natural entity. To stimulate creativity, the entity need not exist at present, but should be theoretically imaginable.

**Bodily/kinesthetic:** **Enjoys dancing, crafts, or sports**

Teaching tip: Classroom theater: Students can act out the material to be learned through role-playing.
Fun activity (grades 4-6): Ask students what they like to eat for lunch – and have them act out the answers in a game of charades.
Fun activity (grades 6-8): Use the human body as a "map" for learning new information in different subjects. In geography, for example, the body might represent Europe. If the head is Scandanavia, then where is Italy?
**Musical/Rhythmic: Enjoys listening to music**

Teaching tip: Create discographies: Supplement bibliographies with lists of recorded music relating to class material. Also, as part of a homework assignment, have students select music that best demonstrates lesson themes. Fun activity (grades 4-6): Play unusual or difficult-to-recognize sounds and ask students to imagine what they might be. Fun activity (grades 6-8): Some students can more easily memorize information if they listen to a teacher’s lesson against a musical background. Baroque and classical music can be particularly effective.

**Interpersonal: Enjoys giving advice to friends who have problems**

Teaching tip: Peer sharing: Set up a class "buddy system" so students can share and develop ideas with the same person over a period of time. Fun activity (grades 4-6): Make learning a fun and cooperative effort with class-made board games. Using file folders, markers, dice, and small game pieces, the information to be learned can be placed on squares of a winding road or on separate cards. Fun activity (grades 6-8): Ask students to think of the results of unlikely events. For example, "What if all of us could feel each other's feelings?"

**Intrapersonal: Enjoys being by himself and thinking**

Teaching tip: Personal connections: To make learning more directly relevant, make connections between class material and students' lives. To spark discussion, ask: "How many of you have ever..." Or "Can you tell about a time when you..." Fun activity (grades 4-6): Start individual or class scrapbooks for remembering special events. Fun activity (grades 6-8): Provide opportunities for setting goals and charting progress toward these goals. Goals may be short-term ("List three things you'd like to learn today") or long-term ("What do you want to be doing ten years from now?").

**Verbal/linguistic: Enjoys storytelling, reading books**

Teaching tip: Tape recording: To help students clarify their thinking, have them use a tape recorder to talk out loud about a problem or project. Recordings can also be used as a writing tool. Fun activity (grades 4-6): Have students think of as many things as possible that share a certain property, such as things that are round (sun, balloons, a squashed soda can), and encourage creative answers. Fun activity (grades 6-8): Invent nicknames for well-known people that capture features that make the individuals unique.
Problems with Inattention/Distractibility:

- Systematically teach student how to attend (square shoulders, lean body forward, and focus eyes on work).
- Use mnemonics such as SLANT (sit up, lean forward, ask questions, nod your head, track the teacher) to help them remember the needed behaviors. Seat student in area free from distractions such as open doors, air conditioners, etc.
- Keep written assignments and workspace free from distractions
- Use study carrel.
- Use proximity seating.
- Assign a peer tutor. Surround student with appropriate role models.
- Use color cues such as neon-colored highlighters to direct student attention to important information, key words, and directions.
- Vary presentation of a task. Allow additional time to complete assignments/tests.
- Use a digital, silent kitchen timer to help a student who is slow to complete work.
- Alternate short work periods with teacher-controlled breaks - have this student be your official pencil sharpener, note-runner.
- Break assignments down into shorter segments.
- Highlight the number of problems you want the student to complete, provide feedback, then assign the next segment.
- Provide "windows" cut from paper or cardboard to expose only one segment at a time.
- Use a line or place-marker.
- Teach self-monitoring techniques. Have the student set goals for how much of a task they can complete in an allotted time.
- Use physical, visual, or auditory signals/cues to redirect student to stay on task.
- Use class and individual schedules. Have students check things off as they are completed.
- Teach students to highlight operational signs.
- Have students work each step in a different color.
- Encourage students to subvocalize while working.
- Have the student remove all but the material with which he is working from his desk.
- Talk slowly.
- Give students advance notice (a physical cue, special word) that you will be saying or showing key information.
- Try not to copy on both sides of the paper.
- It is often helpful to use frequent indentations, double spacing, and boxes around key words to provide visual clues.
- Use games such as hopscotch math to reinforce concepts.
- Change students' environment.
- Present material on colored paper.
- Block extraneous information on pages to limit distractions.
- Provide copies of work that is on the blackboard or textbook. Limit the number of problems that students copy and solve problems.
Problems with Organization

- Create and teach routines and procedures.
- Provide teacher demonstration & modeling, guided, independent practice, and frequent review opportunities.
- Use checklists and mnemonics to help students remember the expected behaviors.
- Color code notebooks and school book covers.
- Have students "check" unneeded books and notebooks at the door. They can pick up their items as they exit class.
- Attach things that often get misplaced (pencils) to students' desks with Velcro.
- Use assignment books and calendars.
- Check that homework assignments are written down daily.
- Provide a copy of assignments for home.
- Check homework daily.
- Send daily/weekly progress reports home.
- Provide a time weekly for organizing desk and notebooks.
- Assign a peer buddy to assist with organization.
- Create backwards timelines for larger projects.
- Help students estimate how long it will take them to complete each portion of a project.
- Provide an outline of the text.
- Color-code to identify vocabulary, main ideas.
- Teach students to identify and highlight key information.
- Use slot outlines.
- Teach note-taking skills.
- Provide page numbers where answers can be found.
- Provide advanced organizers.
- Allow student to use a computer to complete assignments.
- Use graph paper to help students organize calculation problems, or turn notebook paper horizontally. Provide boxes for students to write in answers.
- Avoid cluttered/crowded worksheets.
- Teach goal-setting skills.
- Teach decision-making/prioritizing skills.
- Teach time-management skills.
Problems with Following Directions

• Have the student verbalize written directions. By doing this, you will detect early errors or misunderstandings.
• Provide example of completed item.
• Model or demonstrate each step. Have students check off each step as it is completed.
• Provide only one portion of the assignment at a time.
• Divide longer orally assigned tasks into shorter ones.
• Face the child and speak slowly and distinctly.
• Provide visual reinforcement as often as possible when you speak to the class.
• Provide an outline of your lectures; use graphs and tables to reinforce concepts.
• Provide practice in noticing, describing, and comparing details.
• Check frequently that the student is following directions.
• Have students repeat or re-explain directions.
• Provide visual displays - flowcharts, webs, pictorials, pre-reading questions, and keyword note-taking organizers to help students listen and follow directions.
• Use a buddy system to clarify directions.
• Use cooperative learning activities (i.e. 3 before Me).
• Use mnemonic aids to signal steps (i.e. Does McDonalds Sell Cheese Burgers - divide, multiply, subtract, check, bring down).
• Teach students to highlight operational signs.
• Provide visual cues and reinforcement as often as possible in lecture classes.
• Very gradually help the student learn to take orally presented notes.
• Give the student extra time to respond to oral questions.
• Have the student look at you when you speak.
• Present the key points of a lecture at the beginning of your talk, then summarize.
• Have students write down each step of a problem and check off as they complete it.
Problems with Memory/Recall

• Provide multiple opportunities for practice in different formats.
• Use flashcards for individual or group review.
• Use songs, rhymes, or rhythms to help remember information.
• Chunk pieces of information together. (For example have students learn the number facts in sets of three).
• Use acronyms to remember words or phrases.
• Use mnemonics like "Please excuse my dear Aunt Sally" (order of operations) to remember sequenced steps.
• Help students remember items of a list by visualizing that each is "located" at a different place in a familiar room (for instance to remember 3 shapes that are quadrilaterals, a student might visualize a square on the bed, a rectangle on the dresser, and a parallelogram on the desk).
• Use semantic maps and diagrams to help students remember the connections between concepts.
• Re-teach item of information as often as possible, varying the approach a little each time.
• Maximize the student's potential for success by providing a balance of visual and auditory stimuli in your teaching.
• Teach students to use self-questioning techniques.
• Play memory games.
• Provide the student with a written out schedule of classroom routines and timelines.
• Allow the student to trace over geometric shapes and other important visual patterns during visually presented lessons.

Problems with Understanding/Comprehension

• Teach the meaning of key vocabulary words.
• Provide an example of a correctly solved problem at the beginning of the lesson.
• Provide visual cues to help students who may have difficulty visualizing shapes, dimensions and sizes.
• Have students verbally or visually explain how to solve a math problem.
• Provide students with a strategy to use for solving word problems.
• Introduce only one concept at a time and teach to mastery.
• Provide many practice opportunities and include problem solving, reasoning, and real-life application to help with transfer of information.
• Teach students how the textbook is organized and the format for each page or section.
• Used taped textbooks.
• Have students "talk aloud" as they complete problems.
• Model and teach metacognitive strategies (Model and verbalize procedure, guide students through verbalization of problem computation, monitor student verbalizations as they complete procedure, periodic reviews provided).
• Use cooperative learning techniques such as "jigsaw" or "think-pair-share".
• Teach in small chunks so students get lots of practice with one step at a time.
• Provide learning aids such as calculators to help students focus on conceptual understanding.
• Use estimation throughout the day and have students estimate a reasonable solution prior to starting any computation.
• Teach facts in families.
• Demonstrate all concepts with manipulatives.
Strategies for Students with Physical and Cognitive Disabilities

For students with cognitive or physical disabilities, educators must incorporate accessible instructional strategies throughout the daily schedule. The classroom environment and educational staff must consider changes and accommodations to increase student participation and enhance learning. When teachers and students adapt effective instructional strategies, individual and groups of students gain the tools necessary to become successful learners. Below are suggested strategies to support students with cognitive and physical disabilities; they are applicable to all classroom settings and with all children.

- Strategies for Students with Physical Disabilities
- Strategies for Students with Cognitive Disabilities

Instructional and Environmental Strategies for Students with Cognitive Disabilities

- Teach self-monitoring techniques
- Have students set goals to complete assignments, checking off each step as it is completed.
- Have students work each step in different colors.
- Encourage students to sub-vocalize while learning.
- Use games such as hopscotch math to reinforce concepts.
- Assign a peer tutor, and allow the peer or adult to read text aloud to the student.
- Use cooperative learning techniques to allow students to “re-teach” concepts.
- Model and teach metacognitive strategies.
- Teach students the format of the textbook.
- Teach note-taking skills.
- Provide visual cues and props to reinforce and demonstrate from lectures.
- Have students write down each step of a problem and check off as they complete it.
- Maximize students’ potential for success by providing a balance of visual and auditory stimuli in your teaching.
- Teach students to use self-questioning techniques.
- Provide students with a written schedule of classroom routines and timelines.
- Provide multiple opportunities to practice in different formats.
- Use flash cards for individual or group review.
- Use songs, rhymes, or rhythms to help remember information.
- Chunk pieces of information together and in sets.
- Use acronyms to remember words or phrases.
- Use mnemonics like “Please excuse my dear Aunt Sally” (order of operations) to remember sequenced steps.
- Use individual and class lists for added visual representation.
- Use semantic maps and diagrams to help students remember the connections between concepts.
- Re-teach items as often as possible, varying the approach a little each time.
- Teach the meaning of key vocabulary words
- Provide an example of a correctly solved problem at the beginning of the lesson.
- Have students verbally or visually explain how to solve a math problem.
- Provide students with a strategy to use for solving word problems
- Introduce only one concept at a time and teach to mastery.
- Provide many practice opportunities and include problem solving, reasoning and real-life application to help with transfer of information.
- Provide learning aids such as calculators, manipulatives, and models to help students focus on conceptual understanding and skill building
- Use estimation throughout the day and have students practice estimation prior to starting any computation
- Provide cooperative learning strategies with large and small groups.
• Teach the student how the textbook is organized and the format for each page or section.
• Vary reinforcements styles to provide positive recognition for completing the correct steps regardless of the outcome.
• Use video taped and audio taped lessons.
• Utilize textbooks on CD ROM.
• Make connections between math and other disciplines.
• Scaffold the instruction.
• Use many visual aids (posters, models, videos, slides, pictures, bulletin boards, notebooks).
• Look for the same or similar content in another medium (movie, filmstrip, audio tape, video tape, sticker book, photo album, field trip).

Strategies for Students with Physical Disabilities

• Use mnemonics such as SLANT (Sit up, lean forward, ask questions, nod your head, track the teacher).
• Consider environmental issues such as seating placement in classroom, workspace free from distractions, proximity seating, student remove all non-related materials from space.
• Use textured mats under worksheets and manipulatives to stabilize work area.
• Provide a paper stabilizer (clipboard, non-slip writing surface).
• Use colored highlighters to direct attention to key information.
• Use digital timer to help pace student while working.
• Use a line or a place-marker.
• Provide adapted paper (bold line, raised line, enlarged spacing).
• Use colored sticky notes to draw attention or clarify important information.
• Use large pencils and/or pencil grips /weighted pencils.
• Use adaptive equipment for posture: booster seats, arm rests, etc.
• Use large size calculators.
• Use computers with touch screen capabilities.
• Use software programs with on screen calculator pads.
• Demonstrate all concepts with manipulatives.
• Provide copies of work that is presented on blackboard or textbook to cut down on copying for students.
• Vary group size for instruction.
• Provide large print handouts of text.
• Provide a bookstand for books and assignment pages.
• Use specifically lined /oriented paper.
• Utilize computer speech-enhanced text and lessons.
• Use drawings and real-life examples such as lunch counts and class lists.
Teaching Strategies for Using Materials in an Inclusive Classroom

One of the ultimate goals of teaching is to help students become independent learners. Learners who are knowledgeable about a variety of strategies for learning and who are aware of how and when to use those strategies are on their way to becoming successful learners on their own. Some children are strategic learners by nature; others can become strategic with a few hints and prompts. However, many students need adaptive instruction and additional support to make the strategies part of their ongoing learning repertoire.

Collaborative Strategic Reading

Most elementary- and middle-school reading curricula mention strategies for reading expository (informational) text. Frequently, however, students are not provided with enough supervised practice to make the strategies part of their ongoing repertoire of reading and study practices. Simply being aware of a strategy is not enough – particularly for students with reading and learning disabilities. What they need is systematic and intensive practice in applying strategies to content-area text with support from both teachers and peers.

What is the adaptation?

Collaborative strategic reading (CSR) combines both reading comprehension strategy instruction to provide students with systematic ways to read and learn from text and collaborative learning to provide students with the support they need from peers. CSR is most appropriate for students in grades three and higher. Some third-grade teachers have reported that they first introduce CSR in small groups as part of a teacher-led center activity and later work toward cooperative learning groups. In addition, teachers in lower grades have introduced the language of CSR in whole-class reading activities.

The CSR routine actually includes four strategies that many elementary-school teachers already incorporate in their reading curriculum:

- **Preview** (generate prior knowledge and prediction about the topic)
- **“Click and clunk”** (clarify difficult vocabulary)
- **Get the gist** (determine the main idea of units of text)
- **Wrap up** (summarize the key ideas of the assigned passage and predict questions that might be on a test)

Each strategy is introduced one at a time to the whole class through teacher and student modeling. Students then implement the strategies in their cooperative learning groups.

The cooperative learning groups consist of four or five students. Each student is assigned a role to keep for several weeks. Roles can include leader (who guides fellow students through the strategies), clunk expert (who leads discussion about how to “fix up clunks,” or end confusion about difficult vocabulary), time keeper, recorder, and encourager. The cooperative learning groups ensure that all students have an opportunity to participate and be truly active learners.

During CSR sessions the teacher's role is to introduce the topic (including particularly difficult technical vocabulary students are likely to encounter), facilitate and monitor cooperative learning among small groups, and summarize key points at the end of the lesson.

Teachers frequently balance CSR sessions with other content-area learning activities such as projects, experiments, and other hands-on activities. For instance, CSR sessions may be held for one hour, twice a week, with other activities and tests being scheduled on remaining days.
SIR RIGHT: A Strategy for Math Problem Solving (Student handout)

Students with learning disabilities may have difficulty with basic counting and computational skills in mathematics. Students with and without disabilities also have difficulties in solving math word problems. Indeed, math word problems are the Achilles' heel of many students. The fact is that word problems are designed to show real-world applications of mathematics. Their primary purpose is to make mathematics genuinely come alive.

Solving word problems is a complex cognitive task. Think about what is going on:

- Reading and mathematics are merged.
- Words are sometimes used instead of numbers (e.g., dozen).
- The necessary mathematics operation is not explicitly called for.
- Multiple operations are sometimes necessary.

On top of that, assuming that the correct operations are selected, careful calculation is needed to derive the correct answer. No wonder word problems are overwhelming for elementary students! The complexity of solving word problems necessitates strategic thinking. The difficulty is that many students with disabilities lack systematic strategies for tackling word problems.

What is the adaptation?

SIR RIGHT: A Strategy for Math Problem Solving (Student handout), developed by Radencich, helps students tackle word problems systematically and consistently. The strategy consists of eight steps that can help students become actively engaged in problem-solving. The steps are as follows:

1. Start by reading the entire problem aloud or silently. Do not start solving the problem until you understand generally what problem is being posed.
2. Identify and highlight or circle all numbers – including hidden numbers (i.e., numbers written as words). If you can't write in your textbook, write all numbers on a piece of scratch paper.
3. Read the problem again. This time, try to draw a picture of the problem.
4. Read the problem once again. This time, think: What is the problem asking for? What should my final answer be? What form should my final answer take?
5. Inquire – ask yourself: What operation do I need to use to find the answer (add, subtract, multiply, or divide)?
6. Guess, to estimate what the answer should be. Should I end up with a larger number or a smaller number?
TEACHING STRATEGIES FOR STUDENT WITH VISUAL IMPAIRMENTS
**Visual Impairments**

For our purposes, visual impairment is defined by “a range of visual losses that require adaptations for learning in a variety of environments” (Silberman & Sowell, 1998, p. 162). According to Sacks (1998), students who have visual impairments represent a very diverse group of learners. The level of disability is influenced by environmental factors, other disabilities, and the type and degree of visual impairment. Visual impairments may affect the student’s acuity, the student’s visual field, and/or the student’s ability to process visual information. Because each factor has significant implications for effective instruction, it is critical that the team works closely with the child’s family, physicians and vision teacher to understand the nature of the child’s visual impairment and ensure that proper techniques and strategies are used to maximize the student’s ability to access visual information and use compensatory strategies. It is important to note that most individuals who are legally blind have enough residual vision to see light, color, objects and make use of varying degrees of distance and near visual information.

**Possible effects of visual impairments on the development of history/social studies skills**

- Incomplete and/or distorted visual information interferes with concept development crucial to growth in social studies skills. Foundation skills, such as oral language and vocabulary usage, may be affected by lack of incidental learning opportunities. Concepts such as “near/far,” “east/west” may not be developed early on in a child with a vision impairment, especially if orientation and mobility training has not been made available.
- Visual impairments may negatively affect the child’s ability to comprehend spoken and written words and may increase the length of time required for the mechanics of literacy (following written material, locating key information, organizing information to be referenced at a later time).

**Instructional and Environmental Strategies**

The following strategies are provided to promote access to history/social studies content, based on Virginia’s SOLs, for students with visual impairments. Students with visual impairments will require on-going adaptations and accommodations in this content area to compensate for the reduced and/or distorted information available through visual input. Decisions regarding instructional strategies must be made based on accurate and comprehensive assessment of the child’s vision and involve all team members. The following strategies are offered to provide a starting point for thinking about possible adaptations.

- Involve the student in the brainstorming process. Ask the student to make suggestions about environmental and instructional strategies that are helpful.
- Provide directions and instructions using the student’s preferred and strongest mode of communication. Many students will benefit from a multi-sensory approach that includes spoken language and tactile information.
- Provide information to the student to indicate that a new task is beginning, the expectations for the lesson, and prepare the student for transitions to new activities. Consistency across routines will facilitate learning.
- Allow opportunities for repetition and practice of previously introduced material.
- Work with team members, student, and family to identify appropriate homework options and requirements.
- Provide access to visuals presented at an appropriate distance and in the child’s visual field and allow plenty of time for descriptions and exploration of materials and activity.
- Use mutual exploration and modeling strategies (hand-under-hand and hand-over-hand) as appropriate to encourage exploration of materials and activities. Team members need to be aware of tactile sensitivity issues.
- Consider environmental adaptations such as lighting conditions, contrast between materials, and the use of tactile cues in the room to promote independence and mobility.
- Consider close proximity to the activity and teacher during instruction. Positioning of the student and the materials must be based on understanding the child’s acuity and any field loss concerns. For example, a child who has a field loss on the left side will need materials presented on the right side. Accurate information about the child’s vision and how that loss affects access to information are critical.
• Carefully consider the arrangement of the classroom so that mobility is encouraged and comfortable for the child. Experiencing a simulation of a vision impairment may assist the child’s team in identifying features of the environment that need to be adjusted.

• Consult with assistive technology specialists to discuss possibilities of low to high tech devices for increasing independence and participation. Some students with visual impairments will benefit from light boxes to increase contrast between objects and background and/or other devices to enlarge or magnify print and materials. Other options include Braillewriters, closed-circuit televisions, and screen enlargers.

• Provide instruction at an appropriate pace, frequently checking for understanding and reteaching concepts as necessary.

• Provide appropriate wait time for the student to respond to instruction or directions.

• Have classmates and adults identify themselves as they answer or ask questions and participate in class discussion to allow the student to orient to the speaker.

• Consider having the primary instructor positioned in one location during the lesson and away from glare.

• Begin activities by drawing on the concrete experiences of the learner. Start with vocabulary that is relevant to the student and provide supplemental experiences to help the child comprehend the meanings of new words.

• For younger children, pair real objects with representations (pictures, miniatures)

• Comprehension is strengthened by teaching the student specific strategies for increasing understanding. Students should be taught to ask who, what, where, and why questions to check their understanding of text material.

• Written language should be taught systematically across all content areas and draw on the real-life experiences of the student.

• Teach new vocabulary at a controlled pace and provide opportunities for interactions with peers (McNaughton, Hughes & Clark, 1994).

• Consult AT specialists regarding the use of computer software that can be used to assist with writing assignments and reading of text.
VISION IMPAIRMENT - DIFFERENTIATED INSTRUCTIONAL STRATEGIES - MATH

Visual Impairments

Team members working with students with sensory impairments need to carefully consider each student’s unique needs and learning style, as well as the demands of the task. Strategies are offered to provide a starting point for thinking about possible adaptations. It is important to remember that all team members should have input into decisions regarding instructional strategies.

Possible effects of visual impairment or blindness on skill development in mathematics

• Early math development is very dependent on accessing visual information to form basic concepts. Students with visual impairments may not have had the incidental learning opportunities necessary to understand one-to-one correspondence and number relationships (Silberman & Sowell, 1988).
• Math content is very dependent upon understanding concepts of space, time, distance, and quantity. These concepts are largely based on visual information and experiences exploring the environment and manipulating objects.
• More advanced math skills may be compromised because of difficulties recognizing geometric forms and shapes and completing computations that are multi-step.

Ways to help students with visual impairments or blindness succeed in mathematics

The following strategies are provided to promote access to math content, based on SOLs, for students who are visually impaired or blind. Appropriate instructional strategies for each child MUST be based on accurate and current information about the child’s sensory functioning so that instructional and environmental adaptations match the child’s needs. Current vision information, including medical evaluations and a thorough functional vision assessment, is essential to team planning for academic instruction, including mathematics.

Instructional and Environmental Strategies

• Arrange seating according to the requirements of the assignment and students’ needs; close proximity to the teacher and activity/materials may be desirable.
• Adapt materials to match learners’ needs (large print, regular print, Braille). Keep in mind needs related to lighting, visual contrast, and reduction of visual clutter.
• Provide appropriate visuals including charts, figures, tables and allow plenty of time for verbal descriptions of materials.
• Provide ample time for exploration and play with manipulatives before requiring students to complete the tasks.
• Provide an individualized amount of wait time for student to process information and respond.
• Consult with assistive technology specialists to discuss possible low- to high-tech devices for increasing independence and participation. Some students benefit from CCTVs (closed circuit television), light boxes, and other devices to enlarge or magnify print and numbers.
• Help students organize homework notebooks by using tactile cues and adapted paper to easily access information and materials.
• Provide verbal directions and descriptions of everything that is written on the overhead or blackboard, or provide materials to students in advance of the lesson to allow them to be better prepared for the content and pace of instruction.
• Use memory strategies, including rhymes and mnemonics, to help students remember multi-step tasks.
• Consider length of assignments and how much repetition is important to demonstrate competency.
• Spell out new vocabulary while introducing math concepts. Make sure new concepts and vocabulary are linked to previously introduced lessons.
• Prepare adapted materials in advance of the lesson so that students can be involved in activity at the same time, not later than the rest of the group.
• Make the introduction of a new concept as multisensory as possible. Provide students opportunities to see the problem, record it, move around to participate in an activity related to the concept, and explore manipulatives used in the activity.
DIFFERENTIATED INSTRUCTIONAL STRATEGIES
History/Social Studies

Students Who Have Difficulty Related to Organization, Memory, Comprehension, Attention, Reading and Writing

Instructional strategies for all learners, including those with cognitive and physical disabilities who have difficulties with:

- Inattention/distractibility
- Organization
- Following directions
- Memory/recall
- Reading decoding/access
- Understanding/comprehension
- Mechanics of writing/drawing

Problems with Inattention/Distractibility:

Teach students how to:
- Use class and individual schedules.
- Check off tasks as they are completed.
- Set goals for how much of a task they can complete in an allotted time.
- Verbalize while working.
- Use self-monitoring techniques such as SLANT (sit up, lean forward, ask questions, nod your head, track the teacher) to help them remember the needed behaviors.

Before, during, and following instruction:
- Give students advance notice (a physical cue, special word) that you will be saying or showing key information.
- Break assignments down into shorter segments.
- Alternate short work periods with teacher-controlled breaks - have this student be your official pencil sharpener, note-runner.
- Vary presentation of a task.
- Use physical, visual, or auditory signals/cues to redirect student to stay on task.
- Provide copies of work that is on the blackboard or textbook.
- Use color cues such as neon-colored highlighters to direct student attention to important information, key words, and directions.
- Use games to reinforce concepts.
- Allow additional time to complete assignments/tests.
- Limit the number of problems that students copy and solve problems. Highlight the number of problems you want the student to complete.
- Use a digital, silent kitchen timer to help a student who is slow to complete work.
- Assign a peer tutor. Surround student with appropriate role models.
- Introduce only one concept at a time and provide scaffolding within your instruction.
- Reteach concepts frequently by varying the instructional approach.
Provide a physical environment that is:
- Free from distractions and clutter. Have the student remove all but the material with which he is working from his desk.
- Seat student in area free from distractions such as open doors or air conditioners.
- Use study carrel.
- Use proximity seating.

Provide work materials that are:
- Try not to copy on both sides of the paper.
- Use frequent indentations, double spacing, and boxes around key words to provide visual clues.
- Block extraneous information on pages to limit distractions.
- Present material on colored paper.
- Provide "windows" cut from paper or cardboard to expose only one segment at a time.

Problems with Organization

Teach students routines and procedures:
- Goal-setting skills.
- Note-taking skill to identify and highlight key information.
- Decision making/prioritizing skills.
- Time-management skills to help them estimate how long it will take to complete assignments.

Within the environment:
- Provide a time weekly for organizing desk and notebooks.
- Use assignment books and calendars.
- Have students "check" unneeded books and notebooks at the door. They can pick up their items as they exit class.
- Attach things that often get misplaced (pencils) to students' desks with Velcro.
- Check that homework assignments are written down daily.
- Check homework daily.
- Send daily/weekly progress reports home.
- Color code notebooks and school book covers.

Before, during, and following instruction:
- Provide page numbers where answers can be found.
- Provide boxes for students to write in answers.
- Provide advanced organizers or outlines of the content.
- Use slot outlines.
- Color-coding to identify vocabulary, main ideas, and details.
- Use a variety of teacher demonstrations & modeling, guided, independent practice, and frequent review opportunities.
- Provide a copy of assignments for home.
- Use checklists and mnemonics to help students remember the expected behaviors.
- Avoid cluttered/crowded worksheets.
- Allow student to use a computer to complete assignments.
- Assign a peer buddy to assist with organization.
- Create backwards timelines for larger projects.
- Introduce only one concept at a time and provide scaffolding within your instruction.
- Reteach concepts frequently by varying the instructional approach.
Problems with Following Directions

Teach the student to:
• Verbalize written directions. By doing this, you will detect early errors or misunderstandings.
• To repeat or re-explain directions.
• Look at the person who is speaking.
• Write down each step of a problem and check off as they complete it.

Before, during and following instruction:
• Face the child and speak slowly and distinctly.
• Check frequently that the student is following directions.
• Model or demonstrate each step. Have students check off each step as it is completed.
• Present the key points of a lecture at the beginning of your talk, then summarize.
• Divide longer orally assigned tasks into shorter ones.
• Very gradually help the student learn to take orally presented notes.
• Provide example of completed item.
• Give the student extra time to respond to oral questions.
• Provide only one portion of the assignment at a time.
• Provide an outline of your lectures; use graphs and tables to reinforce concepts.
• Provide practice in noticing, describing, and comparing details.
• Provide visual displays such as - flowcharts, webs, pictorials, pre-reading questions, and keyword note-taking organizers frequently to help students listen and follow directions.
• Use a buddy system to clarify directions.
• Use cooperative learning activities.
• Use mnemonic aids to signal steps.
• Introduce only one concept at a time and provide scaffolding within your instruction.
• Reteach concepts frequently by varying the instructional approach.

Problems with Memory/Recall

Before, during and following instruction:
• Provide the student with a written out schedule of classroom routines and timelines.
• Chunk pieces of information together. (For example have students learn the number facts in sets of three).
• Provide a balance of visual and auditory stimuli in your instruction.
• Provide multiple opportunities for practice in different formats.
  o Use flashcards for individual or group review.
  o Use songs, rhymes, or rhythms to help remember information.
  o Use acronyms to remember words or phrases.
  o Use mnemonics like "Please excuse my dear Aunt Sally" (order of operations) to remember sequenced steps.
  o Play memory games.
• Use semantic maps and diagrams to help students remember the connections between concepts.
• Introduce only one concept at a time and provide scaffolding within your instruction.
• Reteach concepts frequently by varying the instructional approach.
**Problems with Reading/Decoding Access**

**Before reading:**
- Teach students to read strategically – e.g., review title/chapter headings; locate main ideas, etc.
- Reduce amount to be read
- Adjust allotted time for assignment
- Present several versions of the same story
- Locate high interest/low reading level materials at library, etc. – to facilitate fluency in reading
- Enhance/adapt/modify books:
  - Enlarge print materials – on photocopier
  - Rewrite text in simplified form and paste over original text associated with graphic – to allow student to read independently
  - Use objects and actions to enhance meaning of text, specific vocabulary – toys or other objects and role playing can be used to provide cues to meanings of words.
  - Cut apart and remake books, which have graphics but no text – for student to “tell” the story from the pictures.
  - Make props – cut graphics out of one copy of a book, put Velcro on back of graphics/pictures and Velcro on the pages of a second copy of the book, the book becomes interactive, e.g., students can match characters/objects to the picture in the book, choose the correct picture when asked by teacher, do interactive worksheets, etc.
  - Use clear drawings/photos – which correspond to text or relate to content
  - Cut & paste Picture Communication Symbols – place over text so student “reads” via the symbols or place under text to facilitate reading of text
- Extensive reading preview – vocabulary development, story line, background information, etc.
- Label items/spaces around the classroom
- Provide adaptive surfaces for reading materials (slant boards, easels, non-slip padding)
- Have needed books on CD-ROM, videotaped, or audio taped if possible
- Have computer generated text available if possible

**During reading:**
- Enhance meaning of reading with gestures, exaggerated facial expressions and intonation during group reading
- Use choral reading or singing of words/text – music, rhythm and rhyme are memory enhancers
- Peer tutor – or adult, to support or read to student
- Discuss what is depicted in the drawings – how it relates to the text; location of specific vocabulary within the illustrations
- Highlight target vocabulary words from a larger field of text – removable transparent highlighter tape, highlighters, etc.
- Use a magnifying glass, word windows, mini-flashlight – for visual tracking of words/letters
- Segment components of stories/words – so they can be physically manipulated (stickies, index cards, sentence strips, etc.), e.g., sequencing parts of stories, manipulating word families, etc.
- Colored acetate filters laid over text – can make a tremendous difference for students who have Scotopic Sensitivity Syndrome (SSS – a sensitivity to light which affects depth perception); especially helpful for students with Autism/Asperger’s Syndrome, e.g. Transparency Pockets (office supply stores) or filter kit from See It Right which includes multi-colored sets & instructions (See It Right); special colored glasses – may be necessary for some students with severe SSS
- Color code word targets to match answer location – e.g., put yellow arrow sticky in section of text where answer will be found
- Colored pens for note-taking – to differentiate vocabulary, types of information, sections etc. or to highlight after the fact
- Graphic Organizers – to preview/review story narrative, vocabulary, characterization, etc.; e.g., concept maps, Venn Diagrams, story boards, sequence grids, & webs (webs are effective for brainstorming ideas individually or in groups by
choosing a topic placed in a circle in middle of page; free associate quickly; list all responses without judgment; related ideas branch out from the topic and can later be grouped into clusters; pictures/symbols can also be used as templates, e.g., spider, tree, flower, etc.)

- Have books on tape or in digital format for students to hear/review story content or to read along with text.
- Video taped versions of stories – to motivate, make story come alive, and to preview/review story content
- Hand-held talking dictionary/speller – e.g., Franklin Homework Wiz & Speaking Homework Wiz, dictionary/thesaurus; spell check; create personal word list; words appear on small screen; target words, definitions, & synonyms can be pronounced aloud if speaking version; offers practice in cursive and print handwriting; arithmetic tutor & calculator

Following reading:
- Songs – teach students original or other songs, then use overhead device with song lyrics on the overlays; students read as a group; students take turns tracking the words with a pointer
- Word walls – to reinforce frequently used words and topic/story vocabulary; create on blackboard, whiteboard, or cards posted on walls; words may be grouped together by category and color-coded
- Word dice made from milk cartons – for sight word development, vocabulary, synonyms, etc.
- Word searches & crossword puzzles
- Letter tiles, Scrabble tiles, magnetic letters – to form words/sentences
- Magnetic word sets – to create sentences, poems, etc.
- Modify worksheets – simplify format; reduce amount of text; reword in simplified language
- Reteach concepts frequently by varying the instructional approach.

Problems with Understanding/Comprehension

Teach the students:
- The meaning of key vocabulary words.
- How the textbook is organized and the format for each page or section.
- How to verbalize as they complete or work through problems.

Before, during, and following instruction:
- Teach in small chunks so students get lots of practice with one step at a time.
- Model and teach metacognitive strategies (Model and verbalize procedure, guide students through verbalization of problem computation, monitor student verbalizations as they complete procedure, periodic reviews provided).
- Provide an example of a correctly solved problem at the beginning of the lesson.
- Provide visual cues to help students who may have difficulty visualizing shapes, dimensions and sizes.
- Provide learning aids such as calculators to help students focus on conceptual understanding.
- Provide many practice opportunities and include problem solving, reasoning, and real-life application to help with transfer of information.
- Use cooperative learning techniques such as "jigsaw" or "think-pair-share".
- Use taped textbooks.
- Introduce only one concept at a time and provide scaffolding within your instruction.
- Reteach concepts frequently by varying the instructional approach.
Problems with the Mechanics of Writing/Drawing

Make accommodations for writing through the following strategies:

- Allow more time to complete assignments
- Reduce quantity of final product
- Explore different forms of writing – for example, don’t restrict writing to cursive

Consider using an adapted writing surface:

- Enhanced line paper – commercial raised line paper or adapt your own paper by printing lines in a color, then laminating the paper and gluing over the lines to enhance.
- Variety of tactile writing surfaces – e.g. sandpaper, screen, etc.
- White board or small chalkboard

Consider using adapted writing tools:

- Pencil grips stabilize a student’s grip on pen or pencil. These can be commercially made or make your own with a piece of foam or non-slip material.
- Use adapted pens/pencils such as triangular pencils, Squiggle Wiggle Writer, triangular shaped, vibrating or the Nightwriter lighted pen.
- Experiment with a variety of writing implements by trying markers, paints, fat crayons/pencils, grease pencils.
- Use rubber stamps & stamp pad – for letters/numbers/name.
- Use magnetic alphabet letter sets – sticks to any magnetic surface, e.g., cookie sheet
- Scrabble or other letter tiles – for writing, spelling
- Highlighter markers or tapes, colored dots, correction tape – to “take notes” in text by highlighting important points or to indicate margins or start/end points on the writing paper (office supply)
- Use computers with touch screens or switch access if available

For positioning try:

- Shifting the position of paper – the standard positioning may not work for all students
- Using a clipboard to hold paper or tape paper to desk – to hold writing paper steady
- Using a three ring binder or slant board.
- Use adaptive equipment for posture: booster seats, arm rests, phone books, etc.

For longer assignments, taking notes, or completing worksheets try using:

- Prewritten words/phrases on labels/cards/paper
- A peer/aide takes notes for student – use carbon paper, NCR paper
- “fill-in-the-blank” answer format.
- Modified worksheets by making templates for student to complete
- Use multiple choice answer format
- Word walls – to reinforce frequently used words and topic/story vocabulary; create on blackboard, whiteboard, or cards posted on walls; words may be grouped together by category and color-coded
- Correction/cover-up tapes – to correct mistakes in writing if erasing is a problem (office supply)
HEARING IMPAIRMENT

-DEAF

-HARD OF HEARING
Deaf and Hard of Hearing

Team members working with students who are deaf or hard of hearing need to carefully consider each student’s unique needs and learning style, as well as the demands of the task. Strategies are offered to provide a starting point for thinking about possible adaptations. It is important to remember that all team members should have input into decisions regarding instructional strategies.

Possible effects of hearing loss on skill development in History

Children who are deaf or hard of hearing can learn about history in the same sequence and manner as their hearing peers. However, various factors may prevent children who are deaf or hard of hearing from successfully constructing historical knowledge, including the following:

• They may lack general vocabulary and the specific vocabulary needed to discuss the concepts of time, past, present, and future. Hearing children are exposed to language from birth and have an understanding of everyday language. It is more difficult for children who are deaf or hard of hearing to acquire language and learning from their environment incidentally (from overhearing conversations of others in their environment, on TV, on the radio). Without this incidental learning, a child who is deaf may not develop even beginning concepts of time, such as “last week,” “two decades ago,” or “in the twentieth century” without being formally taught them.

• Communication with others may be difficult. If the child and others in the environment cannot communicate with each other effectively, they may not have had the benefit of engaging in discussions regarding current events and concepts important to history such as “independence,” “freedom of religion,” and “exploration and discovery.” Problem solving is especially difficult for children who are deaf, as a sound language base is necessary for putting observations into words or making predictions. Without communication skills, the child can be isolated in the learning environment and unable to participate in group activities and discovery (Ray, 2001).

• Cognitive development may be delayed. Research shows that children who are deaf or hard of hearing have normal intellectual potential (Meadow, 1980). However, for normal cognitive development to occur, a child must be introduced to diverse experiences and exposed to a rich language base (Ray, 2001). This does not always occur in the home and/or in the educational setting. Time concepts are abstract, and difficult to understand without experience and language.
Instructional and Environmental Strategies
- Ways to help students who are deaf or hard of hearing succeed in History

The following strategies are designed to promote access to History content based on the Standards of Learning for students who are deaf or hard of hearing. It is important to remember that each child has unique needs and that decisions regarding instructional strategies should be based upon current and accurate information about the child’s sensory functioning and on team input.

• Be sure that there is someone for students to interact with in the learning environment who can effectively provide not only the vocabulary to label objects but also a language model for expressing concepts and ideas, using the child’s mode of communication.
• Partner with parents. Maintain ongoing communication between the home and teachers so that vocabulary and concepts related with History are reflected and reinforced in as many different situations as possible. Make families aware of the limitless opportunities in the home for exploring and discussing current events and historical concepts during daily routines, and make sure that the parents are able to communicate effectively in the child’s chosen mode.
• Provide an enriched learning environment that promotes a wide range of meaningful experiences with opportunities for reading about and discussion of historic events, past and present.
• Use multimedia approaches for visual representation of course content. Overhead projectors or PowerPoint presentations are preferable to blackboards, as the teacher does not need to turn his or her back to the students. This is especially important for students who are relying on speechreading, signing, cuing, and/or use of residual hearing for receptive communication.
• Use more than one mode of presentation for time concepts and historic events. These may include manipulatives (puppets, action figures), verbal (role playing, debates), pictorial (time lines), and symbolic modes (graphic organizers). Encourage students to translate between sign language, and English, and to make connections between all modes presented. Students can also use pictures, drawing sets, and visualizing or pantomiming of action to move from the concrete to more abstract representations.
• When using visuals, allow time for students to view the board, overhead, or objects, then to watch explanation/instruction given by the teacher or interpreter, and only then, allow students to offer responses. A hearing person can view visuals and listen at the same time. Children who are deaf or hard of hearing and rely on visual communication through sign language, cued speech, or speechreading must process information sequentially rather than simultaneously.
• Pre-teach vocabulary for coming History lessons in context. Collaboration with the speech/language pathologist in this effort can be beneficial. Remember, many children who are deaf or hard of hearing do not learn words incidentally.
• For students who sign, ensure that all involved are consistent in the signs being used. Use conceptually based signs and avoid inventing new signs for new vocabulary.
• Relate events in history with students’ personal experiences through a dialogic process.
• Emphasize the role of deaf individuals in various events in history.
• Encourage students to process information at a deeper level through questioning.
ADHD/ADD
Modifying Instruction: Teaching Students with ADD

You will probably find that most of your students with attention deficit disorder tend to benefit from some type of instructional modification, which is the cornerstone of helping students with attention deficit disorder succeed in the classroom. When modification is used, students are not penalized for not knowing how to learn.

There are many ways you can modify your lessons. Target those aspects of the learning setting that can be most troublesome for the student:

- Lesson presentation
- Physical arrangement of the classroom
- Work assignments

Lesson Presentation

Use the principles of effective instruction when delivering lessons. Make sure that students are successful and challenged. Model cognitive strategies such as "think aloud" techniques, which help students verbalize the thought processes they should engage in to complete the task. Cooperative groupings can also be used effectively. Finally, give praise and feedback immediately and consistently.

Suggestions for maintaining student involvement in the lesson include the following:

- Keep lesson objectives clear
- Deliver the lesson at a brisk pace
- Encourage collaboration among students
- Use meaningful materials and manipulatives
- Prompt for student answers after allowing at least five seconds of wait time
- Have the students recite in unison
- Vary the tone of your voice and model enthusiasm

There are additional ways you can accommodate the student's learning characteristics and needs when designing your lessons. For example, if the student has a short attention span, you might accommodate this learning characteristic by modifying the length of the material. The following are examples of additional accommodations:

- Break up long presentations by "chunking" content. At the end of each chunk, have the student respond in some way.
- Provide the student with additional time to finish an assignment or test.
- Break down assignments into "mini-assignments," and build in reinforcement as the child finishes each part. So as not to overwhelm the student, consider passing out longer assignments in segments.
- Reduce the number of practice items that the student must complete. For instance, allow the student to stop once he or she has demonstrated mastery.

Holding students' interest and attention is not always an easy task. Don't hesitate to experiment with a variety of approaches – and ask your colleagues for ideas.
Physical Arrangement of the Classroom

To help a student who is easily distracted focus on the task at hand, you may need to reduce competing stimuli in the environment or directly cue the student's attention. The goal here is not to create a dull environment, but rather to find ways to focus the student's attention. The following are examples of things you can do:

- Seat the student away from high-traffic and noisy areas such as the pencil sharpener, window, hallway, and materials table. Make a study carrel available.

- Define the work space for the child. For example, when children are to sit on the floor, use carpet squares to help define each child's space.

- Reduce the amount of materials present during work time by having the student put away unnecessary items. Have a special place for tools, materials, and books.

Work Assignments

Because many students with attention deficit disorder are inefficient learners, it is a good idea to spend some time helping them develop learning strategies. Organizational strategies are a must for students with attention deficit disorder. Help them get into the habit of making reminders for themselves of what they need to do, using such strategies as assignment sheets, daily schedules, and "to do" lists.

A teacher in Suffield, Connecticut designed a daily check-sheet for students to keep track of assignments, grades, and targeted behaviors. Here's how it works:

- The first column lists all of the student's classes. Next to it is a column for the student's grades. The next column features criteria (e.g., Is on time for class, Came prepared with appropriate materials, Participates in instruction and discussion, Completes homework). A space is left for the student to write in homework assignments. At the end of the day, the student reviews the check-sheet and uses the data on it to determine what to take home for study purposes.

- Parents are expected to review and sign the check-sheet daily. Daily check-sheets like the one just described enable you to maintain an active record of student progress. These check-sheets also assist the student by clarifying expectations and highlighting successes.

Teach older students how to take notes from both oral presentations and textbooks. Help the student by listing the main ideas or concepts in advance. Some teachers have found it helpful to give their students a template graphic organizer to use when outlining and taking notes.

Other tactics that teachers have used to help students focus in on the task at hand include the following:

- Use color coding or highlighting to help focus attention on critical information contained in assignments.

- Give clear directions both orally and visually. Whenever possible, provide the student with a model of what he or she should be doing.

- Set up consistent routines for making the transition between lessons, getting and putting away materials, and requesting assistance. Teach these routines and reward students for following them.
Managing the Classroom: Teaching Students with ADD

A strong classroom management system helps all students develop positive classroom behavior, study habits, and organizational skills. For students with attention deficit disorder, these behavioral management systems often provide the structure they need to manage their own behaviors on a daily basis.

At a minimum, you can provide the essential foundation for improving behaviors and promoting student success by maintaining an orderly, predictable classroom environment. Establish clear rules and state them in positive terms, so that students know what is expected of them.

**Helping the Student Manage Behavior**

Explicit attention to reducing the incidence of problematic behaviors is essential to help students with attention deficit disorder reach their academic potential. For years, teachers have had positive results from behavioral management techniques such as positive reinforcement, negative reinforcement, and response contingencies. The key is to be consistent in applying positive and negative consequences.

**Positive Reinforcement**

You will probably find that many students with attention deficit disorder benefit from a structured reinforcement system. Let the student know what behaviors will be rewarded. Select reinforcers that are of interest to the student. Rewards don't necessarily need to cost a lot of money; for example, an image made with an ink pad, a trophy or a stuffed animal that sits on the student's desk, or a visit with the principal might appeal to younger children. Older students tend to appreciate special privileges such as free time or time at the computer station. Remember, as students become proficient in displaying appropriate behaviors, you can begin to phase out reinforcement by decreasing its frequency.

**Negative Consequences**

When you must use negative consequences to reduce the frequency of a troublesome behavior – for instance, strategies such as planned ignoring, time-out, loss of privileges, and reprimands – keep in mind that such practices should always be paired with reinforcement for an appropriate alternative behavior. Students need to know what they should be doing, as well as what will not be tolerated.

**Response Contingencies**

Token economy systems are widely used classroom management systems that have promising results for students with attention deficit disorder. A token system is based on tokens that can be exchanged for reinforcers, contingencies that specify the conditions under which the tokens may be obtained or lost, and exchange rates for tokens. Many token systems use points.

For example, students in Irvine, California earn daily points for positive behaviors such as following quiet rules, following seat rules, maintaining appropriate peer relations, attending to class lessons, and completing work neatly. Points are subtracted for negative behaviors. As students become proficient at demonstrating positive behaviors, the intervals between receiving rewards can increase. This school-based reward system is administered by counselors during the last 20 minutes of the day.
Elementary-aged youngsters in Bradenton, Florida experience a five-level point system that assists teachers in monitoring and rewarding appropriate behavior, such as following rules and participating in lessons. The system works this way:

- Each student starts at level 1. To move up to succeeding levels, the child must meet certain behavioral expectations every day for a month.
- At each succeeding level, privileges are increased.
- At the end of the day, students discuss their behavior. A daily report card is sent home, and a graph is used to chart students' progress.

Another variation of a point or token system focuses on increasing student work completion. This system is a type of tic-tac-toe game developed by a school psychologist in Sandy, Utah. The game consists of a specially made tic-tac-toe card (8 1/2 x 11-inch card with nine pockets for holding the tokens), tokens, reinforcements, and progress charts.

Each square on the tic-tac-toe board has a number that corresponds to a number on a token. The object of the game is to place three tokens in their pockets across, down or diagonally on the playing card. Numbers representing units of work to be completed (e.g., number of questions to answer or pages to read) are also printed on the tokens.

Here is how the game is played. The student draws a token and completes the amount of work indicated. Once the work is completed, the student matches the token to the square on the card. This process continues until the student has achieved a "win." To keep motivation high and to show the students' progress, charts are kept.

Charting progress can be not only reinforcing, but also fun. In Sandy, Utah "magic grids" add the element of surprise to reinforcement. The "Magic Grid" is a nine-space grid with the numbers 1 through 5 listed at the top of each space. In each space a reinforcement has been written in invisible ink. Students randomly select a space and tally points in that space. When a student has earned all of the points for that square, the secret message is revealed. Another variation is the "Stairway to Success" chart. Students earn points toward each stair, receiving a reinforcement when they reach the top.

**Learning New Behaviors**

When helping students learn new behaviors such as positive social skills, teachers can use a combination of instructional strategies, including:

- Modeling
- Rehearsing appropriate behavior
- Role playing
- Continuous reinforcement
- Prompting

"Target Behavior of the Day" is a practice used in Jacksonville, Florida to help students think about good classroom behavior on a daily basis. At the elementary level, teachers introduce this practice by asking students to make a list of specific behaviors that are desirable in the classroom such as raising your hand, listening when others talk, waiting your turn, speaking with an inside voice (i.e., using a low tone of voice inside, even though louder voices can be used outside on the playground), and cleaning up your area.

These behaviors are then written on large strips of posterboard and displayed – one each day – on the "Target Behavior of the Day" bulletin board. During the day, the teacher records a mark on a tally card each time a student displays the behavior. At day's end, the teacher recognizes students who have modeled the behavior.
For older students who need more of a challenge, this technique can be adapted by listing all of the desired behaviors and keeping the targeted behavior a secret from the group until the end of the day.

Providing constructive feedback to the student is important. Middle school teachers in Lake Villa, Illinois have come up with an approach for helping students demonstrate positive academic and social behaviors. Each Friday, teachers write a brief progress report on the students, describing the students' behavior, effort, classroom performance, homework completion, and present grade point average.

Before leaving school, the students collect the reports and meet with a designated adult to discuss the comments. During this meeting, the students and adults work together to problem solve and suggest alternatives where needed.

Verbal prompting has also been found to help students better understand the requirements of their environment. In Des Moines, Iowa teachers help ease transition – generally a very difficult time for many students with attention deficit disorder – by telling the student when there are "two minutes to go before..." Even young students who might not comprehend time can benefit from the cue which alerts them of the approaching change.

**Enlisting Colleagues' Support**

Some students will demand more attention and understanding. At these times, consider enlisting the help of your colleagues – either individually or on teams – in supporting the student’s behavioral growth.

In Irvine, California teachers find it helpful to come to team meetings prepared with the following information about the student's behavior:

- Statement of problem behaviors
- Desired alternative behaviors
- Previous attempts at modification in the classroom: what works and what doesn't work
- Special health considerations
- Previously used reinforcement mechanisms: levels of success

Using this information as a guide, the team might decide to have a colleague serve as another set of eyes in the classroom, to gather more insight into how the student might be helped to develop more positive behaviors. Ultimately, this information will form the basis for a classroom intervention plan.
What Can Teachers Do To Help a Child with ADHD?
by Mary Fowler

Whether your child receives services under IDEA, Section 504, or another program designed to help students with special needs, it is important that the intervention be tailored to meet your child's individual needs. One size does not fit all. Work with the school to identify the nature of your child's special needs and to design an educational program suited to those needs.

In addition to the core interventions described in the previous section, there are a number of other educational interventions that can potentially help students with AD/HD. This section looks at some of the more common interventions, modifications, and adaptations.

Select a Supportive Teacher

Try to place the student with teachers who are positive, upbeat, flexible, and highly organized problem-solvers. Teachers who praise liberally and who are willing to “go the extra mile” to help students succeed can be enormously beneficial to students with AD/HD.

Adapt Curriculum and Instruction

- Provide more direct instruction and as much one-on-one instruction as possible.
- Use guided instruction.
- Teach and practice organization and study skills in every subject area.
- Lecture less.
- Design lessons so that students have to actively respond-get up, move around, go to the board, move in their seats.
- Design highly motivating and enriching curriculum with ample opportunity for hands-on activities and movement.
- Eliminate repetition from tasks or use more novel ways to practice.
- Design tasks of low to moderate frustration levels.
- Use computers in instruction.
- Challenge but don't overwhelm.
- Change evaluation methods to suit the child's learning styles and strengths.

Provide Supports to Promote On-Task Behavior

- Pair the student with a study buddy or learning partner who is an exemplary student.
- Provide frequent feedback.
- Structure tasks.
- Monitor independent work.
- Schedule difficult subjects at the student’s most productive time.
- Use mentoring and peer tutoring.
- Provide frequent and regularly scheduled breaks.
- Set timers for specific tasks.
- Call attention to schedule changes.
- Maintain frequent communication between home and school.
- Do daily/weekly progress reports.
- Teach conflict resolution and peer mediation skills.
Provide Supports to Promote Executive Function

To support planning:

- Teach the student to use assignment pads, day planners or time schedules, task organizers and outlines
- Teach study skills and practice them frequently and in all subjects

To increase organization:

- Allow time during school day for locker and backpack organization
- Allow time for student to organize materials and assignments for homework
- Have the student create a master notebook-a 3-ring binder where the student organizes (rather than stuffs) papers
- Limit number of folders used; have the student use hole-punched paper and clearly label all binders on spines; monitor notebooks
- Have daily and weekly organization and clean up routines
- Provide frequent checks of work and systems for organization

To improve follow through:

- Create work completion routines
- Provide opportunities for self-correction
- Accept late work
- Give partial credit for work partially completed

To improve self-control:

- Prepare the student for transitions
- Display rules
- Give behavior prompts
- Have clear consequences
- Provide the student with time to de-stress
- Allow doodling or other appropriate, mindless motor movement
- Use activity as a reward
- Provide more supervision

Memory Boosters

To assist with working memory:

- Focus on one concept at a time
- List all steps
- Write all work down
- Use reading guides and plot summaries
- Teach note-taking skills-let the student use a study buddy or teacher-prepared notes to fill in gaps
- List all key points on board
- Provide summaries, study guides, outlines, and lists
- Let the student use the computer
To assist with memory retrieval:

- Teach the student memory strategies (grouping, chunking, mnemonic devices)
- Practice sorting main ideas and details
- Teach information and organization skills
- Make necessary test accommodations (allow open book tests; use word banks; use other memory cues; test in preferred modality—e.g., orally, fill in blank; give frequent quizzes instead of lengthy tests)

**Attention Getters and Keepers**

For problems beginning tasks:

- Repeat directions
- Increase task structure
- Highlight or color code directions and other important parts
- Teach the student keyword underlining skills
- Summarize key information
- Give visual cues
- Have the class start together

For problems sticking with and finishing tasks:

- Add interest and activity to tasks
- Divide larger tasks into easily completed segments
- Shorten overall tasks
- Allow the student choice in tasks
- Limit lecture time
- Call on the student often
Technology is bursting into the classroom at all levels, as a tool for teachers to develop, monitor, and provide instructions, and for students to access and engage in learning. P.L. 100-407, The Technology-Related Assistance for Individuals with Disabilities Act of 1988 (Tech Act) was designed to enhance the availability and quality of assistive technology (AT) devices and services to all individuals and their families throughout the United States.

What Are Assistive Technology (AT) Devices?

The Tech Act defines AT devices as any item, piece of equipment, or product system (whether acquired off the shelf, modified, or customized) that is used to increase, maintain, or improve functional capabilities of individuals with disabilities. AT devices may be categorized as high technology and low technology. Many low-tech devices can be purchased at a hardware store, selected from a catalog, or fabricated using tools and materials found in home workshops (Franklin, 1991). Examples might be note-taking cassette recorders, pencil grips, NCR paper/copy machine, simple switches, head pointers, picture boards, taped instructions, or workbooks. High-tech devices frequently incorporate some type of computer chip, such as a hand-held calculator or a "talking clock." Examples might be optical character recognition (OCR) calculators, word processors with spelling and grammar checking, word prediction, voice recognition, speech synthesizers, augmentative communication devices, alternative keyboards, or instructional software.

How Can AT Be Applied in Instruction?

Lahm and Morrissette (1994) outlined seven areas of instruction where AT could assist students with mild disabilities. These areas include organization, note taking, writing assistance, productivity, access to reference materials, cognitive assistance, and materials modification. A number of approaches are available to assist students with mild disabilities in these areas of instruction.

1. Organization: Low-tech solutions include teaching students to organize their thoughts or work using flowcharting, task analysis, webbing or networking ideas, and outlining. These strategies can be accomplished using graphic organizers to visually assist students in developing and structuring ideas. A high-tech solution might be the outline function of word processing software, which lets students set out major ideas or topics and then add subcategories of information.

2. Note Taking: A simple approach is for the teacher to provide copies of structured outlines for students to use in filling in information. A high-tech approach might include optical character recognition, which is software that can transform typewritten material into computer-readable text using a scanner.

A teacher's typewritten notes can be duplicated using either NCR paper (carbonless copies) or a copy machine. A slightly more high-tech method is to use microcassette recorders. Or, notes can be read by a voice synthesizer, allowing students with reading difficulty to review the notes much the same as reviewing a tape recording. Recorders are beneficial for students with auditory receptive strength, but they may be less useful for those needing visual input. Videotaping class sessions may be helpful for visual learners who pick up on images or body language, or for students who are unable to attend class for extended periods of time.
Laptop or notebook computers can provide high-tech note taking for many students with disabilities. An inexpensive alternative to a full-function portable computer is the portable keyboard. The limitations of these keyboards are in formatting information and a screen display limited to four lines of text.

3. **Writing Assistance:** Word processing may be the most important application of assistive technology for students with mild disabilities. Many of these students have been identified as needing assistance in the language arts, specifically in writing. Computers and word processing software enable students to put ideas on paper without the barriers imposed by paper and pencil. Writing barriers for students with mild disabilities include mechanics: spelling, grammar and punctuation errors; process: generating ideas, organizing, drafting, editing, and revising; and motivation: clarity and neatness of final copy, reading ability, and interest in writing.

Grammar/spellcheckers, dictionaries, and thesaurus programs assist in the mechanics of writing. Macros, a feature that allows keystrokes to be recorded in a file that can be used over and over, also assist in mechanics. Macros can be used for spelling difficult text, for repetitive strings of words, or for formatting paragraphs and pages. Macros also save time for students who have difficulty with either the cognitive or motor (keyboarding) requirements of writing. Word prediction is assistive software that functions similarly to macros. If a student has difficulty with word recall or spelling and cannot easily use the dictionary or thesaurus feature, then word prediction software offers several choices of words that can be selected.

Teachers can use the editing capabilities of the word processor during the writing process, making electronic suggestions on the student's disk. If the computer is on a network, students can read each other's work and make comments for revision. Painter (1994) indicated that peer feedback was an effective way to assist students in generating and revising text. Computer editing also reduces or eliminates problems such as multiple erasures, torn papers, poor handwriting, and the need to constantly rewrite text that needs only minor modifications. The final copy is neat and legible.

Motivation is often increased through the desktop-publishing and multimedia capabilities of newer computers. A variety of fonts and styles are available, allowing students to customize their writing and highlight important features. Graphic images, drawings, and even video and audio can be added to the project to provide interest or highlight ideas. Multimedia often gives the student the means and the motivation to generate new and more complex ideas.

4. **Productivity:** Assistive productivity tools can be hardware-based, software-based, or both. Calculators, for example, can be the credit-card type or software based, which can be popped up and used during word processing. Spreadsheets, databases, and graphics software also offer productivity tools, enabling students to work on math or other subjects that may require calculating, categorizing, grouping, and predicting events. Productivity tools also can be found in small, portable devices called personal digital assistants (PDAs). Newer PDAs can be used as notetaking devices via a small keyboard or graphics-based pen input. Some PDAs can translate words printed with the pen input device to computer-readable text, which can then be edited with the word processor and transmitted to a full function computer.

5. **Access to Reference Materials:** Many students with mild disabilities have difficulty gathering and synthesizing information for their academic work. In this arena, telecommunications and multimedia are providing new learning tools for the students.

A computer and a modem can transport students beyond their physical environment to access electronic information. This is particularly appropriate for individuals who are easily distracted when going to new and busy environments such as the library. Telecommunications networks offer access to the information superhighway. Students can establish "CompuPals" with other students, which often motivates them to generate more text and thus gain more experience in writing. Students can also access electronic encyclopedias, library references, and online publications. However, these experiences should be structured, because the information highway is complex and it is easy to get distracted or lost as opportunities are explored.
Multimedia-based tools are another way in which information can be made accessible to students. Multimedia’s use of text, speech, graphics, pictures, audio, and video in reference-based software is especially effective in meeting the heterogeneous learning needs of students with mild disabilities.

6. **Cognitive Assistance**: A vast array of application program software is available for instructing students through tutorials, drill and practice, problem-solving, and simulations. Many of the assistive technologies described previously can be combined with instructional programs to develop and improve cognitive and problem-solving skills.

Multimedia CD-ROM-based application programs offer another tool for assisted reading. Similar to talking word processors, CD-based books include high-interest stories that use the power of multimedia to motivate students to read. These books read each page of the story, highlighting the words as they are read. Additional clicks of the mouse result in pronunciation of syllables and a definition of the word. When the student clicks on a picture, a label appears. A verbal pronunciation of the label is offered when the student clicks the mouse again. These books are available in both English and Spanish, so students can read in their native language while being exposed to a second language.

7. **Materials Modification**: Special educators are familiar with the need to create instructional materials or customize materials to meet the varied needs of students with disabilities. Today there are powerful multimedia authoring and presentation tools that educators can use to develop and modify computer-based instructional materials for students with mild disabilities, providing a learning tool that these students can access and use to balance their weak areas of learning with their strong areas.

Authoring software allows teachers and students to develop instructional software that can incorporate video, pictures, animation, and text into hypermedia-based instruction. Multimedia authoring software is very easy to learn and use. In fact, authoring software packages are even available for young children. For example, if the objective is to teach map reading, an image of a local map can be scanned in and specific locations can be made into buttons that the students can click on, causing a short video clip playing of the familiar location. A set of questions might be asked using both text and synthesized speech to have students give directions on how to get the location shown on the video. Students could then write directions (or draw their own map). Digitized pictures of landmarks could also be incorporated into the directions. These directions, along with the images, could then be printed for use in completing the assignment. Without the ability to author and incorporate multimedia easily into instructional software, such computer-based training would be impossible because of the need to incorporate the shared learning concepts inherent in local environments into the assisted-learning process. Such instruction can make learning more efficient and certainly more real for students for whom abstract learning and generalization may be difficult.
BEHAVIOR MODIFICATION AND
CLASSROOM MANAGEMENT
The Virginia Department of Education in collaboration with Old Dominion University has created a series of evidence-based online modules for use by school divisions. This twenty-five module series provides information in the area of specific behavior strategies at both the elementary and secondary level, along with a summary of the supporting research.

The modules can be found at T/TAC Online at [http://ttaonline.org](http://ttaonline.org).

Directions: Go to web address above; click on Region 8 on the map; Go to the tab “online training”; Modules are listed by title, with the description having the module #

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Four Steps for Better Classroom Discipline

Even if you understand that children function at different stages of discipline, it is not easy to sell administrators, school board members and parents on the idea that you are going to have different sets of rules for different kids in your classroom. You don’t have to. If you set up a discipline policy in your classroom that progressively attempts to meet the needs of the students first at Stage 4, then Stage 3, and finally Stages 2 and 1, you can be as consistent in your discipline as everyone expects you to be and at the same time encourage students to practice behaving at a stage higher than the one they normally use.

Let’s look at four steps for classroom discipline that you can start using right now.

Step 1: Reminder

This is a reminder not a reprimand. It may be directed to the whole class at once. It may be directed to one or two students. The teacher does not need to approach the student when using this step. The teacher needs to take the opportunity to remind students early enough that the situation does not progress beyond a point where a simple reminder is no longer appropriate.

Example 1:

"There is the bell, class. You should all have your homework out on your desk, now."

Example 2:

"Janice and Maria, the rest of us have all started working, now. You need to stop talking and start too."

The importance of this step cannot be understated. Students who consistently function at Stage 3, the mutual interpersonal stage, will quickly respond to your reminder. They want to please you and this is right at their level. Students who are in transition to Stage 3 have an opportunity to practice their discipline skills at this level.

Some teachers may complain that they should not have to remind children over and over again. We remind the children because they ARE children.
Step 2: Warning

This is a reprimand. The student is approached. The warning may be either verbal or written.

Verbal warnings should not be delivered across the classroom. The teacher moves in close to the student and lets him know what he is expected to do. The student is asked to identify the next step.

Example 1:

Steven is sitting sideways in his chair and keeps messing with things on Maria’s desk. The teacher approaches Steven and says "Steven, I expect you to turn around in your seat and get on with your assignment. This is your warning. What is the next step?"

Example 2:

During a class discussion, Tammy suddenly speaks out. "Boy, this stuff really sucks!" The teacher walks up to her and calmly, but firmly, says, "Tammy, I will not tolerate your outbursts. I expect you to raise your hand and wait to be called on before you speak. This is your warning. Now, can you tell me the next step?"

Written warnings are even more effective. The student is approached and handed an Honor Level System infraction slip. The teacher has checked an item on the slip and may ask the youngster to fill in the information at the top. He is told that if no further problem occurs he will be able to throw the slip away at the end of the period. If the misbehavior continues, the slip will be collected and turned into the office.

Example 2:

Jason has been teasing Janice. The teacher fills out an infraction slip and takes it to him. He says to Jason "Here is an infraction slip with your name on it. I have marked ‘Failure to treat peers with respect’ because you have been bothering Janice. I will put it here on the corner of your desk. If it is still there when the bell rings, you may throw it away. If you continue to pester her, I will pick it up and it will be turned into the office."

The warning step would normally be the first step if you were using Assertive Discipline. Instead of putting a name on the board (or on a clip board, as Lee Canter now recommends), placing a slip on the student’s desk keeps it much closer to the child where he is less likely to forget and get into trouble again.

If you do not teach in a regular classroom with desks, still give the slip to the student. Even in a gym class the youngster can tuck the slip inside an elastic band somewhere. The slip can even be folded and put in a shoe!

It is important that the child has possession of the slip and that he realizes that he is the one in control of it. Just as he is in charge of the infraction slip, he is also in charge of his own behavior. This helps the student learn to take ownership for his own actions. When the slip is in the hands of the teacher or his name is on a board far away, it is too easy to think that the situation is in someone else’s hands. Instead, this technique fosters and encourages internal locus of control rather than external locus of control. There is no doubt in the student’s mind that he has been reprimanded, but he is not left with a feeling of helplessness: that his fate is in the teacher’s hands.

The warning step, especially the written warning, directly addresses the needs of the student who functions at the power stage will be sizing up the situation. You have moved into their space and made your expectations quite clear. If you are firm, cool, and assertive, they may feel that the balance of power tips in your favor. If you shout and display excessive anger, it will be read as a challenge and this student will confront you. Regrettably, the situation will then escalate quickly to the next step.
Step 3: Infraction Slip

The student is approached again. She is reminded that she has already received her warning. An infraction slip will be turned into the office. If she has received a written warning, the slip is collected from her. The student is asked to identify the next step.

Example:

Nathan has been warned about staying in his seat and working on his assignment, but he keeps wandering over to argue with Jeff about a missing baseball card. The teacher marks "Failure to follow classroom rules" on an infraction slip and asks Nathan to fill in the top. She says "Nathan, I warned you only a few minutes earlier about following directions. Yet you refuse to go to work. You will receive a detention. Can you tell me the next step?"

Nathan has refused to follow classroom rules even after being reminded and later warned. The infraction slip will be turned into the office where this information is entered into a computer that manages the data for The Honor Level System. Nathan’s Honor Level may change and depending on the number of other infractions that he has received in the past 14 days, he will be required to serve an appropriately significant consequence. If the slip is the first, he may serve a short detention during noon. If the slip is one of many, he may be suspended from school. In either case, the consequence is not chosen by the teacher. It is part of a consistent school-wide discipline plan.

It is important that the teacher has tried Steps 1 and 2 before turning the infraction slip into the office. Only in special, extreme cases, should an infraction slip be used as the first step.

Remember: The Honor Level System is an extension of your classroom discipline system, not a replacement for it.

Step 4: Send to the Office

The student is removed from class. A special "Time Out" slip is filled out and sent with the student, or a "Referral Form" will be completed for the office later.

Example:

Linda has been acting up in class quite a bit today. She has been warned, and has had an infraction slip written up. Still, she continues to disrupt the class. The teacher sends her to the office. As she leaves the room, the teacher calls the office to let them know that Linda is on the way. As soon as possible, the teacher stops by the office to fill out a referral form and check with the principal. The teacher will contact the girl’s parents, as well.

If the first three steps are followed faithfully, this step is rarely needed. When things do progress this far, the teacher can proceed with this step in a cool, unemotional manner. There is no need for shouting or anger.

The student may want to bargain for leniency, but the effective teacher has remained calm through all the previous steps and lets Linda know that she has left him with no other option. He will insist that she leave the room, but may send her off with an optimistic "Tomorrow we will try again. I’m sure we can make this work right."
Post the Steps and Classroom Rules

These steps for discipline should be posted in several places in the classroom. The teacher should identify three to five classroom rules that are important to his or her teaching station and post them, as well. The list should be as short as possible and stated in a positive way. Write down your rules as behaviors that you expect of your students. Including an item like: Follow directions the first time they are given helps cover most problems that may occur in the classroom that are not addressed by more specific expectations.

Take time to go over the rules and the steps with each class. Explain to your students that they may be asked to identify the next step if they get into trouble. Let them know that they can always look on the wall to answer your question.

Also, let the students know that in extreme cases you reserve the right to skip to higher steps. There may be certain behaviors that you simply will not tolerate. Be specific and give them examples
11 Techniques for Better Classroom Discipline

Here are eleven techniques that you can use in your classroom that will help you achieve effective group management and control. They have been adapted from an article called: "A Primer on Classroom Discipline: Principles Old and New" by Thomas R. McDaniel, Phi Delta Kappan, September 1986.

1. Focusing

Be sure you have the attention of everyone in your classroom before you start your lesson. Don’t attempt to teach over the chatter of students who are not paying attention.

Inexperienced teachers sometimes think that by beginning their lesson, the class will settle down. The children will see that things are underway now and it is time to go to work. Sometimes this works, but the children are also going to think that you are willing to compete with them, that you don’t mind talking while they talk, or that you are willing to speak louder so that they can finish their conversation even after you have started the lesson. They get the idea that you accept their inattention and that it is permissible to talk while you are presenting a lesson.

The focusing technique means that you will demand their attention before you begin. It means that you will wait and not start until everyone has settled down. Experienced teachers know that silence on their part is very effective. They will punctuate their waiting by extending it 3 to 5 seconds after the classroom is completely quiet. Then they begin their lesson using a quieter voice than normal.

A soft spoken teacher often has a calmer, quieter classroom than one with a stronger voice. Her students sit still in order to hear what she says.

2. Direct Instruction

Uncertainty increases the level of excitement in the classroom. The technique of direct instruction is to begin each class by telling the students exactly what will be happening. The teacher outlines what he and the students will be doing this period. He may set time limits for some tasks.

An effective way to marry this technique with the first one is to include time at the end of the period for students to do activities of their choosing. The teacher may finish the description of the hour’s activities with: “And I think we will have some time at the end of the period for you to chat with your friends, go to the library, or catch up on work for other classes.”

The teacher is more willing to wait for class attention when he knows there is extra time to meet his goals and objectives. The students soon realize that the more time the teacher waits for their attention, the less free time they have at the end of the hour.
3. Monitoring

The key to this principle is to circulate. Get up and get around the room. While your students are working, make the rounds. Check on their progress.

An effective teacher will make a pass through the whole room about two minutes after the students have started a written assignment. She checks that each student has started, that the children are on the correct page, and that everyone has put their names on their papers. The delay is important. She wants her students to have a problem or two finished so she can check that answers are correctly labeled or in complete sentences. She provides individualized instruction as needed.

Students who are not yet quite on task will be quick to get going as they see her approach. Those that were distracted or slow to get started can be nudged along.

The teacher does not interrupt the class or try to make general announcements unless she notices that several students have difficulty with the same thing. The teacher uses a quiet voice and her students appreciate her personal and positive attention.

4. Modeling

McDaniel tells us of a saying that goes “Values are caught, not taught.” Teachers who are courteous, prompt, enthusiastic, in control, patient and organized provide examples for their students through their own behavior. The “do as I say, not as I do” teachers send mixed messages that confuse students and invite misbehavior.

If you want students to use quiet voices in your classroom while they work, you too will use a quiet voice as you move through the room helping youngsters.

5. Non-Verbal Cuing

A standard item in the classroom of the 1950’s was the clerk’s bell. A shiny nickelbell sat on the teacher’s desk. With one tap of the button on top he had everyone’s attention. Teachers have shown a lot of ingenuity over the years in making use of non-verbal cues in the classroom. Some flip light switches. Others keep clickers in their pockets.

Non-verbal cues can also be facial expressions, body posture and hand signals. Care should be given in choosing the types of cues you use in your classroom. Take time to explain what you want the students to do when you use your cues.

6. Environmental Control

A classroom can be a warm cheery place. Students enjoy an environment that changes periodically. Study centers with pictures and color invite enthusiasm for your subject.

Young people like to know about you and your interests. Include personal items in your classroom. A family picture or a few items from a hobby or collection on your desk will trigger personal conversations with your students. As they get to know you better, you will see fewer problems with discipline.

Just as you may want to enrich your classroom, there are times when you may want to impoverish it as well. You may need a quiet corner with few distractions. Some students will get caught up in visual exploration.
For them, the splash and the color is a siren that pulls them off task. They may need more “vanilla” and less “rocky-road.” Have a quiet place where you can steer these youngsters. Let them get their work done first and then come back to explore and enjoy the rest of the room.

7. Low-Profile Intervention

Most students are sent to the principal’s office as a result of confrontational escalation. The teacher has called them on a lesser offense, but in the moments that follow, the student and the teacher are swept up in a verbal maelstrom. Much of this can be avoided when the teacher’s intervention is quiet and calm.

An effective teacher will take care that the student is not rewarded for misbehavior by becoming the focus of attention. She monitors the activity in her classroom, moving around the room. She anticipates problems before they occur. Her approach to a misbehaving student is inconspicuous. Others in the class are not distracted.

While lecturing to her class this teacher makes effective use of name-dropping. If she sees a student talking or off task, she simply drops the youngster’s name into her dialogue in a natural way. “And you see, David, we carry the one to the tens column.” David hears his name and is drawn back on task. The rest of the class doesn’t seem to notice.

8. Assertive Discipline

This is traditional limit setting authoritarianism. When executed as presented by Lee Canter (who has made this form a discipline one of the most widely known and practiced) it will include a good mix of praise. This is high profile discipline. The teacher is the boss and no child has the right to interfere with the learning of any student. Clear rules are laid out and consistently enforced.

9. Assertive I-Messages

A component of Assertive Discipline, these I-Messages are statements that the teacher uses when confronting a student who is misbehaving. They are intended to be clear descriptions of what the student is suppose to do. The teacher who makes good use of this technique will focus the child’s attention first and foremost on the behavior he wants, not on the misbehavior. “I want you to...” or “I need you to...” or “I expect you to...”

The inexperienced teacher may incorrectly try “I want you to stop...” only to discover that this usually triggers confrontation and denial. The focus is on the misbehavior and the student is quick to retort: “I wasn’t doing anything!” or “It wasn’t my fault...” or “Since when is there a rule against...” and escalation has begun.
10. Humanistic I-Messages

These I-messages are expressions of our feelings. Thomas Gordon, creator of Teacher Effectiveness Training (TET), tells us to structure these messages in three parts. First, include a description of the child’s behavior. “When you talk while I talk...” Second, relate the effect this behavior has on the teacher. “...I have to stop my teaching...” And third, let the student know the feeling that it generates in the teacher. “...which frustrates me.”

A teacher, distracted by a student who was constantly talking while he tried to teach, once made this powerful expression of feelings: “I cannot imagine what I have done to you that I do not deserve the respect from you that I get from the others in this class. If I have been rude to you or inconsiderate in any way, please let me know. I feel as though I have somehow offended you and now you are unwilling to show me respect.” The student did not talk during his lectures again for many weeks.

11. Positive Discipline

Use classroom rules that describe the behaviors you want instead of listing things the students cannot do. Instead of “no-running in the room,” use “move through the building in an orderly manner.” Instead of “no fighting,” use “settle conflicts appropriately.” Instead of “no gum chewing,” use “leave gum at home.” Refer to your rules as expectations. Let your students know this is how you expect them to behave in your classroom.

Make ample use of praise. When you see good behavior, acknowledge it. This can be done verbally, of course, but it doesn’t have to be. A nod, a smile or a “thumbs up” will reinforce the behavior.
Techniques that Backfire

There are some techniques, however, that should be avoided. Linda Albert surveyed dozens of teachers, asking them what methods have backfired for them. Here they are as she has presented them in her book *A Teacher’s Guide to Cooperative Discipline* (American Guidance Service, 1989).

After 27 years in elementary and middle school classrooms, I can honestly say I have tried most of these techniques. Linda is right. They may work a few times, but not over the long haul. Techniques that backfire include:

- raising my voice
- yelling
- saying "I'm the boss here"
- insisting on having the last word
- using tense body language, such as rigid posture or clenched hands
- using degrading, insulting, humiliating, or embarrassing put-downs
- using sarcasm
- attacking the student’s character
- acting superior
- using physical force
- drawing unrelated persons into the conflict
- having a double standard — making students do what I say, not what I do
- insisting that I am right
- preaching
- making assumptions
- backing the student into a corner
- pleading or bribing
- bringing up unrelated events
- generalizing about students by making remarks such as “All you kids are the same”
- making unsubstantiated accusations
- holding a grudge
- nagging
- throwing a temper tantrum
- mimicking the student
- making comparisons with siblings or other students
- commanding, demanding, dominating
- rewarding the student
Proactive Discipline

How do you feel at the end of your teaching day?

Do you feel tired, but good? Do you feel like you have put in a good day’s work and you’re ready to go home, relax a bit and then tackle the chores that wait you there?

Or do you feel worn out, worn down and exhausted? Do you feel like you have battled your way through the day, “putting out fires” as they erupted in your classroom? Did you look forward to the end of each class, hoping that the next group of youngsters who walked through the door would behave better? Do you have a stack of infraction slips that you just can’t wait to turn into the office on your way out the door? Are you ready to get home so you can raid the fridge, find some chocolate, or alcohol because “you really need it?”

The difference in the way you answer these questions has a lot to do with whether or not you spent the day proactively, in control of when and how things happened in your classroom or reacting to one and then another and another situation as behavior problems interrupted your lessons again and again.

You can be sure that all of us have had both kinds of days. There are some teachers, however, who consistently experience the better days. These teachers have learned how to use proactive discipline to create a happy, healthy classroom setting. Their students feel comfortable and safe. Both the teacher and the students experience few surprises during the period. There are established routines for nearly every daily task. The students know what they are expected to do when they come into class.

PRO-ACTION is about being prepared and in control. It’s about knowing what is going to happen and when. In contrast, REACTION is about doing “this”, because some kid did “that!” It’s about dealing with problems as they come up. Soon you’re finding that a second problem comes along while you’re still dealing with the first.

Good preparation gives the teacher time to be proactive. This teacher doesn’t have to scramble between classes setting up materials, printing copies in the office, and hurriedly writing instructions on the board. Instead, because she has handled these details earlier, she is standing outside her classroom, welcoming each of her students as they arrive at her door.

Every child hears her call him by his own name. Before class begins she has good idea who is sad or happy today. She knows who is angry and likely to vent that anger soon. She knows who is going to need a little encouragement, who is going to need a little discouragement and who is going to need a lot of TLC.
The proactive teacher has planned her lessons so that she has a few minutes at the end of each period to get things ready for her next class before passing time. If necessary, she enlists the aid of youngsters in this class to help her set up for the next one. When the bell rings she is at the door again, reminding students about work that is due and sending them off to their next destination with a warm farewell before her next batch of students start to arrive.

**Proactive classroom control** begins with setting the tenor in your room in the first few minutes, before behaviors can become problems. If you miss the opportunity for a smooth, controlled start, you will spend more of your time trying to calm things down and regain control.

By following a routine that the students can count on, the proactive teacher heads off many discipline problems that the reactive teacher faces daily. Students arrive to class over the course of several minutes during passing time, but the children go right to work on a **daily start up activity** when they enter the room. The reactive teacher is trying to get attention when the bell rings. He starts the period by interrupting "free time."

When youngsters enter the proactive teacher's classroom they find their classmates already at work. As the reactive teacher's classroom fills up, students are talking, joking and waiting for class to start. Each period, each day the reactive teacher has to break their momentum, cut through the energy, and pull his students onto task. When the bell rings, the proactive teacher's class has been on task for some time, while her colleague is already in a reaction mode, trying to settle his students down.

While the youngsters work, the proactive teacher quietly takes roll, handles the start up chores of getting class going, and always announces her agenda for the period. Knowing this, the students are not excited by uncertainty and anticipation.

Her start up assignment provides practice in skills the students already know. It requires no instruction and very little explanation. Every student, regardless of ability, can complete the task in five to ten minutes. This routine has varied very little from the first days of the term when she took the time to walk them through the steps and practice her expectations. The children know where to find the assignment and what to do when they finish. Those who work quickly find time to talk quietly. Because the tone of the class has already been set, their voices are low and they rarely disrupt the others.

Across the hall, the reactive teacher has finally settled his class down. Less than five minutes into the period, he has already lost his temper. Now his students are waiting while he calls out roll. As he works his way down the list, casual talking begins. A student doesn't hear her name called because she is trying hard to go unnoticed as she continues a conversation the teacher "interrupted" when the bell rang. Again he has to react to misbehavior. His anxiety and frustration build. Class still hasn't started and he is reaching for the pad of infraction slips.
When problems do occur in the proactive teacher’s room, she uses a series of discipline steps designed to help the student change his behavior. In her classroom, a simple reminder is usually all that it takes. If that doesn’t work, she hands an infraction slip to the student. She doesn’t threaten to turn it into the office. Instead she says, “If you still have this at the end of the period you may throw it away.”

She controls the situation by putting the student in control of the infraction slip. He doesn’t have to see his name on the board. He doesn’t have to wait to see if she is going to put a check after his name. This child doesn’t worry about what the teacher is going to do next. He only has to worry about what he is going to do next.

At the beginning of the term the proactive teacher has carefully explained these steps. They are posted on the wall of her classroom. The student has just been given the opportunity avoid a detention or some other consequence. The slip sits right on his desk as a reminder that if he stays on task, all will be fine. Usually no further intervention is required.

On those rare occasions, when a student continues to have difficulty making appropriate choices, the proactive teacher takes the slip back to be turned into the office. Even now she is still helping the student understand that he owns his own behavior. She is not giving him a detention; he has forced her to take the slip away. It is easier for him to see that this is not something that she is doing to him. Someday he may even realize it is something she has done for him.

The final step in her discipline plan is to send the student to the office if the behavior doesn’t change in the classroom. The proactive teacher may need to use this step only a few times a year with the more extreme cases.

In addition to posting these steps and going over them with each class, this proactive teacher has a short list classroom rules posted on the wall:

1. Follow directions

2. Come to class prepared and on time

3. Leave gum, food and beverages in your locker

4. Keep your hands, feet and other objects away from others

During class she may feel a need to remind a student by whispering, “Debbie, do you see this list on the wall? Look at number 1. Are you doing that right now? … But you can, though, can’t you?”

Her students rarely feel threatened by these reminders. This teacher has learned to spot problems even before the student knows he is headed that way.

The reactive teacher sends students to the office time and again. Usually this is the result of confrontational escalation. Too often we see a youngster sitting in the office, upset and confused. When asked what he did, he says, “I don’t know.”
Then after talking it through we find out that something very minor progressed to a major problem in no time at all. The teacher asks a student to go pick up a crumpled paper that was thrown towards the wastebasket. Five seconds later they are arguing and the teacher reacts: “Get yourself to the office, now!”

The teacher scolds Jimmy, “Stop talking, turn around and do your work.” Jimmy tosses his head and snaps, “I wasn’t talking!”

“Don’t tell me you weren’t talking!” Like a trap spring releasing, another minor offense has just escalated into a major discipline problem. Another student will soon be headed for the office.

The proactive teacher, on the other hand, focuses on the behavior she wants from the very beginning, without drawing attention to the misbehavior. “Jimmy, the rest of the class is working quietly now. You need to turn around and get going with your assignment, too.”

There is not a lot there for Jimmy to challenge. He doesn’t feel threatened or rebuffed. If he becomes a bit obstinate and attempts to argue, the proactive teacher sees where this is headed before he does. She calmly repeats what he says before telling him again what he needs to do.

It is very difficult to argue with someone who repeats everything you say. If Jimmy is getting upset and anxious, if his voice tenses up and gets louder, she repeats his own words slowly and calmly. Instead of taking the confrontation up a notch, she brings it back down.

A proactive teacher doesn’t deliver ultimatums. During a classroom discussion, Mary is repeatedly turning around to speak with the students around her. “Mary,” her teacher directs, “I think it would be better if you come sit over here for the rest of the period.”

Mary’s face darkens and she folds her arms across her chest. “I don’t want to sit over there!”

Calmly, but firmly, her teacher repeats Mary’s challenge. “You don’t want to sit over here. I can understand that. I know you would rather sit with your friends, but I think we can help you stay out of trouble if you move over here.”

Mary becomes a little more anxious. She is reluctant to get up and move in front of her peers. “Why do I have to move?”

“Why do you have to move?” her teacher rephrases the question. “I have tried to give you the opportunity to make things work where you are sitting. You are leaving me with fewer and fewer choices. I would like you to come sit over here. Remember our first classroom rule, Mary. I expect you to follow directions.”

Mary reluctantly makes her way across the room. “This isn’t fair.”

“I’m sorry you don’t think this is fair. We can talk about this later when you’re less upset. Thank you for moving now.”
As always, the proactive teacher is hoping to see a change in behavior. She hopes that there is a way her student can stay in the classroom and not be sent somewhere else. Her principal knows that if and when she does send a student to the office, that she has really made an effort to make things work in the classroom. He is quick to follow up on the problem and support the teacher.

Once a teacher gets caught in the reactive mode, classroom problems seem to multiply. The stress builds and his patience drops. Switching from a reactive mode to a proactive one is not easy, but it can be done. The first step can be as simple as greeting the students with a warm and friendly smile as they walk through the door.
A PRIMER ON BEHAVIOR MANAGEMENT

We all imagine ourselves becoming a "master teacher". We bring to mind images of enthralled students enthusiastically participating in our lessons. We imagine our hard work and intensive study paying off in a highly rewarding series of years leading up to our retirement.

However, we can't do our job and reach the highest levels of professional practice if the kids won't attend to the lessons and be civil in their interactions with others. We can't teach the material (and kids can't learn it well) if our behavior management skills are underdeveloped. What might be the most crucial aspect of teaching (with respect to our career satisfaction and longevity), is the most complex and difficult to master. Proficiency in behavior management, unlike the teaching of subject matter, or interventions for students with learning disabilities, involves much, much more than following the procedures stated in the manual. Competent management of behavior involves developing excellence in multiple areas of "discipline": classroom design and arrangement; setting up and running a comprehensive classroom management system; counseling and communication skills; instructional practices for teaching new behaviors; being able to develop positive emotional bonds with students; knowing when and how to modify the vast number of procedures that we have placed in our "behavior management tool kit", and so much more.

When most of us entered teaching, we probably held the view reflected in what is known as "The Teacher's Motto". It goes something like this:

"A hundred years from now, some things won't matter; how much money was in my bank account, the size of the house in which I lived, or the kind of car I drove around...but the world may be a better place because I was important in the life of a child."

So why do so many teachers leave the field, or, if they stay, get mean and nasty in their interactions with kids? Sadly, a great many of them weren't "making a difference" because of a lack of skill in behavior management. They were less satisfied then they expected to be with their teaching careers. That lack of skill in managing student behavior created a gap between the image of the master teacher they had hoped to become, and the level at which they found themselves performing. They weren't making the positive impact on kids that they had hoped to make.

Indeed, how well you manage student behavior is crucial to your success as a teacher. The behavior that is exhibited in your classroom affects how administrators, colleagues, kids, parents, and YOU view your competence as a teacher. "Problems with discipline" is the number one reason that administrators fail to rehire teachers or award tenure. It is the main source of career-related stress as reported by teachers, and the number one reason that former teachers report for having left the profession.
The source of the problem is well known: The vast majority of teachers are sent into the classroom with absolutely \textbf{NO training} in managing student behavior. Others have been told by professors that if they implement well planned lessons based on a strong curriculum, the kids will sit with their hands folded and say "Teacher, please tell me more." While that practice certainly helps, we need more in our behavior management bag of tricks. Because the typical teacher has received little or no practical guidance in this area that is so vital to teaching success and satisfaction, many eventually begin to listen to tired and misguided educational folklore like:

- "Don't smile until Christmas." (or Chanukah, Kwanza, Ramadan, Chinese New Year)
- "Keep those brats under your thumb, and let `em know who's boss."

These negative views on how to manage the behavior of youngsters is in stark contrast to the views held by individuals who have just entered teacher training programs. When asked why they wanted to become teachers, the number one answer was something like: "I love children and want to help them." Noble stuff. And don't kid yourself; Teaching is a heroic act. We believe that we have the ability to make a difference in the lives of children, and thus can make a positive, long term impact on society. Our influence gets passed down through the generations, giving our acts, if not our name, a degree of immortality.

How do we "keep the faith" though when the threat from behavior problems to career satisfaction is greater today than ever before? The reason for the increase of frequency and intensity of behavior problems is open to debate. Depending on who you talk to, it is blamed on any of the following reasons (and more):

- abusive parenting
- poor parenting
- decay in family structure and values
- anonymity in large communities and schools
- loss of the influence of elders on youngsters
- psychological disturbances
- song lyrics
- popular culture
- exposure to societal violence
- failure of the juvenile justice system
- poverty
- romantic breakups
- availability of weapons
- boredom
- racial tensions
- invasion of body space
- inability to handle frustration
- drugs and alcohol
- computers
- televised wrestling
- video games
- a bad swimmer in the gene pool
- politicians/the political system
- big business
- chemicals
- radiation (from cell phones or the depletion of the ozone layer)
Whatever the reason(s) might be, teachers need to be more skilled in behavior management than ever before. Let's take a look at how a lack of skill in behavior management affects career longevity and satisfaction. Typically, poor behavior managers progress through a four stage process.
THE FOUR STAGES OF TEACHING
(related to behavior management skills)

Our present proficiency in the use of positive and effective behavior management strategies has an enormous impact on our success and satisfaction with teaching, the motivation and achievement of our students, and our career longevity. Our knowledge and skill with regard to managing student behavior determines whether and how quickly we arrive at the career stage of "master teacher". (Described below and then illustrated later in a "PowerPoint" presentation).

STAGE 1 THE SHINY NEW TEACHER

As the first day of our new career approaches, we're nervous, but believe deep inside that we are going to have a great year. We've studied hard under professors with Ph.D.'s and/or plenty of real life experience. We have the skills, and we also have the personal approach. We're going to be different than those teachers who were so rigid back when we were in school. We're going to love our students,...and they're going to love us. We're going to create a wonderful, nurturing, supportive, and productive learning environment.

STAGE 2 SHELL SHOCK

After an initial two or three day "honeymoon" period, the students' behavior starts to take a turn for the worse.

The kids have been excited about the start of the school year too, and vowed to do well. Some kids however, are unable to manage themselves for very long. They start to test the rules to determine limits and discover exactly how strict you are going to be about that pencil sharpening rule or "Keep hands, feet and objects to yourself" regulation. Your attempts to reason with the youngsters aren't having any impact. You find your lessons disrupted by some students while others complain about their misbehavior. You're having a heck of a time trying to keep structure and order.

Being unable to teach at the level you (and others) expect, you're frustrated and humiliated. This is the stage when teachers place brown wrapping paper over the window on the door so others can't look in (We write "Please knock and wait before entering. Learners at work."although those who walk by say "Gee that doesn't seem like the sound of learning to me."
The problems don't stay behind at school. They follow you home. You think about your problems day and night.

While you're not working in the salt mines or operating heavy machinery, you drag yourself into your abode and fall onto the couch...absolutely exhausted. In time, you manage to pull yourself up to plan for the next day, hoping in vain that your potentially interesting lessons will recapture the pupils' attention. When the time comes to rest your weary head, it's difficult to fall asleep. When you do so, it is restless. You toss and turn, seeing certain youngster's faces in your dreams (These are true night terrors!), and wake up strangling your pillow. Your first words echo those of some of your students..."I don't wanna go to school. I don't wanna to go to school."

You've just entered the early stages of "burnout". The kids (and others) are demanding too much of you. Emotionally, you just can't give anymore. You're worn out and feeling incompetent. You doubt whether you made the correct career choice. You think that maybe you don't have what it takes to be a teacher.

I've always liked the advice of "Ed Norton", the character played by Art Carney on Jackie Gleason's classic TV program "The Honeymooners". His advice to "Ralph" when he had a bad day driving the bus:

When the tides of life turn against you,
And the waves upset your boat;
Don't think of the way things might have been,

Just Lie On Your Back And Float!
At this point, you have several choices:

a) You can continue on as an ineffective teacher (Not recommended). You have to much promise to give up your life's dream)

b) You can take your friend's and family's advice and go into sales. (Not recommended). While surveys show that those who leave the teaching profession report being paid more and under less stress, they also report a sense of loss. They had the heart of a teacher, and now there is a "hole in the soul".

c) You can get out of the classroom, but stay in education by getting an advanced degree. Now you can become an administrator who evaluates the disciplinary performance of others, sends the youngsters who just arrived at the office back to their class, or suspends any kids who create too many problems. Or maybe you'll go into guidance counseling so that you only have to deal on a one- to-one or small group basis with kids. Or maybe you go on to earn a Ph.D., become a professor specializing in kids with behavior disorders, and set up a web site claiming to have never-fail techniques for working with misbehaving kids...all without ever having to actually work with them.

d) You can give up your ideals and values, taking the advice uttered in the teacher's lounge (OH NO!!). You decide to quit being kicked around (figuratively...I hope), and steel yourself to "get tough" and "show em who's boss". You decide to move into stage 3 (REALLY not recommended).

e) Skip to STAGE 4 (Highly recommended...but read about stage 3 first)

STAGE 3  THE DISCIPLINE DICTATOR

When teachers haven't yet mastered positive and effective behavior management practices they often turn to the "dark side". Like Darth Vader in the Star Wars movie, they treat their underlings in quick and negative ways. When in the teachers lounge (I've yet to see a room for teachers deserving of the term "lounge") they often refer to another movie, bragging about their "7 Dwarfs metamorphosis": "When I came to teaching, I was Dopey. Now I'm GRUMPY!"

I meet teachers stuck in this stage at many of my workshops. These are the ones who communicate to me (in disguised wording) "Hey McIntyre, if you want to be of any use to me today, give us better ways to intimidate these errant urchins. Give me toxic strategies that will strike fear deep into their deviant little hearts. I want my former students to tell the new ones: `Be afraid. Be very afraid'." They deny that they need to change their ways, thus proving the old statement: "Denial (Da Nile) ain't just a river in Egypt."

Certainly things seem to be better than when you were in stage 2. There is no more pleading voice and timid grin. You draw the line and you get compliance (even though it's superficial respect and kids are only obeying out of fear).
But despite trying to subdue it, something still claws at your insides (like that pork sausage you ate for lunch at the school cafeteria)... its that desire to be a master teacher. In this stage, you've become the teacher you swore you would never be. You're doing things you never imagined you would ever do to kids: exacting polite and respectful behavior in impolite and disrespectful ways; and demanding appropriate behavior via inappropriate actions. You're doing things that you won't allow your kids to do (e.g., yell, berate, touch in a non-respectful manner). Let's face it, the love is gone and you're just showing up for the paycheck.

"You do not lead by hitting people over the head...that's assault, not leadership." Dwight D. Eisenhower, 34th President of the United States; Allied Commander during World War II.

Why is it (for stage 3 types) that "punish them hard" is the best way to deal with everyone except ourselves? Why is it that they do things to kids that would cause us to file a union grievance if a supervisor did them to us?

I've heard these stage 3ers tell me "I was punished hard, and I turned out alright" (a statement I question when I watch them deal with student behavior). However, for those who did turn out "alright", it probably wasn't due to the punishment, but rather the conditions that surrounded it: an adult who did it with regret; an adult who when punishing, told them that they were being punished because they were capable of doing better; the positiveness of the punisher outside of those punishing moments, etc.

Teachers in stage 3 talk about how the "mean teachers" that they had in school who motivated them to do the work, achieve, and behave well. However, wouldn't they have advanced even more so under the guidance of a skilled and supportive teacher?

That said, stage 3 teachers...

At this point, you have two choices:

a) Keep the ball and chain on your professional growth, staying mean and justifying your actions by thinking of your students as "losers" and claiming "It's the only thing they understand." (Not recommended) You can also recruit new and struggling teachers who drop by the teacher's lounge where you and other burned out instructors go to complain and criticize. You certainly don't want any more skilled and well liked teachers in your building, reminding you of what you had hoped to be. If you decide to remain in this stage, purchase a "shock collar"... not for the kids... FOR YOU when you think negative thoughts about your pupils. Then hook the electrode to the seat of your pants.
b) You realize that behavior management is not a hammer and nail scenario. (It's more like splicing wires). You drop your belief in the authoritarian saying: "If a hammer doesn't work, get a bigger hammer." (e.g., "Oh yeah!? A zero doesn't bother you? Then you're getting a "double zero" young man.'), and stop using more of what already isn't working. Instead, you hang your hat on the advice from the U.S. Cavalry: "If your horse dies, dismount.". In other words, "If it ain't working, stop doing it!"

If your horse dies, **DISMOUNT**!

(If your intervention doesn't work, stop doing it!)

**DO NOT**

1. Stay on the horse.
2. Switch riders.
3. Move the horse to a new location.
4. Buy a stronger whip.
5. Tighten the cinch.
6. Try a new bit or bridle.
7. Say things like: "We've always ridden our horses this way."
8. Visit other sites where they ride dead horses in different ways.
9. Complain about the state of horses nowadays.
10. Blame the breeding.

You start again to look for answers and seek mentors. You're now seeking solutions instead of blame. You ask questions of skilled colleagues and drop by their classrooms during your planning period to observe them and pick up tips that you'll use with the kids. You read good books on behavior management, and attend local conferences. You work to convince the district to hold more staff development workshops on behavior management. Heck, you even decide to take a classroom management class at the local college.

Dang! You're feeling enthused again. Things are improving. You've realized that certain practices (e.g., lecturing, threatening, arguing, shaming, labeling, blaming, preaching, ordering) are counterproductive
and roadblocks to optimal learning. You're discovering and trying more effective and beneficial interventions. You're on your way to stage four, that master teacher stage.

**STAGE 4 THE SKILLED & CARING BEHAVIOR MANAGER**

You're there! You always knew that you could do it. The only regret is that you wish you had started your on-the-job study much earlier. Now you're familiar with "the 80/15/5 rule" (Any one technique works great with 80% of kids, somewhat with 15% of pupils, and not at all with 5% of your students) and realize that you need many behavior management tools, not just a hammer.

As Mark Twain said: "To a man with a hammer, everything looks like a nail."

You've moved beyond that stage. Now you're leading rather than pushing. You're talking **TO** kids, not **AT** them. You've come to realize that the only way to break your students' negative behavior patterns is to break your own first. Now when kids give you a fun house mirror version of appropriate behavior, or are grating on your last good nerve like #6 sandpaper, you're demanding (yet friendly and supportive), firm (yet fair), and **NEVER** do anything you wouldn't want done to you. You're no longer ashamed and embarrassed of your actions. You're rightfully proud of yourself.

**Remember: Use your super powers only for good!**

With entry into stage 4 you've come to know the perks of being a good behavior manager. You now sleep better at night and wake refreshed. Your first words upon arising are "Carpe diem" (seize the day). And boy, it feels great when the kids listen and achieve! You're teaching with confidence and charisma. Your sparkling personality surfaces, and you have enough energy left over at the end of the day to say "Carpe noctum" (seize the night).

**Why not go to stage 5 (the wise mentor)?** Now that you're so darned good, it's time to help someone who is struggling at levels 2 or 3. **Befriend that new teacher** (Remember how you wished for helpful colleagues in your first couple of years on the job?) or tell that crotchety colleague of yours to stop complaining and do something positive about it. Share the wisdom. If not you, who?

**Traits of a Stage 5 Teacher**

1. **Stage 5 teachers are able to hold their emotions during a behavior event.** Rather than striking out at a youngster who is being “inappropriate”, they are able to observe the aberrant behavior and say to themselves: “Here’s a kid in crisis. What can a caring professional such as I do to help him/her?” They then respond in an assertive, self-confident, and proficient manner.

2. **Stage 5 teachers are able to find something to like in even the “worst” kid.** Rather than focus on the student’s shortcomings, they focus on the imbedded positive aspect in the negative behavior (For example, a kid who beats up another for having insulted his little sister is showing family loyalty. Perhaps a replacement behavior for the pummeling of others is needed, but the protection of a younger sibling was admirable.) **These teachers focus on the progress, however small, that is being displayed.** They cheer for the student when s/he shows an approximation of the appropriate behavior.
3. **Stage 5 teachers use “symptom estrangement”** (a term coined by the behavior management pioneer Fritz Redl). They hate the behavior, but work with the pupil to create change. They realize that kids are a reflection of what they’ve experienced with adults before meeting us. Stage 5 teachers don’t blame the victim. They help him/her.

**SUMMARY AND CONCLUSIONS**

Order, limits, firmness and kindness...the qualities of a positive and effective classroom. However, comprehensive classroom management doesn't just happen. In the words of Haim Ginnott (1978): "Discipline is a series of little victories, not something that occurs overnight." It takes thoughtful planning, implementation and maintenance. Well developed plans implemented by a positive and respectful teacher result in well managed classrooms that are conducive to learning. Skilled behavior managers foster a classroom climate in which kids feel valued and motivated.

If you're not yet a consummate behavior manager, here's how to discover the reason why: **Look in the mirror.** In that mirror, you'll also find the solution to your problem. With reflective experience and study, you'll soon be turning confrontations into "carefrontations". That outcome is necessary for many reasons. Educators no longer have the same coercive and intimidating consequences that were once available to them. What is left to our disposal today isn't half as bad as what some of our kids experience at home, and additionally, the law now requires that kids labeled as emotionally or behaviorally disordered receive "positive interventions". It's also necessary for our own emotional health. If you're coercing kids into behaving, it's time to give up the ghost. In the words of Bob Dylan, "The times they are a-changin'."

**In ambiguous situations, kids look to us for guidance.** We are like the banks of a river: Our behavior management skills guide our students' energy flow. If the banks are too weak, the undirected flow causes disaster. If the banks are too constrictive, the flow backs up and causes problems elsewhere. We can provide the guidance needed by always keeping the following principles in mind:
THE 10 DEMANDMENTS OF BEHAVIOR MANAGEMENT
1. Always treat youngsters with respect and preserve their dignity.
2. Always do what is in the students' best interests.
3. Seek solutions, not blame.
4. Model tolerant, patient, dignified, and respectful behavior.
5. Use the least intrusive intervention possible.
6. Connect with your students and build strong personal bonds with them.
7. Instill hope for success (otherwise there is no reason for kids to behave in your class).
8. NEVER do anything disrespectful, illegal, immoral, ineffective, bad for health/safety, or you wouldn't want done to you.
9. NEVER give up on a student. Be perturbed with the actions of a student, but keep believing in his/her ability to change for the better.
10. CATCH KIDS BEING GOOD . . . A LOT!!
    (Check out the home page link on this topic to be sure you're doing it right)

    So what's the next step in your positive progression? For starters, spend time at this web site (BehaviorAdvisor.com) and others recommended in our link titled "Other web sites". There is a lot of great information waiting for you to discover and implement. All you have to do now is to take the challenge. It's time to move to stage 4. C'mon, we know you've got it in you.
ACTIVITIES

1. If you are presently teaching, in what stage or stages of development do you find yourself? What's your plan for progressing higher?

2. Devise a definition of "behavior/classroom management". What does it encompass? What is its purpose(s)? What are the components?

The following definition of classroom/behavior management (one of many to be found in the literature) is from Weber 1977 (no other reference information available).

"...that set of activities by which the teacher promotes appropriate student behavior and eliminates inappropriate student behavior, develops good interpersonal relationships and a positive socio-emotional climate in the classroom, and establishes and maintains an effective and productive classroom organization."

In other words we want to:
1. Create more of the "good" behavior
2. Get rid of the "bad" behavior
3. Have positive and caring interactions with our students
4. Create a classroom in which kids feel welcomed, valued, befriended, useful, challenged, respected, and physically and psychologically safe
5. Be structured, organized, and efficient.

How are you doing on each aspect? What plans will you make to accomplish each?

3. Evaluate yourself using the "10 Demandments". Strive to change (if necessary) so that all 10 items describe your professional demeanor and practice. Is there an 11th demandment that should be added?
Nice Ways to Gain Compliance & Help Kids Develop Self Management of Their Behavior

Ways to lure students into showing appropriate behavior, that also promote self control of one’s behavior.

Looking to gain compliance in ways that don’t make you ashamed to tell others about it? Looking for positive and respectful ways to lead your students into displaying appropriate behaviors? Do you want to improve your relationships with your students? Are you hoping to teach your kids to make good behavior choices, even when you’re not around? Those ideas are found on this page (and many other pages on this site). These simple techniques (so simple that a lot of teachers don’t believe that they’ll work until they give them a try) are nice things to try before going to your penalties for non-compliance and misbehavior. While these strategies may be initially ineffective with some of your "tough" kids, they gain effectiveness quickly. If you still find yourself having to go to your penalties, the youngsters come to understand that the nice interventions are their "warnings". They begin to respond to these strategies in order to avoid the penalties. And now, because you are treating them respectfully, they come to like you better and return the respectful treatment. (This outcome is even true with students labeled “behavior disordered”, as I found in a study I conducted with 308 acting-out students in self-contained classes in a large urban area. On a survey, they reported that they behave better and work harder for teachers who teach them well and show them respect.)

Another nice thing about these strategies is that they build inner control over behavior. Kids have to take the limited amount of information that you provide to them and figure out why you said it to them. They try to discern what the problem must be and what they should do about it. They become self disciplined “thinkers” instead of “stinkers”.

You'll find that these interventions are easily implemented and highly effective, creating and maintaining positive relationships with our kids. They provide you with ways to gain power and influence...all without having to resort to coercion. They allow you to be a teacher who is both effective and nice. You'll accomplish more than could ever be done with mean-spirited strategies.

More benefits: These interventions work with kids of all ages...3 to 83. If you find yourself getting in battles with your neighbors, colleagues, bosses, dry cleaner, deli server, or loved ones... these strategies can help to develop closer bonds of attachment and respectful treatment toward each other. Make a point of trying these ideas in your home right now, or your class tomorrow.
P.S. These strategies are "Psychoeducational" in that they:
- Promote the development of positive personal relationships
- Help the youngster to change his/her thought patterns and perceptions, &
- Involve the student in his/her own behavior change

You can find more of these type of interventions under the section on our web site titled "How to use psychoeducational interventions"

OK...Here we go...

Rephrasing Our Comments
How we word and deliver our comments to others determines the outcome. Our delivery of the message will have an enormous impact on our effectiveness, our relationships with our students, the self image of the other, and happiness with ourselves as teacher/parent. The "4 No No's" (see below) hurt others, blame, accuse, and create hard feelings...even if you get compliance. They are used by teachers functioning inadequately in the area of behavior management, and the many teachers who are disfunctioning in their bullying, coercive, emotionally toxic manner. The latter group may gain compliance from most kids, but defiant and "difficult" kids are likely to strike back. They may then be seen as heroes/heroines by your other students who resent being treated poorly. Oppressed peoples eventually rise up against their tyrants. Avoid sowing the seeds of discontent. Make your classroom the kind of place you envisioned when you were training to be a teacher. Mean teachers may brag about their caustic methods, and defend them as "the only thing they understand", deep inside they realize that they have lost the dream. They have become the teachers they hated when they were kids.

When we address misbehavior, it's important to delete four things from our commentary.
1. "Why Questions"
2. The word "YOU"
3. The words "NO" and "DON'T"
4. Lecturing/Nagging/Berating

Why? (that "Why Question" is OK...it really is seeking information and was said respectfully). All place blame rather than seek solutions. They make matters worse rather than better.

Let's look at each of the types of phrasing that we want to avoid:

"Why Questions"
"Why are your socks on the floor?" "Why is the toilet seat up?" (Gee. Perhaps I'm revealing too much about my home life here...Just kidding. We avoid these types of questions at the McIntyre homestead).

Do you ever find yourself asking kids "Why did you...?" Were you really looking for the reason behind the behavior, or were you starting your series of lectures, reminders, and put-downs? Think about
those accusatory "why" questions. They are "wolves in sheep's clothing". They appear to be seeking information ("I just asked him why! I don't know why he got so upset."). The real message is clear however. Asking "Why are you doing that?" really means "GOTCHA!!". Kids know "Why?" means "I've caught you being bad, and I'm going to let you dig a bigger hole for yourself before I really come down on you hard." Kids, realizing they are facing impending penalties, then lie, deceive, make excuses, or otherwise try to escape the inevitable punishment/criticism/chastisement. Our approach forces them into more undesirable behavior. Then we lose the focus, having to deal with the new excuses/misbehaviors that emerge instead of the original one.

The inquisitor is saying "I'm going to give you the opportunity to come up with some inadequate excuse and expose yourself more to my impending verbal pummeling." The word "Why" should only be used when a nice, concerned tone of voice is attached by someone who has true concern about the student's behavior.

"YOU"

Delete this word from your vocabulary when dealing with misbehavior. It attacks and hurts. It is condescending and controlling. It fails to solve the problem. So what should we use in it's stead??

What can you say in place of "YOU" when talking with kids (or a loved one with whom you're having an argument or to whom you will need to give a direction)? A particularly good way to prevent escalation of arguments and avoid putting others on the defensive is to state feelings or directions in the form of an "I (not) message". An "I message" involves stating what you would like to see done, how you feel, or what you need. Examples include "I need quiet in this room right now." (As opposed to "Why are you talking?"). "I'm disappointed in what I saw out on the yard. I don't expect to see that sort of thing now that we're in 3rd (6th, 9th) grade. I expect to see better in the future." (Instead of "You all acted like idiots out there."). We can also bond and connect with our pupils by using the plural form... the "We message" combined with 3rd person references ("all of us", "my students") in place of "YOU". So, instead of saying "You're being too noisy.", try "We all need to be quiet so that we can hear our classmate's report."

**Examples:**

Notice how the word "YOU" was eliminated from the statements found below, replacing that word with "I", "us", "we", and "our".

"You weren't listening. You're gonna end up on welfare."  
becomes  "I want my students to listen closely so that they can learn important things that will help them succeed in life."

"If you use your garbage mouth one more time, you're losing recess."  becomes  "I need to hear only appropriate words for the rest of the period. That way recess will still be on the schedule."

"You're a rude little bugger."  becomes  "I feel bad when my students speak in a mean way. Please tell me what you want in a polite way...that's the only way you'll ever get it. (knowing smile here)"
Notice how the utterances become less confrontational and condescending. Chances of getting compliance and cooperation increase. The wording can initially be a bit cumbersome, but becomes easier with practice. Let's all give a conscious effort toward improving our verbal directions to kids. (Did you notice how I avoided saying that "You need to improve your verbal commands."?)

**Review on I and We Messages:**
- Use a respectful, positive, and considerate tone of voice (and body language)  
  AND
- a 3rd person references to replace "you" (e.g., "my students", "everybody")
- "I", "me", or "my" when expressing your feelings or concerns
- "we", "us", or "our" to promote esprit de corp (& positive peer pressure)
  ("T.J., if we're going to be ready for Monday's show, I need everyone quiet and on their marks now.")

**Or**
If you need to be more directive in a situation:
- The student's name (we all like to hear our names)
- a request or direction to engage in an action (preceded by "Please")
- encouragement (to motivate youngsters to comply with directions)
  ("Elsie, let's keep working on our map game. You know, it's really starting to take shape. We're going to have a great game board for our geography group.")

**More on "I messages and Expressing Ourselves**
Most of us have been indoctrinated to believe that we have to suppress our emotions, and we feel guilty when they have erupted. Describing how you feel using "I messages" helps us to:
- display emotions appropriately in a moderated manner
- deal with pressure
- release pent up energy
- model appropriate behavior for kids

**EXAMPLES**
"Standing bear, please steer clear of me right now. After our little episode, I need a break."

"Sal, this isn't a good time to review your test. I'm a little tense & distracted right now. How about if we look at it after lunch?"

**INSTEAD OF:**
"What is wrong with this class? Why does it take you forever to open your notebooks? How do you expect to learn anything if you take up half the morning fooling around?"

**TRY:**
"I get impatient when we don't get to work promptly. I'm so excited about teaching you things that will help you succeed in life. I like to see all notebooks opened and everyone ready to begin when the bell rings."
INSTEAD OF:
"How can you all be so mean? That is a cruel thing to do, making fun of someone who stutters!"

TRY:
"It upsets me to see anyone in our group being made the brunt of hurtful jokes. I expect our class to treat all of its members with respect. We are a team."

What do you do if you say "I feel...", and a youngsters says "Who cares how you feel?"
(Use another "I message")

"I" MESSAGE ACTIVITY

A particularly good way to prevent escalation of arguments and avoid putting others on the defensive is to state feelings or directions in the form of an "I message". Restate the comments found below, avoiding any negative or even neutral use of the word "you". Tell how the behavior affects you by using "I", "me", "my" or some other self-referring designation.

What can you say in place of "you" when talking with kids (or a loved one with whom you're having an argument or to whom you will need to give a direction)? Instead of "you", perhaps respond with "my students." We can also bond and connect with our pupils by using the plural form of the "I message"...Instead of "You're all too noisy.", try "We all need to be quiet so that we can hear Toby's report."

Examples:

Notice how the word "you" was eliminated from the statements found below, replacing that word with
"I", "us", "we", and "our".

"You weren't listening. You're gonna end up on welfare."
becomes "I want my students to listen closely so that they can learn important things that will help them succeed in life."
"If you use your garbage mouth one more time, you're losing recess." becomes "I need to hear only appropriate words for the rest of the period. That way recess will still be on the schedule."

"You're a rude little bugger." becomes "I feel bad when my students speak in a mean way. Please tell me what you want in a polite way...that's the only way you'll ever get it. (knowing smile here)"

Notice how the utterances become less confrontational and condescending. Chances of getting compliance and cooperation increase. The wording can initially be a bit cumbersome, but becomes easier with practice. Let's all give a conscious effort toward improving our verbal directions to kids. (Notice how I avoided saying that "You need to improve your verbal commands."?)

**Your Turn**

Imagine the situation in which these comments are said and provide an "I message" replacement.

"You're outta your chair again."

"What's wrong with you?"

"Oh no...What did you do that for?"

"Whoa! You're doing it all wrong."

"You little brat."

"You better start paying attention."

"You're living down to your reputation."

"Why do you always do this to yourself?"

"You ain't never gonna be no honors student nohow."

"You're doing it all wrong."

"You're so clumsy (noisy, rude, nosy, etc.)"

"Bozo! Quit acting like a clown."

"Bonzo and Cheetah. Stop acting like apes."

"Godzilla and King Kong, why are you always breaking things?"

"Don't deny it. You're the only one who opens those boxes Pandora."
**Practice Makes Perfect**

Write down "You" statements heard being used by yourself or others. Rephrase them into "I" or "We" messages.

For other effective ways to gain compliance while respectfully communicating with youngsters, see the home page link titled "Nice things to try before you use 'do it or else' strategies"

Rephrase these "Negative YOU messages" using various points mentioned above:
"How can you be so mean? You're very cruel to make fun of someone who makes a mistake."

"What's wrong with all of you? Why does it take you forever to get ready? How do you expect to learn anything if you take up half the morning goofing around?"

"The milk spilled on the table. What should we do about it?" (Well, first of all, don't cry over spilt milk)

**EST PARTS ABOUT THIS APPROACH**
- Takes away
  - accusations & finger pointing (by teacher & students)
  - student defensiveness and excuses
  - the need to apologize later

- Helps everyone focus on what needs to be done

- Builds inner control over behavior
"You're outta your chair again."

"What's wrong with you?"

"Oh no...What did you do that for?"

"Whoa! You're doing it all wrong."

"You little brat."

"You better start paying attention."

"You're living down to your reputation."

"Why do you always do this to yourself?"

"You ain't never gonna be no honors student no how."

"You're doing it all wrong."

"You're so clumsy (noisy, rude, nosy, etc.)"

"Bozo! Quit acting like a clown."

"Bonzo and Cheetah. Stop acting like apes."

"Godzilla and King Kong, why are you always breaking things?"

"Don't deny it. You're the only one who opens those boxes Pandora."

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**Practice Makes Perfect**

Write down "You" statements heard being used by yourself or others. Rephrase them into "I" or "We" messages.
Avoiding Saying "NO" and "Don't"

When you tell a kid what s/he shouldn't be doing ("No yelling.", "Don't run.") you fail to give the student direction in what s/he OUGHT to be doing. There are a number of drawbacks to using these negatives:

1. It doesn't tell kids what behavior you want to see. Therefore, it won't happen.
2. Even if the youngster can tell you what s/he should be doing, has s/he displayed the behavior on a regular basis? Being able to describe the behavior verbally is much different from possessing the behavior in one's repertoire and being able to use it at the correct moment.

**IF YOU WANT TO A STUDENT TO DISPLAY A BEHAVIOR, TEACH IT TO HIM/HER. BEHAVIOR IS LIKE ACADEMIC MATERIAL...KIDS LEARN IT BY BEING TAUGHT. IF THEY'VE NEVER BEEN TAUGHT, THEY DON'T KNOW IT YET.**

3. Kids hear the action word in your statement. Telling a kid "Don't run." will guarantee that s/he and all other kids with him/her will immediate break into a run.
4. Parents and teachers often use the behavior they tell a kid to stop: "STOP YELLING!!", "No hitting!!" (as the adult hits the child). Expect the wrong message to be heard by the youngster. Yelling at kids **CREATE** yellers. Hitting kids **teaches** them to hit weaker others.

Lecturing About Behavior

Nowadays, as adults, we don't like it when someone is lecturing or nagging us. We didn't like it when we were students either. We felt as if the speakers were condescending toward us, and often ignored those people or rebelled against them. Other times, we felt small and felt bad about ourselves (instead of our actions). Lectures are either ineffective, incendiary, or hurtful. Keep corrective messages short and simple.

**For example**, instead of: "Fran, you've walked out of the door again without your backpack. Where's your head at. You're so busy gossiping with all your friends you're not even thinking about what you're supposed to do. Sometimes I think you'd lose your head if it weren't tied to your neck. C'mon. Get with it girl."

(Here's what Fran actually heard: "Fran, you've blah, blah, blah, yakety yak, blah, blah, blah...")

Try: "Betsy. Your schoolbag."

This technique avoids:

- nagging
- causing
  - embarrassment
  - negative self image
  - retaliation from defiant youngsters
Short statements motivate youngsters to:
- think about the limited information
- identify the problem
- devise a solution
- exercise their own initiative & resolve the problem

Read this long-winded commentary spouted from the mean-spirited mouth of a mean, bullying teacher. Then create a shorter, respectful direction.

"Hey Cosmo. COSMO!! Do I have to put up a neon sign to get your attention? What are you doing? (Cosmo looks blankly at the teacher.) Why isn't the notebook on your desk? Let's get on the ball here. (Student gives a look of recognition, meekly smiles, and pulls his backpack around to his desk.) Hey! Get to it. Let's go. (Cosmo shuffles through the materials in his backpack) You always take too much time to do things. It's this way every day. Get out your notebook now, not next week. (The embarrassed student nervously hurries to locate the correct notebook.) Put your hands on it boy. Geesh, I've seen faster moves from a 3-legged turtle with a hernia. Time to get a move on."

STATEMENT FROM A TEACHER WHO USED SHORT STATEMENTS WITH CHILDREN WITH AUTISM

The Use of Short Statements with Students with Autism

Introduction:
I am an assistant teacher at a school for children with Autism. My class is the oldest and highest functioning in the school so we try to keep school as academic as possible. This focus is because three out of the nine students in our class are graduating this year and next year two will try to be mainstreamed into general education classes. Our goal is to have the students be as independent as possible. They have to unpack by themselves, record their homework activities on their own and complete various other tasks with as little prompting as possible.

Problem:
Because our students are older and more capable, we don’t want to treat them like little kids and hold their hands through all of the decisions in the day. Yet at the end of the day we find that many of our students have not written down their homework assignments. This equated into a much larger problem for certain students who didn’t have their homework on the next day. For some students this act of not completing their work would trigger a melt down which in turn would keep them out of the classroom for short periods of time. This would make it even harder for them to catch up.
Goal:
The two other teachers and myself wanted to create a system in which all of our students would remember to write down all of their homework without making them feel as if the teachers were involved too much. We also wanted our students to do their homework on a daily basis so that they wouldn’t fall behind the others.

Implementation:
I will use short statements 5-10 minutes before pack up to remind my students to write their homework down at the end of each day. So now every day I say “Are there any homework questions?” or I will ask a student “I’m looking forward to seeing you homework assignment tomorrow.” And then in the morning I would use short statements to remind the students to hand in their homework to the assigned box. “I can’t wait to check the homework box in a few minutes.”

Outcome:
Every time I used one of my short statements like “Homework” or “Unpack” you could see the students stop whatever they were doing to think for a minute if they had done everything they were supposed to. And after about a week or two I didn’t have to use the short statements quite as much and the kids were still completing their work because the prompting helped engrave this activity into their schedule.

What happened? (Effective/ineffective? What might I try differently?)
For my students the short statement strategy was exactly what they needed. It was also the easiest strategy to implement. It worked very well for my students because they function on such a high level cognitively. When they hear the word homework they know that the next step is to write it down and do it for the following day. Where the lower functioning classes in my school might actually need to set up and send the activities home for their students because they have not yet achieved that level of independence. If you have a class that is capable of receiving the message from one short statement I would highly recommend the strategy.

Josh G.

STATEMENT FROM A TEACHER WHO USED SHORT STATEMENTS WITH A CHILD WITH ADHD

Author: Rosemary McQuade
Short Sentences

Josh is a seven year old second grader for whom my neighbor babysits for five days per week at her home. Josh is diagnosed with Attention Deficit Hyperactivity Disorder. It seems that each day Josh leaves her house, it is an absolute mess. If he has decided not to play with his toys and leave them all over the house as he usually does, he will make a mess of miscellaneous items around the house not belonging to him. He will often go into tupper ware cabinets and leave them all over the kitchen floor. He will take newspapers apart, page by page and leave them on the table spread throughout the house. Susan, my neighbor, finds herself continually discussing the importance of cleaning up his mess with him. She reports finding herself becoming frustrated as a result of these lengthy attempts at making him understand why he must clean up after himself. She explains to him that it is not nice to leave someone’s house a mess. She continues telling him that since he is the one making the mess, he too is responsible for its clean-up. However, at six o’clock, upon his mother’s arrival, he runs out of the house, leaving his mess behind for Susan to clean. Susan came to me asking for help.

I started to come over sporadically while Josh was there. The first thing that I realized was when Susan started going on her tirade about the importance of cleanliness, Josh was turned off right away. It was as if it was too much information for Josh to process. Instead of understanding and beginning his clean-up, he would begin jumping around, singing, shouting etc.
He had decided to completely tune her out. As a result, I informed Susan of the short sentence technique. We decided to no longer attempt to enlighten Josh with the importance of order and instead, we chose to simply say “clean up time!” at five o’clock. At this time, it was no longer an option for Josh to continue playing. He was not allowed to take out any other items after five o’clock. After five o’clock we simply sat and watched, periodically, making short clean-up statements. I was somewhat unsure of whether or not this technique would work with Josh, considering his history of an inability to follow instruction.

However, I was shocked at how well this rather simple technique helped. Josh no longer tuned Susan out. He would simply begin putting everything away. It helped that we first explained to him that after a certain time, we would no longer play. We explained that we would simply announce that it was time to clean up and therefore, there would be no more time to play.

We discussed the need for everything to be in order in time for Josh to go home with his mother. For a week, I observed and engaged in the “short sentence” technique. It was obvious that Josh preferred it over Susan’s long-winded explanations. It seemed that Susan was not the only one getting frustrated by these explanations. In fact, Josh was getting frustrated too and his lack of responsiveness seemed to be a sort of coping mechanism. In using a simple short sentence, Josh responded immediately. He no longer reacted inappropriately. He simply began to clean up from day one of the intervention.

In conclusion, I was impressed by the effectiveness of such a simplistic technique. One would think that this technique may only be effective if used with “normal” kids as it is quite uncomplicated. However, being that Josh is quite involved behaviorally and it worked despite his disorder, one can conclude that before technical or more involved interventions are used, the most simple of interventions should be employed. This behavior, as reported by Susan, no longer occurs and Susan is still using this technique almost one month after its initial implementation.

Thanks Rosemary!

GIVING INFORMATION

In "giving information", we utter golden nuggets of knowledge, but don’t tell the student what to do about it. The youngster has to figure out why the teacher said that utterance to him/her and devise a positive plan of action. Make the statements short and non-judgmental. Use them as nice "reminders" before you use more directive measures.

"Kelvin, records (CDs) warp if they're near heat."

"Lucinda, if you hit others, they won't want to be your friend."
"If you touch your tongue to metal on a cold day, it might freeze there."
"David, paste dries up unless the cover is put back on the jar.

"Cindy, alcohol dries up unless the cover is put back on the bottle."
(I have to tell this to my friends almost every Friday night.)
"Protractors are for measuring angles, not frisbee catch."

"Geometric compasses are for drawing circles, not javelin practice."

READ the two variations of teacher statements below, noting how the second utterance is a much nicer way to gain compliance. Which one would you like to hear if you were a student?

1a. "No, you can't paint without an apron."
1b. "I know you feel uncomfortable in an apron, but it keeps paint from ruining your nice clothes."

(Devise an informational statement):

"Don't throw sand!"

What might we say if a pupil jokingly hits another with a ruler?

How might we respond if we spot a youngster bending back the covers of a book?

**Cautions**

Avoid giving information that is already very obvious to an adolescent. It may appear condescending & sarcastic, resulting in rebellion or a snide remark. Use one word statements (see that section below) or say the statement as a quick reminder as you are walking away from the youngster. Don't hover over him/her.

**DESCRIBE THE PROBLEM**

Mention the problem that needs to be addressed without assigning blame or mentioning the student's role in the situation. We all make mistakes. Describing the problem is more advanced than the "Giving information" strategy. The child has no provided knowledge to use. It requires a higher level of thought from the youngster. S/he has to figure out how to resolve the identified problem. Give your kids a chance to learn from experiences. Non-emotionally and non-judgmentally lead kids to proper actions by pointing out the problem that has developed. Give hints and cues if necessary to help him/her through the thought process (even when you want to SCREAM!). (Gee, I'm lecturing now...Maybe I should have used a short statement here.)
EXAMPLES:

"Yuen Shing, the paint spilled. What needs to be done now?" (If he fails to react, you might give cues like "We have paper towels over the sink." Notice that you didn't tell him what to do with the towels. You merely hinted that they were somehow involved in the solution of the problem.)

"Ralph, the hamster is sucking at an empty bottle."

It's near dismissal and the books aren't in their place."

"Folks, lots of papers and items are strewn around the room. We need order, and I'd appreciate your help."

"The room is messy. I expect it to be different in 30 seconds."

"I hear answers, but I don't see hands."

"Keisha, the plant soil spilled onto the window sill."

SEND A NOTE

Notes are a great way to prevent misbehavior, nip it in the bud, or address issues. They are also good ways to communicate to a youngster who is frustrated or angry... times when they are less able to process verbal communication. The permanent and novel (at least between teachers and kids) form of communication often makes a more dramatic impact upon the behavior and emotional state of our students. Below, you'll find examples of different types of notes. Just remember though: watch the wording (remember that this note might be shown to others) and be aware that it is more difficult to convey emotion in writing...add a smiley face to the note (or to your face as you deliver the document).

Pre-emptive/Preventive Notes (Present these to the student(s) before the activity/event)
"Svetlana, remember to raise your hand to offer an answer or comment."
"Group 2: Bring your discussion to a close soon. Have your projects put away by 2:10 pm."

After-The-Fact (Present these to address a behavior/event after it has occurred)
"Chandra, please see me at your convenience, but before the bell rings."
"I was saddened to hear of your family's loss. If you want to talk, I'm available."
"T.J.: Insightful answers in class today. Thanks for contributing."
"Shoshana, thanks for helping me yesterday. It's greatly appreciated."
"Calvin, I let your rude remarks pass today. Just don't let it happen again tomorrow."

Humorous Reminders (To address issues that need resolution now...or in a couple of minutes)
Dear Willie: Please stop using invisible ink.
Your ledger.
Dear Josie: I get lonely without words.
Your notebook.
Dear Ali: I can't think straight. I need my mind organized.
Your locker.

"Offers Of Assistance" (for kids who are oppositional/defiant, unmotivated, or concerned with peer disapproval)
Here's a typical scenario: The teacher says "Hector, open your book to page 14 and answer the questions please." Hector says "I ain't opening no stupid book. This is baby crap." Hector is sending a false message to his peers...He's too bright for this material and rejects you for asking him to do the assignment. The true message is that the material is much too difficult for him. He has a choice. He can appear "Bad" or "Dumb". Which one would you choose?? Here's how to use notes to gain cooperation...

If you detect that the youngster needs assistance:
-Continue to teach the lesson while moving slowly toward the student.
-As you teach, write on a "post it" (sticky back) "Do you want help?"
(Be sure to use the word "want"...he can't admit that he "needs" help)
-Keep walking, but look back to the youngster in a couple of seconds
-Wait for a cue from him/her as to "Yes" or "No"
-If "Yes", write another note: "From me or another student?"
-Watch for a non-verbal reply (e.g., nod of head, pointing to someone)

Offers of assistance don't force kids to reveal that they need help and give "personal space" to oppositional kids while being supportive.

FINAL THOUGHTS

If we overpower students, what have we taught them? Essentially, they'll learn:
-"Don't think, just obey." (if you can't avoid or trick them)
-"I've got to get some power so that I'm the one who gives orders and bosses people around."

Do we really want our kids to follow the directions of others (e.g., child molesters, gang leaders, drug dealers) without thinking about it?

When possible, we should seek cooperation in our classroom, especially because:
-we don't have much left nowadays that can coerce kids
-it creates a positive classroom climate
-it teaches kids how to behave appropriately
-it brings joy to our teaching and their learning

Always emphasize and express:
- mutual respect
- recognition of the inherent dignity of others
- courtesy
- maintenance of the honor of others
- belief in the student's ability to improve

You get what you give, so give good things.

Remember the **ABC's** of behavior management: **Always Build Character**.
Examples of Classroom Use of "Nice Ways"

Author: Megan Weitz

Implementation 1: Describe the Problem

This procedure was implemented first because my students (12:1:1 self-contained 6-7 years olds in private school setting with learning disabilities, speech and language impairments, and emotional disturbances) were having difficulty being aware of problems in the classroom, especially thinking that they were done cleaning up when there were materials left all over the classroom, including the floor and the rug. My assistant and I met before we implemented the technique so that it would be twice as effective if we were consistent in our messaging to the students. The next day we began to try to “describe the problem” when it was time to cleanup at the end of free choice. We set the minute timer and when the bell rang, we waited to see which students would remember to start cleaning up their games and materials.

I noticed that there were little Playdoh crumbs all over one of the tables in our classroom. I said, “Wow! It’s going to be hard to find our lunches if we have all that Playdoh left on the table.” Immediately, Ben looked up and saw all the crumbs and began to sweep them together and put them back into the containers. My assistant saw that there were BINGO chips left all over the rug, but the box was already put away in the cubby. She said, “It would be great if we were able to find all those BINGO chips that were left on the rug the next time we want to play BINGO together.” Penny and Jim were talking on the rug, but heard my assistant mention that and put the chips away.

We have continued to use statements to “describe the problem” because we get tired of saying, “Jim! Put those BINGO chips away!” and realize that it is ineffective to always say the same statement to get students’ attention. We have found that these “describe the problem” statements are also effective when students are having difficulty remembering to unpack their homework folders and communication notebooks in the morning.

Implementation 2: Short statements

This technique was used because my students have such a difficult time remembering to unpack their backpacks in the morning, organizing their materials before they leave for their reading and math groups, and packing up at the end of each day. I found that long worded explanations were completely ineffective and after asking once or twice, short statements were the most effective. Penny needed to remember to unpack her lunch, communication notebook, folder, and eyeglasses each morning and pack them up at the end of the day. She often forgot at least one of these components, and constantly needed teacher support to get it all together. I created a checklist with pictures and taped it to the inside of her locker, and then could say, “Penny, your checklist!” She would check her list, and make sure she had everything. If there was still a piece missing I would say, “Penny, your glasses.” I also have another student who always tries to come into the room before going to his locker to unpack in the morning. If he gets in the room wearing his coat and backpack, and my assistant and I do not catch him before he gets started playing on the rug, it takes a lot of persistence to get him back into the hall to unpack. We have started a routine where one of us stands in the doorway and as Eli approaches the classroom door we say, “Eli, let’s unpack!” or “Eli, your locker!” This has decreased his efforts to come into the room first and it helps him start his day in a much more organized manner. Once he gets to his locker, he usually knows what to do (and if not, another short statement works!).
Implementation 3: Ripple effect

The “ripple effect” has proven to be a very effective self-awareness technique during my morning circle time in my classroom. We started off the year by having the students sit on the rug, but quickly found that their lack of personal space awareness made it much too difficult for everyone involved. Now the students bring their own chairs over to the rug and sit in a semi-circle around our meeting center. However, we still have another set of issues with the class, especially keeping their hands and feet to themselves, having a quiet voice, raising their hand to speak, and keeping their chairs flat on the ground (not tipping back in them). In order to have this be an effective technique, I made sure that my first few statements were firm and clear. When going through our schedule, I asked the students to raise their hand and tell me “what comes next” in our day. Unfortunately, I had several students blurt out the answer, so I said, “I love the way that Maggie is raising her hand with a quiet voice. Maggie, what comes next after reading?” After doing this twice more, my “interrupters” were desperate to be called on and raised their hands while jumping around in their seats. Next I said, “Marty, your calm body is showing me you are ready to share.” Then, two of my “interrupters” tried as hard as they could to calm their bodies and raise their hand. I immediately called on them to reward and reinforce their appropriate behaviors. My assistant and I have found ourselves not only using this often during morning circle time, but throughout the school day when trying to get students to show appropriate behaviors.

Thanks Megan!
Ways To Catch Kids Being Good

The most effective behavior management technique is the easiest to implement..."catching 'em being good". Research shows us that the quickest and most effective way to promote the display of appropriate behaviors is to reward them (e.g., touch, a smile, a "thank you", praise, points, food,...whatever would be reinforcing to those youngsters). We all like to have our efforts acknowledged, and will show more of that behavior if it brings us rewards. It's human nature to show behaviors that bring benefits to us. It is also human nature to like and want to please people who recognize our efforts.

Oh...If only I could convince more teachers to include this approach into their teaching style. Many just don't believe that such a simply implemented strategy can actually work. They insist upon continuing their negative approaches that aren't working (and often make things worse...creating the behavior they complain about and continue to be nasty toward...a vicious cycle maintained by them). If only they could hear themselves saying "How many times do I have to keep punishing you before you learn to do the right thing?" They use more of what already isn't working. If their ways worked, they wouldn't have to keep addressing the behavior over and over. (See the home page link on "What is ABA?" to understand why punishment does not teach kids how to show new behaviors)

Willing to give niceness a try? Here's how: If the youngster isn't presently demonstrating the desired behavior, set him/her up for success. Prompt the behavior, or request/demand it. When its displayed, recognize it positively (Don't hold a grudge or say "It's about time."). Be glad that you're finally seeing that elusive behavior. Recognize effort first, then focus on accuracy. Just be glad to see any rough approximation to the final desired behavior (To eventually focus on accuracy, see the home page link on "shaping"). Recognize the student's effort and progress.

When first building a behavior, reward it each time as quickly as possible. (See the page titled "Schedules of Reinforcement" for more information) As the youngster begins to incorporate the behavior into his/her repertoire, reinforce less often and less quickly (See the page titled "Schedules of reinforcement"). Be sure to check out the other link on this web site (www.BehaviorAdvisor.com) regarding "Problems with catchin' 'em being good and how to do it right".

Below, you will find summaries of, and excerpts from some homework assignments of the graduate students in my behavior management class at Hunter College. They used various ways of positively recognizing appropriate behavior. Most are practicing teachers who thought that they already used plenty of positive reinforcement in their classes. When required to "Go overboard" in recognizing behavior, they were amazed at the positive results (About 98 % of my students report positive results. Of the 2% who report no change in behavior or creation of worse behavior, most failed to implement praise correctly (Click on the boxes below to read the correct ways to give praise, and see the page titled "Nice ways to create self discipline in kids). Others had not yet built a positive relationship with their students and the youngsters were suspicious of the new way of treating them.
Secret Student (Summary of a report)

This technique is a great way to motivate kids to do their best (behaviorally and academically). Before a class, an activity, a walk back to the room, whatever... Draw a name from a pile of paper scraps containing all the student’s names. Keep this name a secret. The students know (from you having told them) that this selected person will be watched to determine if they have behaved well and are deserving of the reward. All student in your line or class hope that they have been selected, and then try their best to behave well. Upon completion of the task, the name of the student is revealed and a prize given if deserving. Be sure to compliment others who did really well (in comparison with their typical behavior). A variation: If one of your "more difficult" kids does really well, you might pretend that the drawn name was his/her's (even though you drew another name). It will help to promote more of this positive behavior in the future.

Melissa Bandes, a former student of mine, outlines how one would implement the "Secret Student" procedure:

Clearly state a behavior that one would want to see or change. For example, "I'll be keeping my eyes peeled for on-task behavior...working hard on the assignments that I give." Or, “I’m looking for quiet behavior...keeping our lips closed unless we have permission to talk.”

State a time frame. For example, “From now until the end of Morning Meeting”.

Choose a popsicle stick at random from a jar. Each student has his or her name written on a popsicle stick in that jar. Place the stick in your pocket.

Share the name of the “secret student” with the class after that given period of time.

Ask the student if s/he displayed the behavior for the whole time period.

If that student demonstrated the targeted behavior the whole time period, say "Thank you" and everyone in the class receives a reward. If the student did not follow through with the targeted behavior, give an encouraging statement like, “I know next time you'll try a little harder!” and then ask him/her to apologize to the class. (Dr. Mac's note: This form of the strategy could bring great shame and perhaps the wrath of the fellow students. You might want to consider rewarding or failing to reward only the secret student. You might also select three secret students, and award a point for each of the students who displayed the behavior consistently. This variation takes the spotlight off any one particular pupil. Each point contributes to the number of points needed for a whole-class reward, privilege, or trip. Melissa also notes this point...)

The one thing that a teacher must be sensitive to is analyzing whether or not all the students are able to handle the peer pressure put upon them as the “Secret Student”. If the name of a particularly sensitive student is in one's pocket, and that student does not meet the targeted behavior, I would recommend changing the name called to prevent damaging his/her self esteem or causing an avoidable disruption. Select the name of a student who was on task. Call the sensitive student's name when s/he has been successful.

Finally, in order for this experiment to work well, the teacher must have a positive rapport with the students and needs to have at least the beginnings of a strong classroom community. I feel that a major factor in the success is that the students and families at my school know me to be consistent, fair, and very caring.

Ideas for rewards- group games, table stars for each table, smelly stamps, stickers, “high-fives”, hugs, extra time at the park.
The Sticker Chart  (Summary of a report)

Make a large chart table consisting of anywhere from 20 to 100 boxes/spaces. In one or two places, draw pictures or write something that indicates that a prize has been won (a fast-food restaurant coupon, extra time on the computer, extra minutes of recess,...depending on whether this chart will be used for the whole class or one student). In some of the other spaces, write compliments like "Super job" and "Nice work". In some others, next to the prize space, you might write "You're only one space away from the prize!" Last, cover all the spaces with easily removed stickers.

Whenever your students have been good for 5 minutes, one period, or whatever interval is an improvement for them, have a student come up to remove one of the stickers to reveal the space underneath. If you are using the chart with one student (or multiple charts with multiple students), have the student remove a sticker after having shown effort (NOT accuracy) for a designated period of time.

Be sure to guard the chart diligently. Kids will conspire to distract you while others look under the stickers to determine where the prizes are located.

Catch em being good
Scene:  The Wedding

The problem:

This past Saturday, October 6th, I was a bridesmaid in the wedding of my best friends, Janine and Rick. Janine's six-year old goddaughter, Karly, was the flower girl and Rick's five-year nephew, Dillon, was the ring bearer. The hour before the wedding, the wedding party had gathered in a back room of the church. Karly brimmed with confidence - she'd been a flower girl twice before and was already booked for two more weddings in the next year. Dillon wanted no part of the whole thing - one hour before the ceremony, he was refusing to take part.

The wedding occurred at the tail end of his family's trip to Florida; while he had a wonderful time at Disney World, now he was ready to go home. He knew his mom wasn't happy - she felt uncomfortable being part of the ceremony herself, though no one wanted to leave her out. Plus, one week of the forced togetherness of a semi-dysfunctional family had exposed Dillon to lots of tension and fights. And now to top it all off, everyone wanted him to put on this ridiculous, uncomfortable penguin suit with a flower pinned to his jacket and a purple vest with palm trees on it! The vest and the flower took the cake. Everyone in Kindergarten knows that boys do not like and would never wear flowers or the color purple. Everyone said that he had to wear the flower and that all the big boys were wearing flowers and that he had to match his Uncle Ricky. His younger brother didn't have to wear any flowers - everyone tried to convince him that this was because he was a baby and only big boys wore flowers. What, did everyone think he was stupid?

Dillon broke his downcast, constant, silent, sullen pout only to scream out that his brother was not a baby - he was already three years old! And Dillon didn't really feel like matching Ricky these days anyhow. Ricky hardly ever came over anymore and now he was moving to Florida. Plus, Dillon didn't really understand why Ricky was marrying Janine - he knew they lived together and therefore were brother and sister - and brother and sisters can't get married. He wanted to marry Janine and didn't know why she always had to go home with Ricky. I want Janine to sleep in my bed with me, Dillon would always command when Janine and Ricky came to visit. So do lots of guys, said Dillon's daddy, but Janine always went home with Ricky. "I hate Ricky and Ricky hates me.", Dillon would yell. Janine told him that wasn't true, but Dillon wasn't always sure. So now, here Dillon was at this wedding - his first wedding for his mom and dad didn't invite him to theirs, he informed Janine.
Janine looked like a princess - but she wasn't paying much attention to Dillon - except to tell him sternly that he needed to wear the flower and the vest. Janine's dad made the vest himself to match Karly's dress. Janine said the vest wasn't really purple - but Dillon had eyes! Janine didn't seem very happy with him. No one did. He overheard someone say that he was ruining the whole day! He told his grandmother that he wanted to sleep over his Aunt Melissa's house tonight - she had a new puppy and two cats, but he knew he wouldn't get to stay there. And now everyone kept coming over him - including lots of people that he didn't know - but all they wanted to talk about was the stupid vest and the flower.

The goal:
Convince Dillon to wear his appointed outfit and drum up some enthusiasm, or at least some willingness to participate in the events.

The intervention:
Nothing was working, the ceremony was minutes away, and Dillon wasn't budging, let alone walking down the aisle. At this point, I decided to try the catch em being good technique with some Faber and Mazlish thrown in. First we needed some Faber and Mazlish (From the book "How to talk so kids will listen and listen so kids will talk"), for Dillon needed to have his feelings accepted and respected. Dillon was past the stage of talking about his feelings and therefore I skipped step 1 of listening quietly and attentively, and step 2 of acknowledging his feelings with a word, so I went straight to step 3 of giving his feelings a name. It can be really frustrating when people want you to do something that you really don't want to do, I said. Dillon continued to look down and pout. Then I feel sad when people get upset about it...I wish this whole thing would be over for you - and it will be over in twenty minutes and then we can throw that flower in the garbage. (By this point, we had already given up on him wearing the vest.) Dillon still sat silently. Now I threw in some, catch em being good: "You did such a great job at the rehearsal yesterday. I loved how you pretended to hold the pillow. And how you watched the pretend pillow so carefully the whole time to keep a close eye on the rings. You could tell that you really knew how important your job is today. Janine and Rick are so lucky that they have you as the ring bearer." Dillon sat up straighter. I noticed Karly had suddenly started paying rapt attention to us and walked over. "And Karly, you did a fantastic job yesterday, too - you held the basket so straight and did a great job putting the flowers down the aisle." Karly beamed. The wedding is starting so soon - everyone's rushing around. "Dillon, you're doing such a great job of sitting patiently and waiting. And Karly, you're all ready - with your gorgeous dress on, and your shoes, and your hair done so beautifully, and you have your basket of flowers all set to go." Then I noticed a bucket of tubes of colorful glitter glue on the window ledge. "Hey, did you guys see what's in the bucket?" I took the bucket off the ledge and started examining the contents. "Do you guys know what these are?" Karly picked one up and explained, "It's glitter glue". Dillon slowly slid off his chair and walked over to us and picked up a green tube and uttered his first clear, bright statement of the day: "We need paper to use these." At that point, we were notified that the wedding was about to start. Dillon looked up and said, "It's time to go." He walked steadily down the aisle, with Karly leading him by the hand, never taking his eyes off the fake rings of which he was put in charge. Afterwards when we all told him what a great job he did, he shyly looked up and smiled.

Analysis:
Positive reinforcement definitely works. In this case, the ultimate goal was having an excited ring bearer, though we were willing to accept compliance and participation. It is unfortunate that Dillon had to experience the feeling of disappointing people when his only crime was refusing to wear a vest and a flower that he felt was inappropriate for boys. Ideally, the positive reinforcement would have started much earlier and Dillon would have been congratulated every step of the way for all parts of his compliance - instead of focusing on what he was doing wrong.

This report was submitted by Katherine Phipps while she was a graduate student in the Department of Special Education at Hunter College of the City University of New York. It is used with her permission. Thanks Katherine!
The Sandwich Technique

Ken is a very shy and quiet fifth grade student who has enclosed himself in an emotional shell as if to hide from the world. We have been told by his parents and teachers that he has given up in school and does not attempt anything for fear of failing. He has been coming to our center for several months, has made some progress socially, and puts forth some effort. It is Ken who clicked into my head while discussing and demonstrating the "Sandwich" technique in class.

Usually when I work with Ken, I am fearful of saying the wrong thing. If he gets the least bit frustrated, he turns you off and shuts you out. I decided to try out the MBO technique in which the instructor points out something positive, offers constructive criticism and suggestions, and then follows up with a positive response ending.

Ken was writing a final draft of a paragraph. When he was finished, I noticed he began writing with normal size letters and continued to make them smaller and smaller. At the end of the page, the letters were almost microscopic. I said "Great Ken! You made the corrections, indented, capitalized the beginning of your sentences, and punctuated correctly." Ken just gave me a quick nod of the head. Although he does not physically show it, I believe Ken appreciates and needs this recognition of his efforts. I then said, "Ken, let's take a look at the size of your letters." "I know, I know," said Ken. I continued by suggesting that when he starts his spelling sentences to concentrate really hard on the size of his letters. Ken gave me a quick, "OK." Another teacher was going to continue working with Ken while I packed up to go to another classroom. I ended with a little boost of encouragement by saying, "Ken, I see a lot of improvement in your writing. Keep up the good work."

It wasn't until I was getting ready to exit the room that I realized maybe this technique did impact on Ken. He came up to me, which is very unlike him. He had his spelling sentences in his hand and wanted to show them to me. His letters were pretty much the same size throughout. I made mention of that point and encouraged him, saying "Now I know what you're capable of doing. In fact, I knew you could do it all along. I know I'll see more of this great penmanship in the future. He looked down, but I could tell that he was beaming with pride.

This technique worked well in this situation. I believe this is a great strategy to use when trying to correct difficulties in behavior and academics. It sets goals while recognizing the success that is already evident.

This report was submitted by Jody M while she was a graduate student in the Department of Special Education at Hunter College of the City University of New York. It is used with her permission.
Thanks Jody!

The Raffle Ticket System

(Award cut-up pieces of paper to kids who are on task, answer questions, etc. Don't be stingy. There will only be one drawing at the end of the period or day...thus only one prize given away.)

My students were very excited when I told them about the raffle we were going to hold in class. I explained that they would earn tickets for participation, cooperation, concentration, following class rules, and completed assignments. Throughout the day the children displayed interest, enthusiasm and motivation in all the activities that we did. They had a lot of fun. The raffle technique (as we discussed in class) was a huge success in class 2-202.

I was very generous with my tickets. During our morning routine I gave them out for following rules. The children were very motivated. They all wanted to earn tickets, and stayed on task without any problems. As I checked their homework, I gave out tickets for assignments that were neatly done with sentences properly punctuated. I also gave out tickets for following capitalization rules.
Immediately after I was done checking homework I gave a writing assignment. I was very surprised to see how aware the children had become of their punctuation and capitalization rules. They were working very hard to earn more tickets, and it also seemed that the more tickets I gave out, the harder they worked.

During reading, I gave tickets for participation. I couldn’t believe how many hands went up to read out loud and answer comprehension questions. We were having a great time. The pile of tickets in each student's large cup was growing rapidly.

Another observation that I made was that the children were helping each other earn tickets. They praised their peers as the tickets were given to their classmates. In math, we engaged in a cooperative learning activity. The children earned tickets for everything from working nicely together to completing the assignment. I was amazed at how efficiently they worked, how helpful they were to each other, and how well the cooperative project was done in each group.

By combining the raffle technique along with encouragement and descriptive praise I had created an enjoyable and productive day for everyone (including myself). My students were focused on task and completely engaged in all activities throughout the day. I gave out a lot of tickets and got back wonderful results. I will definitely do this exciting and productive activity with my class again.

This report was submitted by Keisha T. while she was a graduate student in the Department of Special Education at Hunter College of the City University of New York. It is used with her permission. Thanks Keisha!

Another Example of the Raffle Ticket System

I currently work with a child who has difficulty concentrating during our one hour tutoring session. She sits at her desk and gazes out of the window while I ask her questions concerning her previous week of classes. We typically take about five minutes and catch up on her goals achieved from the week prior. I also allow her five minutes for a gossip session about her new boyfriends and girlfriends. I realize she is going through a hormonal juggling act at the moment and feel this only helps her to concentrate once the session begins. Unfortunately, this isn’t always the correct assumption. One out of every three sessions, Susan becomes withdrawn and unfocused once I begin class work discussions. I decided to reward Susan with lottery tickets during any significant reaction or comments made regarding class work. My goal was to create an enthusiasm towards her curriculum material while incorporating rewards and fun.

Susan is a twelve-year-old girl who would enjoy having fashion and shopping as her only subjects in school. I tried to use this to my benefit by using a trip to the mall as the reward for accumulating a total of fifty points worth of lottery tickets. In our past sessions we focused on getting her assignments written in her notebook for each subject. This week we began by reviewing each of her subjects. I asked her to discuss each of her homework assignments. I was mostly concerned with her Math class. Math had caused her a great deal of difficulty in the past few weeks. “Susan, how was your Math class last week?” I asked. “O.K.” she replied. “Did you have any homework?” I asked. “Not that I know of.” She said quietly. I knew from the tone in her voice that Math was a bad subject as choice for discussion. I persisted, “Were there any homework assignments given out this week?” She stared down at her shoes. “Susan, can you show me your assignment book, please?” She handed me her assignment book hesitantly while staring at the ground. I knew she had written her assignments down for over three weeks. Four assignments were written in her book for Math. “Congratulations, Susan, you receive four lottery tickets! Each of the assignments is written so neatly in your book. How fantastic!” I exclaimed. She looked at me funny and wasn’t sure how to approach the situation. I was so excited because she stopped staring at her shoes. “You receive lottery tickets for each of your assignments written down. Once you receive fifty points worth of lottery tickets, you can go to the Stamford mall with one girlfriend and myself.” Each of the tickets had points given ranged from five to fifteen points and included a drawing of the mall on the opposite side. Susan was so excited with the lottery ticket idea. She showed me her assignments and apologized because some of the
assignments were missing. “I think I forgot to write down some of the assignments. I’m really sorry.” She stated.

“Susan, I see so much effort out into this assignment book and I like the way you are asking questions and discussing your class work with me. I enjoy spending this time with you.” I replied. Susan finally asked questions about her Math homework which of course earned her more lottery tickets. As the hour progressed Susan opened up to me about school, difficulties with her homework and her grades. She told me she felt like everyone was against her and wanted her to fail. The lottery ticket technique also gave her a sense of accomplishment and success. After the hour session I had a talk with her parents who were very receptive to Susan’s feelings. They also realized she was at a very difficult age of maturation. I suggested the book

**How To Talk So Kids Will Listen & Listen So Kids Will Talk** (Faber & Maslich).

Susan reacted to the lottery ticket concept very well. I believe I used this technique during a time when positive reinforcement was needed desperately. I realize this technique doesn’t usually provoke such reactions typically. However, once I teach in the classroom I will use this technique again with my students and hope for positive reaction.

This report was submitted by Melody Trava while she was a graduate student in the Department of Special Education at Hunter College of the City University of New York. It is used with her permission. Thanks Melody!

**A variation on the Raffle ticket system**

( in which a ticket is awarded for accomplishment of a particular task)

This variation on the random and frequent raffle ticket system provides one ticket for each accomplished task listed below. This way just provides a little recognition to those who put in the effort in my class.

1. Submitting homework on time.
2. Being ready for class (i.e., bringing in paper and pencil, having text book, being in seat within 15 second of bell).
3. Participating well in cooperative groups.
4. Scoring well on assignments (70% receives one ticket, 80% earns two tickets, 90% results in three tickets).
5. Turning in assignments on time.

Tickets are awarded at the end of class. Students write their names on their tickets and drop them into the lottery container. On Friday, two winners are drawn. Being a winner entitles the student to draw a card to determine which prize s/he won. Each card has a number between 1 and 7 (inclusive), representing the numbers of the 7 prizes. However, one card has all 7 numbers, which allows a pupil to win all 7 prizes. Additionally, the person with the highest number of tickets earned in a week automatically gets to pick a card. The prizes for this week include homework passes, NFL pencils, a selection of CD’s on loan during free time, fast food restaurant coupons, early dismissal for lunch, and options that are negotiated.

This report was submitted by Tamara K. while she was a graduate student in the Department of Special Education at Hunter College of the City University of New York. It is used with her permission. Thanks Tamara!

**Using non-verbal praise**

I have made an extra effort to give non-verbal praise to the students in my class. The results have been wonderful for both myself and the children. Students who once avoided looking at me have begun to smile back. I winked at one student and he squinted with a very puzzled expression. Later he came up to me and asked if I’d teach him to "do that thing with my eye". He couldn't master winking so he just blinks back at me. The "thumbs up", mouthing the word "good", and the "OK sign" have encouraged the students and I find them staying on task until they finish their work.
I've also done some mime with them. I pretended to put a smile on my face by taking it out of my pocket. If the child wasn't smiling I would then take another one out and give it to him/her or pretend to put it on him/her. The miming can cause a disturbance in the class, so I only do it when the student comes to my desk to have work checked.

I've discovered, by accident, another non-verbal technique that works really well with my kids. I ran out of stickers, so I started to put quick drawings of faces on their papers. They were characterizations of myself with a smile or a "WOW" expression. If I couldn't understand their handwriting I would draw a face with a squiggly mouth. They loved it! When I did get stickers they still wanted a doodle on their paper too.

What surprised me the most in doing this non-verbal experiment was that I began to feel better about my job. It felt good when a disappointed student came to me and asked why I had only put a check mark on his paper and no "Schulze face" as they call it. I turned his paper over and he was delighted to see it on the other side. He gave me a quick hug and ran back to his desk. The hug was a major breakthrough for this student who usually doesn't like any physical contact. This same student went back to his desk and made me a smiley face sticker for my notebook. It seems that little bit of non-verbal praise has gone a long way.

This report was submitted by Patricia Schultze while she was a graduate student in the Department of Special Education at Hunter College of the City University of New York. It is used with her permission. Thanks Patricia!

**Using A "Secret Message" To Promote Appropriate Group Behavior**

**Implementation:**

I began implementing the “Secret Message” technique at the beginning of the week. I gathered all my students on the rug and voiced my concern about how much I would love to see a change in their hallway behavior. I acted enthusiastically about having a secret message in mind and how I could not wait to share it with them. The room was in complete silence. My students were so eager to find out about the secret message, we could hear a pin drop on the rug. I further said that the only way they could figure out the secret message is to display appropriate behavior while walking down the hallway. One of my students raised her hand and asked to clarify the behavior I wished to see from the class. Another student jumped in and replied that the class would have to be quiet while walking in two straight lines. For every trip we successfully attempted, the class would be rewarded a letter. If the students did a great job, they could be rewarded up to four letters a day. The students all agreed to play the “game” and they worked together cooperatively while walking down the hallway quietly as a class.
Outcome/Result:

The result was great. I do not think I can come up with another strategy that worked as effectively as the secret message. They were so excited that almost all of them started guessing what the whole message was every time when I added a new letter up on the board. By the end of the week, the students had earned my secret message that said, “Let’s watch a movie together.” We had a great time watching the movie about the ocean. They enjoyed the movie and they were ready to start a new secret message for the next reward.

This report was submitted by Catherine Teh while she was a graduate student in the Department of Special Education at Hunter College of the City University of New York. It is used with her permission. Thanks Catherine!

Recognizing kids who behave appropriately

In addition to teaching math each day, I am the team advisor for approximately 110 students in our public school. This means that I am responsible for any discipline problems in any of the classes of the teachers whom I supervise (I am given one period of release time to handle this monumental task). I have to respond to referrals sent by other teachers regarding my students’ behaviors and schedule conferences to address them. Needless to say, it occupies more than the 42 minutes of time allotted to me each day. Our health teacher was having a difficult time with one particular class (populated primarily with “my kids”). I have spoken to her more than once on the personality of different students and things that I felt could be done for each. However, she never seemed to implement any of the ideas offered.

After the first couple of weeks she asked me to come to the class and speak to the students because she did not know what else to do. When I walked into the class I was surprised to see the number of students who behave appropriately in my class, misbehaving in this class. I quickly put the names on the board of those students who were behaving properly. Before I was done I heard one of the students, thinking that he was being warned or punished, say, “Hey, Miss T., I am doing my work.” I responded by saying, “I agree. That is why I put your name on the board. I am proud of you.”

As the students quieted down I said, “I have the same expectations of you in each class, not just in math. I am proud that I could put the names on the board that I did, and expect that there will be more names on the board when I return.” The health teacher agreed to put more names on the board as the class period went on. I returned the last five minutes of class and thanked the students whose names had been added. Each of the students were given a sticker that said, “I'm proud of you.” I shared with the teacher many of the techniques discussed in the class and in the text. I still stop by the class so that the students know I am aware of their behavior, but I have found the number of referrals given to me by that teacher decreasing over time. It proves to me that the teacher does in fact set the tone of the classroom and that many students will rise or fall to the environment in which they are placed. It is our responsibility as educators to set high expectations and encourage our students to meet those expectations.
This report was submitted by Lori Ann T. while she was a graduate student in the Department of Special Education at Hunter College of the City University of New York. It is used with her permission. Thanks Lori Ann!

Building positive peer pressure to behave well

1st way:
Use a kitchen timer (the type on which you twist the dial to a certain time interval and a bell sounds when it finishes the timing). Tell the students that you will be evaluating their behavior at the very moment that the bell sounds. Set the timer for any time between one minute and twenty minutes (shorter times for classes that misbehave more often). Do not let the students see the timer. You want the sounding of the bell to be a surprise. In this way, they are never sure when the "ding" will occur, and must stay on task and behave well at all times for fear that they might be off task or misbehaving when the bell sounds.

Upon hearing the bell, assess the behavior of the youngsters at that very moment. You can give each well behaved, on-task student (when the bell sounded) a point toward some prize, or give the whole group zero to 3 points depending on the percentage of students who were attentive, compliant, hardworking, and otherwise well behaved.

2nd way:
When the bell sounds, evaluate the group's behavior during the interval between bells. Award 0-3 points depending on their performance during that time period.

3rd way:
Use two kitchen timers set randomly. Have two different types so that the sounds of the bells are different. Use one to assess group behavior at the very instant that the bell rings. Use the other timer to assess behavior between bells. This double bell procedure provides double the incentive to behave well.

Catching kids being good when they're "never good"

Because I am teaching in what New York City defines as a shortage area, there are many students within the walls of my school who are without a teacher. Before taking the position in the resource room, I promised the principal that I would be available for coverage’s during my planning periods. This meant that for 1-3 class periods during the day, I would be responsible for substituting a class in which a vacancy exists. My naivety kept me from seeing the difficulty in what I was about to encounter. Without hesitation, I agreed to the principal's offer and confidently took my first coverage that afternoon.

My skepticism grew when I was given warning all morning about that particular group of adolescents. Experienced, burnt-out teachers filled me with angst over this responsibility, assuring me the only place for this group of students was the jail house. Upon entering the room, a teacher from across the hall greeted me. Pointing to one of the students, she whispered loudly, “If he misbehaves, just turn him upside down and mop the floor with him.” Disgusted with the attitudes of my colleagues, I politely shut the door behind me.
I greeted the children and stood quietly in front of the room, giving them a few seconds to stop fidgeting. Erika was making spit balls. Jermal was listening to headphones while singing along with the obscenities that were blaring from his cassette player. I couldn’t have thought of a better time to employ Lee Canter’s notion of “Catch ‘em being good.” I introduced myself and quietly pointed to the aim and “do now” I had written on the board. Throughout the chaotic first few minutes I remained calm and commented on the actions of those who were exhibiting appropriate classroom behavior. The students shuffled for their notebooks while I subtly continued to point out exemplary behaviors in the group. Rather than telling the class what I didn’t want to see, I showered them with reminders of the kinds of behaviors I did want. Eihab raised his hand and politely stated, “Ms. Jenkins, you do know that we are the worst kids in the school, don’t you? Ms. Helen tells us everyday we’s probably won’t even make it through ‘da eighth grade…”

A loud roar filled the room. I thanked Eihab for sharing and assured him that I was confident that they would be well behaved because I knew they were quite capable of it. I took the next minute or so going over what I considered to be exemplary behavior, asking the students to add their own opinions and definitions on the matter. At the heart of their responses was the sheer truth that other teachers appeared to have given up on them, expecting negative behavior. I listened. And wanted so badly to disagree and overlook what they were saying. Only their perceptions were accurate. I said nothing and listened attentively for the next few minutes.

My lesson plan would allow the students to write an autobiography. I asked the students to suggest what might make theirs an interesting account and continuously acknowledged those students who raised their hands. As I walked up and down each aisle, I showered the students with positive non-verbal signs of approval. The students worked diligently. Erica decided to join the group and I gave a significant amount of praise for this effort. Jermal had turned off his cassette player and was involved in his writing. Accompanied with a nod, Eihab let out a sigh that I took to mean one of relief. “You’re cool, man. Nobodies ever ‘dis cool to us.”

Room 220 was quiet during the writing activity. The only noise came from the turning of loose-leaf paper. The students were engaged. I approached each student and gave positive feedback on one specific element of his or her story. During the last ten minutes I gave the students the opportunity to share. Interestingly, those students who initially appeared to be disengaged were the first to share. I offered my sincere thanks to each student and commented on the wonderfully unique writing style of each volunteer. At the close of the period, I acknowledged each of them for listening so attentively while their classmates were sharing. The bell rang. Jermal looked up at me. “Miss J, this is the shortest forty-one minutes I’ve ever spent.” Smiling, I exited.

It was clear that other teachers had either given up on any attempt to instill a behavior management plan for this particular group or have never tried. My initial fear was that the students would catch on to my excessive recognition of effort. Keeping this in mind, I constantly reminded myself to remain subtle in my delivery. It was apparent that this technique was effective with the students. The students didn’t expect it, nor did they realize how quickly they were capable of exhibiting appropriate behavior. Much to my dismay, it was also obvious that they had rarely received such treatment and praise for their actions. I encouraged, recognized effort, praised, and listened.

My only plan for the future is to encourage my colleagues to do the same.

This report was submitted by Jessica J. while she was a graduate student in the Department of Special Education at Hunter College of the City University of New York. It is used with her permission. Thanks Jessica!
Catch ‘em Being Good (with Kids with Autism and PDD)

Currently I work as an assistant teacher at a small elementary school program serving students with Autism and Pervasive Developmental Disorder (PDD). Pervasive Development Disorder is a Disorder much like ADD but more severe. In my class I have nine students with varying social and academic capabilities. My class is made up of all boys varying in ages from ten to twelve.

Before joining the class I was told of the numerous violent tendencies that the students may display such as hitting, kicking and biting. In preparation for these events, I had to take a special class designed to teach various technique in restraining children who may become violent in order to protect myself and the people around me. My immediate reaction to having to take a class like this was I would have to be some kind of drill sergeant who runs a tight ship instead of someone who was there to teach.

With my head full of thoughts of dangerous kids I convinced myself that my first day with the students would be one where I would have to show them who’s boss so they wouldn’t walk all over me. I explained the rules and what the consequences would be for not following them. I had to implement the system immediately. For the first few days a couple of kids had no recess at all for not following the rules. After a week of being very consistent with enforcing the rule system the students were starting to listen to me, I thought. I realized they were just listening to me out of fear and not out of respect or consideration for others around them. Rather than paying attention to the daily lessons I noticed that many of the students were fixated on the marker that I kept in my hand. This was all because I used the marker to punish them by putting a check next to the student’s name on the board. After attending a couple of SPED 702 classes and realizing that being a feared teacher was not the type of teacher I wanted to be kind of teacher that. I decided that the “catch ‘em being good” homework assignment was the perfect chance to change.

As the students came into class the next morning I began my onslaught of compliments, “Great job signing in on the morning board, Derick.” “I really love the way you unpacked Henry.” “Wonderful job sitting at your desk Kyshua.” Rather than pointing out the negative I would find a student acting appropriately and compliment them on doing the right thing. Rather then putting a check by Derick’s name when he was out of his seat, I told all of the other students what a wonderful job they were doing sitting and following directions. Once Derick saw all of the positive attention the other kids were getting for following directions he sat down at his desk. When he did so I complimented him on a wonderful job finding his seat and becoming part of the group. He responded very well to this approach. Throughout the rest of the day I kept on “catching ‘em being good” and made sure that no one was left out.

The kids reacted so well to the “catch ‘em being good” approach that myself and the other teachers amended our classroom management system. We realized that we had three of the four components of a good behavior management system (rules, consequences, and consistency). We were missing the most important one, to positively reinforce good behavior. We had been focusing on the punishment component too strongly. Now instead of getting punishing marks by the students name we decided on a positive points system. The student would earn positive checks by their names and after they had earned enough points they could trade them in for special activities like extra computer time, first choice at snack, and so on. We also decided that after the students had earned 1,000 points as a class we would have a pizza party. It only took them two and a half weeks to accomplish this goal of a thousand points. I was giving most students up to ten points a day for their great work.
My favorite thing about the “catch 'em being good” approach is that it really motivates the students to try their best. It also provides a good model on how to interact and treat others.

In conclusion, I still have to use punishment in my classroom when kids are violent and being unsafe but it is a lot less than before. The whole vibe of the classroom is so much more positive than before and the students and myself are really creating strong bonds that make teaching and learning whole lot easier and more rewarding.

This report was submitted by Josh G. while he was a graduate student in the Department of Special Education at Hunter College of the City University of New York. It is used with his permission.

Thanks Josh!
PROBLEMS WITH CATCHING 'EM BEING GOOD
(AND HOW TO DO IT RIGHT)

If you were allowed to use only one behavior management strategy, I would recommend that you choose "Catching 'em being good". Because we have so little to hold over kids' heads anymore, and coercing kids into behaving doesn't really build inner control or help us connect with our students, we have to "go positive". By developing stronger bonds with your students, and making them feel valued, you will have to deal with less misbehavior. If you want kids to listen to your message, they have to like the messenger.

However, there can be pitfalls to using praise, rewards, recognition, and other forms of "positive reinforcement" (as the behaviorists [BOO!] like to call it). For example:

1. Concrete/tangible rewards can create materialistic kids who ask: "Why should I do what you ask? What's in it for me?"

2. Extrinsic reinforcement can destroy inner motivation. These rewards focus on outer control, and kids learn to "kiss butt" rather than think for themselves. They may become dependent on the adult. The youngster does not internalize the appropriate reasons for engaging in the desired act.

3. Kids who don't get rewards may act up out of resentment toward you for not noticing their prosocial behavior.

4. If you use a limited administration of rewards (e.g., winner of the week, best essay writer), this contest pits kids against each other and creates conflict, resentment, and rebellion. Most kids also realize that the same two or three kids will keep winning, so why should they even try to excel?

5. Kids' self-esteem becomes dependent on the approval of others, rather than their own self reflection. In our efforts to build self esteem and independence, we instead create "approval junkies" who constantly judge themselves by the approval of others rather than self-evaluating.

"Why do kids act up when I reward them?" That's a question often asked by teachers and parents. Here are some possible explanations:

1. The kids view you as a judge/evaluator who likes them today, but could give them a "thumbs down" tomorrow. The reaction could be their way to retain autonomy and self-dignity.

2. Perhaps you've praised the character of the youngsters rather than their actions. When you say "Good boy/girl/student/etc.", the youngster might think "I'm not always good. My teacher didn't see me push Kenny in the hallway." Believing the exclusive label to be inappropriate, they rebel against it. So
don't put labels on youngsters, good or bad. Describe the actions that pleased you. Let them label
themselves as "good boy/girl", etc.

3. The youngsters might be from cultural groups or homes that do not praise children for appropriate
behavior. The American middle class home is one of the few in the world that uses this strategy.
Youngsters from homes unlike the middle American may be unfamiliar or uncomfortable with the
receipt of praise.

4. Maybe the youngsters think that they have accomplished their goals and can now goof off.

5. Rewards tend to be given after structured tasks. Unstructured times often follow. The lack of
structure, not the reward (e.g., sugary foods/candies), might be setting them off.

So what do we do to avoid the pitfalls?

Try these suggestions:

1. Pair material rewards with social recognition (e.g., smile, positive touch, encouragement, stating the goal
that was achieved). In that way, personalized contact gains reinforcing value. Then start to remove the
material rewards slowly.

2. Give verbal recognition along with material rewards. Be sure to recognize or describe the
action/product, NOT the character of the youngster (Instead of "You're such a good artist.", try "Wow. That
beach scene you've painted is really eye catching. I love how the dark clouds add an ominous tone to the sky.
How did you decide to paint a stormy day at the beach instead of the usual sunny pictures we see?"
Identify the criteria they have met.

3. Ask youngsters what they did that deserves recognition. Have them identify the desired behavior and
self-congratulate, thus fading out our external evaluation. Link praise (your's and their's) to positive
attributions such as strong effort and effective study strategies

4. Encourage youngsters and express belief in their ability to accomplish or continue the behavior ("I
expect more of this class. You are capable of producing better work." and when they show it..."Now this is
what I expect from you folks. I'll expect to see this quality every day because with hard work you can do it.").
Kids try to live up to the expectations of those individuals they admire and respect.

5. Prepare students for positive feedback. Give advance notice by saying something like "I have
something nice I’d like to tell you. Would you like to hear it?" or "I’m about ready to give you a
compliment. How are you going to handle it?" This practice gives students an opportunity to reflect and
answer. They start to change to reflective rather than automatic responding. If they are awkward with
receiving recognition, teach them to say “Thank you.”
Is Your Praise Worthy of Praise?

It's one of the things that we professors tell prospective teachers to do when they finally get out there in the classroom. It's something that all future teachers imagine themselves doing proficiently. It's something that is essential for drawing the best from our students, and creating positive interpersonal bonds with them... Praising kids for doing the right thing. It's also something that often fails miserably. A large percentage of praise that is given profusely by well-meaning teachers is ineffective or even counterproductive. But why?

On the other end of the spectrum, I've had teachers tell me "I don't believe in praise." Knowing what we know now about the effects of well-formulated praise, that"s like falling off a cliff and saying that you don't believe in gravity!

I'm guessing that that in their minds they"re thinking "We're born with only so many nice things to say in us, and I'm not wasting them on somebody else's kid." When I inquire as to how they reached their conclusions, many of these self-proclaimed "no-nonsense' teachers insist that "I tried it & it didn't work." ...And I've got to believe that for them, it didn't. But why not?

Emerging research (Conduct an internet search for "Effects of praise", but select the readings that apply to the classroom, unless you wish to read religious sermons) is revealing something interesting: Not all types of praise are equal in their positive impact. In fact, some types of praise actually reduce the chances of the recognized behavior happening again in the future! Yes, Praise works... but only if we know how to give it in its correct forms.

Before we get into the evidence base, take a moment to consider the four different utterances found below. All are attempts to praise. According to the evidence, only one is an effective type. The other three will actually reduce the chances of the student displaying the desired behavior in the future.

**Here's the situation:** A student submits a homework assignment for the first time in two weeks.

1. "Let's see... There's a complete heading, all questions have been answered. Thanks Fran. I'm looking forward to reading it tonight."
2. Holy Moly! My heart! (Teacher clasps hands over heart and puts a shocked look on her face, followed by a sunshine smile). What's it been, Fran? Two weeks with nothing? It's great to see that you've finally turned the corner & are submitting homework again. Keep it up.
3. Alright Fran! Every answer is correct. Let's give you credit in the grade book right away. You've got the smarts, so I expect an assignment every day now.
4. "Alright, Fran! (The teacher gives a "high five" hand slap to the student, and a smile appears on the youngster's face). This is one good-looking paper you just submitted. See? You're a smart kid. Keep these homeworks coming, and you just might see that passing grade."

While I won't give you the answer, I can tell you that the correct form of praise is not found in numbers 2, 3, or 4. (Ha!) But what is it about those three responses that make them poor choices for recognizing and promoting positive actions? Give it some thought.
Praise that Backfires

Did you go to elementary school in the USA during the 1990's? If so, quit bragging on yourself, because we’re going to bring you down a notch. The belief in many professional circles back then was that if kids felt good about themselves, they would get along with others better and achieve highly. There might be something to that belief, but in practice, kids in many schools were told that they were special because they liked the color green, or enjoyed macaroni and cheese for lunch.

This recognition of superficial and insignificant traits is not much on which to base one’s self esteem and self concept. Kids were also given lavish praise for non-demanding accomplishments...

– "Holy moly! Fantastic job of passing out papers!
– "Great Googily Moogily! That’s a spectacular job of hamster cage cleaning. You’re a super-duper pooper scooper!"

This sort of praise gives younger students incorrect perceptions of their performance. After about age 7 or 8, as their cognitive framework changes, they simply dismiss it as being insincere (a reflection of the person who said it).

When youngsters accomplish a non-challenging, non-academic task/duty of which they are quite capable, it is best recognized with? That’s right... "Thank you." (If the contextual cues make the reason for the gratitude clear.) We could also offer an acknowledgement of what has been accomplished: "Your paper has the proper heading, and the penmanship shows the proper form." Hmm... If we acknowledge good penmanship, should we also attend to good penmanship? But, I digress... Let’s move on.

During that last decade of the 20th century, it was also believed that if kids were told that they"re "smart", they would feel that way about themselves, love learning, and achieve at a high level. In fact, research showed that doing so actually LOWERED achievement!

That outcome leads us to the next type of counter-productive praise: Labeling.

Truth in Labeling

Carol Dweck is the name to use as a search term for this type of praise. She and her colleagues have investigated this sort of praise with a wide range of age groups, all with the same result: If you give a kid a label ("Smart", "Good kid", "Great artist", etc.), it will actually create performance that is in opposition to that label. Huh? ("Eh?" for our Canadian colleagues) Who wouldn"t want to have these wonderful tags placed on them? What could be wrong with saying: "Good boy." and "See? You're a smart kid."?

First of all, few kids (& adults... except for me and you) are fully "Good" & "Smart". Realizing that they’re not deserving of the label, they chalk up your statement as being insincere, unknowing, or manipulative. We look bad if the student is thinking: "Teach, you're not very "with-it". I got all these answers by text messaging my sister while you were helping other kids."

Dweck found that labeling kids as "smart" resulted in them avoiding academic challenges, and a reduction in their achievement level. Why? The thinking is that kids accept labels given to them by important adults (and groups/peers). In kids’ minds, if someone is smart, information and knowledge comes easily to them. Academic tasks are easily accomplished. In that case, if someone has to struggle, that proves that s/he is not smart. The image, built on thin pillars, comes crashing down. Kids choose easier tasks, avoiding learning challenges that might require cognitive effort, in order to preserve their poorly supported self-image. They therefore reduce their acquisition of information and knowledge.
Second, the positive label may be at odds with what has been persistently heard by the youngster in other settings and at other times in his/her life. They think "Wow, you've got it all wrong! That label doesn't fit comfortably at all. Let me show you who I really am." (Based upon what they've heard throughout their lives.) The student then displays behavior consistent with his/her present identity (e.g., puts the head down on the desk, destroys the paper that brought the positive comment from you, talks with others, plays with items, etc.).

Avoid assigning labels ...even positive ones like "Great actor", "Nice girl" & other ones you've heard, like "Phenomenal speller", "Super swimmer", "Wonderful reader", "Great helper", and so forth.

I remember, back in 9th grade, hearing from peers and adults: "Wow, Tom, you're a GREAT swimmer!" And I was. My strong performance was not due to our coach who knew quite a lot about track and field events, but nearly nothing regarding swimming. He would just have us swim lap after lap in the pool. I learned my swimming form by watching movies (yes movies back in the day, not videos) of Olympic swimmers. I didn't know what they were doing exactly, I just tried to look like them when I swam, emulating their form. It's sort of like when I go to a ski slope now; I find a better skier and follow him/her, moving like that model, and I ski better (even though I don't know exactly what I'm doing differently).

Anyway, I always came in first in my best races. At the end of the season, it was time to go to "The sectionals" in which I would swim against kids whom I had never competed before... kids from swim conferences outside my own. For the first times, I came in second in my best races... touched out by some guy named Condino (I still turn my head and spit whenever I think of that name. I apologize to any readers with that name). It was shocking, but I vowed to swim better when I got to the state championships. I didn't know what to do differently... I would just "swim harder" (whatever that meant).

At the state championships, I got my butt kicked (figuratively speaking), coming in 8th and 11th in my best races. Guess who didn't join the swim team in 10th grade? Yep, me. But why?

I had that stellar label, but it was a house built on sand. I had been told that I was a "Super swimmer". Outside my district, I witnessed super swimmers and I wasn't even in their league (literally and figuratively speaking). I obviously didn't deserve my label and I didn't know how to get better. (I know what you're thinking: "Don't tell me McIntyre. Tell your therapist."... I do, every Wednesday at 4:15.) I see that our session is over. Let's move on.

The approach that we want to undertake is to avoid assigning labels; even positive ones. Withhold the verbal rubber stamp. Instead, describe the ACTIONS that deserve positive recognition. Let kids (re)label themselves if they wish to do so.

Let's take a peek at what this replacement praise would look like. You might say things along the lines of: "I like the way that you...", OR "Ooh. The (noun) is very (adjective)." For example, "You're a wonderful writer." Becomes "This piece is so colorful and captivating. The passages bring vivid images to mind. That's because now you're adding a wide variety of adverbs and adjectives. One other thing; let me compliment you on creating some very imaginative situations."

Here are some other examples of specific, descriptive praise:

- "Excellent prediction, Farrah. You had to be listening closely to be so detailed in describing what you thought might happen next."
- "Lamont, I'm impressed with how you went to the glossary to find definitions for new words."
- "Hey. Jackson. C'mere. I gotta tell ya... I'm really impressed with your decision to return to class after the fire drill when others ran off to the hills. It takes a lot of self-control & maturity to make these types of responsible choices. Give yourself a pat on the back after you get one from me."
Do we ever use general praise? ("Good.", "Nice.") Of course, IF the student knows what he or she has done given the standardization of routines, and contextual cues involved in the situation. Otherwise, you can almost see the question marks appearing above their heads.

Save your labels for your file folders.

**Other Contra-indicated Types of Praise**

Other forms of praise also attempt to fit a square peg into a round hole. Here are a few of the violators of effective recognition:

**Perfection Praise**

Why not focus on perfection? It's what we want... Isn't it? So why not recognize exceptional performance in statements like: "You got all check pluses on your homework this week.", "Good boy, Calvin. You worked in your group without once causing a problem.", AND "James: 100% ...The only one in the class. Well done."

Besides increasing the risk of James getting panned by bullies after school, focusing on "nearness to perfection" promotes view that:
- Scores & grades matter more than learning.
- Perfection must be attained & maintained at all costs.

In pursuit of that praise, kids often do what? Right...cheat & use deceit (due to performance anxiety and fear of failure).

Others avoid engaging in academic or behavioral challenges in which they might fall short of "perfection". Pupils who recognize that they can't always be perfect, or even come close to it, don't even try. Our attempts to spur motivation destroy it instead.

Indeed, it is the rare individual with a mentally healthy mind who can lay claim to an infallible level of excellence... We won't run out of fingers and toes counting them. Let's see, there's the Pope, the Dali Lama, you and me (and I'm not all that sure about you).

The solution? Praise effort. From effort, comes increased achievement (with our skilled instruction helping that effort to pay off). You can also praise progress, assuring that the student is aware of what progress has been made, and knows what contributed to that progress, so that it can be displayed again).

**Backhanded Praise**

Avoid praise that hints at past problems. Below you'll read a few of this genre that were overheard (by my graduate students in the behavior disorders program at Hunter College while they were conducting fieldwork) in the New York City Schools. (Note: The vast majority of NYC teachers are skilled and knowledgeable, but some classroom adults need to work on ways to avoid creating the behaviors they complain about.)
"Monique! Good to see you arrive on time for once."
"Jonaya: I'm elated to see a completed journal reflection today. It's the first one you've done it all week."
"Wow. I'm shocked...Flabbergasted! I never thought you'd pass that exam!"
"Welp, it took forever; but you finally got the steps in the right order."
"Wonderful. This is the first time you've ever earned all your points for the morning session."
"You were paying attention today, Jazz. I just might have to change my opinion of you."

With one verbal hand, the teachers were offering positive recognition, while the other oral hand pulled it away. Keep praise in the present time frame. It's OK to reminisce back to when the youngster has been successful, and then say "This continues to show me what you're capable of doing."

Controlling Praise
Back in the 1960's, Haim Ginott said that encouragement and showing belief in a kid is even more powerful than praise. It certainly trumps "controlling praise" in which one directs (rather than encourages) future performance. Instead of saying "I know you can do it.", it simply says "Do it." It's pushy rather than supportive. Here's an example: (A student is writing on a notebook computer) "Dajour, what I'm seeing on the screen is excellent grammar, indentation & punctuation. Don't stop now... do it throughout your composition."

Why the big brouhaha over this apparently fine line between encouragement and control? Research (Kast & Connor, 1988) with 3rd, 5th & 8th graders found that "Keep it up." controlling praise destroyed student motivation to continue with the desired behavior in the future.

So... instead of "Nice penmanship in your journal entry today. You should write that legibly every day.", we would state "Nice penmanship in your journal entry. With those well-formed letters, the reader can give full attention to the content."

Unearned Praise
What can we say when the student submits something, but it's not up to par? When teachers praise substandard (for that student) academic or behavioral performance, it conveys the message that "The work is fine... for a person of your low ability."

Yes, we're glad to have had the youngster put forth some effort in the creation of a product, but it's not yet deserving of full-fledged positive recognition. You'll want to consider using "partial praise" that recognizes what has been accomplished, and then spurs better performance. For the seated, but distractible youngster, we might say "You're in your seat at the bell. Getting the materials out of your pack will show me that you're fully ready."

We could also use a "criticism sandwich". You'll find information about that practice on the "Giving Criticism" page. but I"m saving that procedure for the next e-mail. That future "B-list" communication will address other aspects of praise and move into criticism that helps, not hurts.
Summing Up

So, what are the "take aways" from this reading? When praising, remember to...

- Avoid giving labels.
- Use descriptive praise. Describe the actions that, as a teacher, make you happy. Avoid saying "Good" or its vague & nebulous variations ("Nice job." "Great.") in isolation. Be specific. Give details. Elaborate on what you mean by "Good". Identify the action deserving of praise.
- Keep praise in the present. If you are also going to talk about what happened in the past, be sure that you only mention the positives.
- Praise effort.
- Praise progress.
- Say praise in a tone of voice that conveys sincere appreciation for the action.

OH YEAH... The answers/explanations for those situations at the beginning of this post... Here they are:

1. In the situation with Tony: After the teacher gave some vague and nebulous praise to other pupils as she strolled by them, she gave loud and "over the top" praise to the two youngsters at the back table. Tony, was a bit curious (Who wouldn"t be?), and rose from his chair to see what all the hullaballoo was about ("What"s all the hubbub, Bub?"). The teacher should have:
   - Used descriptive praise toward other students as she walked around the classroom.
   - Kept her voice low in volume.
   - Used specific recognition of what was wonderful in the drawing.
   - Said that she was impressed, and ask the students to tell her about the drawing (self recognition and self reinforcement).
   - Left with a note of encouragement ("I look forward to seeing it when you've put on the finishing touches.")

2. In the situation in which our colleague praised the girl's desk work, she praised the speed with which the young lady finished. Typically, we are looking for reflective thought and checking of one's work, not quickness. She also gave "perfection praise" ("This one is right.")

Kids minds are fragile. Let's be careful out there.
How to compliment praise-resistant kids; students who (at present) reject our positive verbal commentary. Let’s begin.

Has it happened to you?… You praise a student who, upon hearing the compliment, goes bonkers, showing the behavior that keeps you up at night. Didn’t the textbook say that praise is supposed to create more of the behavior that we positively recognize? Other than having blundered by phrasing it in one of the counter-productive forms mentioned in the previous post, why might praise fail with many kids? Why are they immune, or even hostile to it?

Let’s round up the usual suspects:

1. The teacher fails to be consistent & persistent in providing positive recognition. When it does pop up, students suspect that today’s praise has an ulterior motive. They are wary of the teacher’s intent, suspecting that it might be manipulative rather than sincere.

2. The teacher offers summative praise that uses the past tense (“Those are nice descriptive words that you wrote in your essay.”, “I like the elongated brush strokes that you used in your watercolor painting.”) The student perceives that s/he has completed the task adequately, & figures that s/he can take a break or quit.

3. In schools, praise is usually given by a superior (adult). If the teacher is unable to manage the classroom and prevent bullying (physical, intellectual, emotional), well-behaved, motivated students become fearful. Of what? Kids in the class know full well that the individuals who wield the power are the 3 kids in the back corner, not the teacher. If they are praised by a weak teacher who is victimized by the “tough kids”, it means that they are of an even lower status than that instructor. For self-protection, they must align themselves with the stronger force, emulating their actions, laughing at their jokes, and supporting their negative efforts. They would love to work hard and earn praise, but doing so would set bring on the ridicule and bullying of the “bad kids”.

4. At the other extreme is the hostile/aggressive teacher who focuses solely on behavior, but does not connect personally and emotionally with his/her students. S/he is viewed by the pupils as being judge and jury, not someone who truly cares about them as people. The kids sense that their innate human dignity is non-valued and disrespected. A student’s thoughts would resemble this one: “Oh yeah. I’m your golden girl right now, but I’ve seen you flip like a pancake on kids… praising them in one moment, and chastising them in the next. We’re not ‘your kids’. You’re not unswervingly supportive of us. To you, we’re just chess pieces to be moved around.”

5. Sometimes, the teacher is not liked or respected by the students (as would be the case in #4 above, among other situations). It follows that praise from a non-valued source is not valued. You’ve got to like the messenger if you’re going to listen to the message.

6. The teacher uses praise statements that are more appropriate for younger students. Praise for older kids has to be more mature than with our younger urchins, and needs to represent a more equal status between parties than the benevolent-dictator-to-obedient-subject approach. Besides diminishing the young person’s status, well-meaning, but superior-to-inferior compliments typically bring peer resentment and teasing. This praise is rejected due to the aversive nature of the public, condescending approval.

7. Many of our students belong to cultures or households that don’t use much, if any praise for showing correct actions. The North American middle class is one of the few groups in the world that makes a point of catching kids being good (“Thank you for playing so nicely with your sister.”, “I’m proud of the way you handled your team’s loss so graciously”). Pupils might feel uncomfortable with, and/or be confused by verbal compliments due to their lack of exposure to it.

8. In another cultural variant, the teacher is from the majority culture, while the student is a member of a minority group that historically was not given respect & equal rights; those who were brought to the country long ago, but still
are underrepresented in power positions. The “truth” & “folklore” that “involuntary minorities” pass on to their children differs greatly from that of “voluntary minorities” (those who came more recently of their own volition). Many kids from involuntary minority cultures are under pressure from their group to avoid “acting white”, apparently devaluing their culture and “identifying with the oppressor” (according to their folklore orientation). They may not value praise from a majority culture teacher until that educator has repeatedly proven him/herself as having the student’s best interests at heart. (See the writings of Ogbu & Kunjufu)

So... Which practices have a greater chance of working with praise-resistant kids?

Personalized public praise can provoke misbehavior designed to avoid the appearance of subservience to authority. So... how does one effectively praise “praise resistant” kids... students who are suspicious of your intent, given your culture, gender, or profession... often due to unflattering tales told about your group before you’ve had the chance to prove that you are a caring, competent, and culturally responsive classroom leader? What can you do before positive interpersonal bonds have developed between you and the student? Here are some important things to remember (Along with other essential life lessons like: Don’t spit into the wind, Don’t step on Superman’s cape; Don’t kiss a rattlesnake; and Don’t cook Bacon in the nude):

1. Offer soft private praise while moving past the student. Say it while you mosey by. Perhaps look back, and smile.

2. Send complimentary notes privately by slipping them into notebooks, backpacks, or students’ hands as you shake them.

3. Replace public praise to one student with general praise to unspecified pupils: Instead of saying: “I love the way that Casper is copying down today’s learning goal. He’s leading the way.” replace it with compliments to non-designated individuals: “Students who are copying down the learning goal are showing me that they’re leaders. They’re out in front. They’ve got my respect.” The student thinks “Hey. I’ve been given respect. I’ve been recognized as a leader.” The classroom and its captain (you) increase in value. Emotional bonds begin to form. Your direct praise then takes on value.

4. When working with relationship-resistant kids, make your commentary more jocular, short, subtle, and private.

5. Assure that the praise is sincere.

6. Make sure that the praise is descriptive. Identify the actions that were displayed. Avoid labels like; “Smart kid”, “Great writer”, “Good boy”, etc. (See the previous blog post on praise for the reasoning behind this suggestion.)

7. If praise given in the moment gets rejected, give the praise after the event is over, perhaps during the next day or even later. Reminisce back to the activity, and compliment the youngster’s actions.

8. Give praise with money (or food). Money is valued. Pairing your praise with a U.S. nickel or dime (convert this amount to your country’s currency), increases the value of your praise. Wean the students from the money over time. (See “Schedules of reinforcement” under the “Applied Behavior Analysis” section of the “Strategies & Interventions part of BehaviorAdvisor.com)

9. As those interpersonal bonds form, begin to use other strategies that further cement the positive teacher-student connections while promoting self-recognition by the learner. Place the onus on the youngster by having him/her identify the appropriate actions that were displayed (Remember the advice in the first blog post on praise... have him/her keep it specific. Identify the actions that are deserving of positive recognition.) Here are some examples:
“Your report was impressive. Tell me how you prepared & what you were thinking about during the presentation.”

“I’m a happy teacher when I look at your project. Why do you think I’m wearing this smile?”

“I just saw you do something that made you look very mature & responsible. I want to make sure that you noticed it too. What did you do that made you look so good to others?”

“You can be very proud of yourself right now. Why do you think I say that?”

Have kids further delineate and expand upon statements such as:

– “I gave the right answer.” or
– “I did what I was supposed to do.”, etc.

Have them identify the specific actions in which they engaged.

10. Establish a classroom culture that values positive comments given by students and staff. (Thanks to Chris Briggs for reminding me of this one.) Acknowledge individuals who compliment others, and make sure that personal attacks are disallowed. Make it clear that your class only uses “push ups”, never “put downs”. Have kids rephrase negative commentary into objectively stated disagreements. “That’s stupid.” would be rephrased as “I hold a very different view on that matter.” Or “I really think that viewpoint (not “you”) is wrong-headed.”

Summary

Learning to effectively use praise is like when you were a young child learning to use a knife. Unless it is used properly, things can get very messy. To keep the analogy going, praise is a double-edged sword that can serve its intended purpose well, or cause us great pain if used incorrectly.

Used correctly, offering complimentary comments is a great way to direct future behavior in our students, and build interpersonal trust bonds with them. Use it often, but use it right.

Kids minds are fragile. Let’s be careful out there.
Giving and Getting Respect

When students feel valued, respected and welcomed in their classroom, they are more likely to behave better and demonstrate respect toward you. Here are a few tips for creating the optimal classroom environment.

Build your "rep" by communicating and showing concern for the welfare of your students.
- Display concern for youngsters
  - When they ask: "Why did you call my parents?" or "Why did you give me detention?"
  - Answer with "Because I care about you." or "Because I know you're capable of so much more."

- Converse with your students outside of class. Give them the time of day. Build a friendly relationship.

- Use your expressive and receptive humor. See the humor in situations and create joy for your youngsters.

Set up kids for success
- Establish routines so kids know how to behave in recurring situations.

- Discuss behavioral expectations before an activity & use student input.

- Use proactive cooperation. Give a direction that you know they will enjoy following before you give them directions with which they might hesitate. Get them in the cooperative mood first.
  - "Everyone draw a capital "I" in the air."
  - "Hey Fran, give me five."
  - "Everyone hold up your pointer finger. Now stick it in the book where you think page 108 must be."

Then tell them to open their books to page 108 and write answers to the six questions.

- Help them respond correctly in class. Give hints and cues so that they are successful in front of others.

- Catch 'em being good (Remember to describe the behavior. Don't label the student...for more information, see the link on the home page titled "Problems with catching kids being good and how to do it right)

- Recognize effort, not correctness. If a kid is giving us his/her best, we should be happy.
- Point out the progress made over time. Kids need to see that they have learned.

- If a kid doesn't want to attempt a hard task, reminisce about the times when effort brought success. Encourage that display of effort again. Remember to tell her/him that as long as s/he tries hard, you are pleased.

- State your belief in their potential. Let them know that you have faith in their ability.

**When things go wrong, remember why you went into teaching.** You do remember, don't you?

(You liked kids and wanted to help them learn and become good citizens.)

- Interact respectfully with misbehaving youngsters. Treat them as you would like to be treated. Help them to do better. Be a guide, not a boss. Be the type of teacher you remember fondly from your school days.
  - Talk TO them, not AT them
  - Keep your voice at a conversational level, even when you're perturbed
  - Avoid giving lectures about life
  - Exhibit the self control you wish for them to show
  - Never do anything to them that you wouldn't want done to you
  - Separate the behavior from the kid. Like the youngster, dislike the behavior.

- In an incident, don't just find fault, identify what was OK and what wasn't (some % of positive). For example: "Fran, it was noble of you to stand up for your friend. Being a loyal friend is important. However, I can't allow you to hit others. How else could you have handled the situation?"

- Seek win-win solutions. Look for solutions to problems that don't find blame or punish.

- Help the youngster to display more acceptable behavior:
  - teach it, role-play it, remind him/her to demonstrate it, reward it, encourage more of it
MANAGING BEHAVIOR VIA TEACHING STYLE

Some of the **keys to effective management** of student behavior are:

1. Devising comprehensive systems
2. Consistently reinforcing well-practiced routines and procedures, and
3. Packing our professional bags full of positive and respectful preventive strategies and reactive interventions.

Another important component doesn’t get very much attention...

4. The way in which we present and conduct our lessons.

A teacher's teaching style has a positive or detrimental effect on behavior in the classroom.

There is a connection between the actions of the teacher while teaching, and student behavior. Effective teaching and effective classroom management is established through the mastery of the following five areas: withitness, overlapping, movement management, smoothness, and group focus. Additionally, classroom organization, planning, proactive interventions, and student involvement are essential to a well-run, productive classroom.

**Preventive (versus Reactive) Discipline**

**Withitness** – The teacher should be aware of what is happening in the classroom at all times. S/he needs to have “eyes in the back of the head.”

“It is not necessary to know what the teacher knows is going on – it is what the students believe she knows.” (Kounin, 1981)
**Overlapping** – This word pertains to the ability to do many things at the same time (i.e., “multi-tasking”).

Kounin stated that this ability is closely related to being “withit” (see above). In his mind, they worked hand-in-hand to produce a powerful effect.

One without the other reduces the teacher’s effectiveness (Kounin, 1988).

**Movement Management** – This term refers to the pace of a lesson. The momentum should be consistent, monitored, and adjusted in order to prevent slow-downs and stoppages. The pace of the lesson should be modulated so that it keeps the attention of the students.

Because s/he is prepared, the teacher knows what s/he will do next in the lesson, what the students will be doing next, and facilitates smooth transitions between parts of the lesson. Unexpected happenings and interruptions are handled quickly and smoothly so that the lesson flows well, and keeps students attentive and on-task.

**Smoothness** – Smoothness refers to the teacher’s ability to keep the classroom running in an organized fashion. Teaching a lesson while maintaining the students focus, transitioning from one subject to the next without losing the students or having a lot of disruption. Orchestrating the events, procedures, and movement/traffic patterns are factors in development of a well-managed classroom. It is important to avoid “flip-flops” and “dangles” (see below).

**Group Focus** – Group focus is the ability to keep all students actively participating in a lesson. Teachers can do this by having class discussion, calling on students unannounced (choose these students wisely), and asking questions just to name a few. More suggestions will be provided in the upcoming BehaviorAdvisor.com web page.

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**Proficient Classroom Management Avoids:**

**Dangling** - “Dangles” occur when a teacher leaves a topic without having finalized it, provides a summation, or otherwise draw the lesson to a full conclusion. If a lesson is important enough to teach, it is important enough to finish. To avoid dangles, teachers work on proficient planning and the timeliness of their lesson presentation. They should not be surprised by the time on the clock: “Oh my! It’s almost time to go to lunch. Clean up quickly and line up at the door.” (Additionally, this teacher better have a practiced and ingrained procedure for “cleaning up” and “lining up at the door”, or the madness that is about to ensue from the dangle will be magnified exponentially.)

Nearly all "rules" about managing behavior have exceptions. A few that don't include: Always do what is in the students best interests; Always treat youngsters with respect; and Build and maintain positive interpersonal bonds with kids. Here's an exception to Dr. Kounin's admonition to avoid "dangling": At the conclusion of the day's lesson create a "hook" to spur interest in the next day's lesson. This practice leaves the pupils eager to learn more about the topic tomorrow. It makes it much easier to gain student attention and transition...n into the next lesson on the following day. While Jacob Kounin warns against “dangling” (leaving a topic unfinished), we don’t always need to reach an endpoint in a lesson. We can decide to "dangle" in a planned manner, such
as when we stop a video before the climax or impacting point. The kids plead and beg you to re-engage the video, but you say "That's the first thing we'll do tomorrow. Be on time, and be attentive so that we can begin promptly".

**Flip-Flopping** - A “flip-flop” is somewhat like a “dangle”. It occurs when a teacher is teaching a lesson on one topic, but then inserts unrelated material from a previous lesson. This act destroys student concentration, and they are now confused as to where to focus their attention. Once a lesson has been concluded, and another one begun, avoid reminiscing back to previous material (except to relate the earlier material directly to this new subject matter in order to facilitate comprehension). Teachers should avoid leaving a topic on which the students are focused in order to introduce unrelated material.

**Thrust** - Thrusting occurs when teachers fail to give clear, well-worded directions when group attention was upon them. Non-descript directives result in student confusion, complaints, multiple questions as to what to do, conversations with other students, refusals to work, and so forth. Teachers then find themselves answering the same question multiple times, having to address misbehavior, and pulling students who did comprehend off-task. Directions for giving directions is the topic of a future podcast on BehaviorAdvisor.com

**Becoming "Stimulus-Bound"** - Teachers who allow themselves to be distracted by outside stimuli, move the class’ attention to that distraction. The students are now off-task, have trouble re-engaging in the task, and engage in misbehavior. Teachers also become bound up in the wrong focus when they draw student attention away from the lesson to make spontaneous announcements (“Oh...Remember that field trip permission slips are due tomorrow.” Or “Mr. Lee! Before Ms. T. goes to the deli, please tell her to order a vegemite sandwich for me.” {Non-Australians: Conduct an internet search for the term... Oops, did I just get stimulus bound again?}), or attend to non-essential conversations with other teachers who walk into the room.

Secretaries and administrators often create a “stimulus bond” situation school-wide by allowing announcements to be made over speakers while classes are in session. (I found that pulling the wire out from the back of the speaker worked particularly well in solving this problem.) We now know from cognitive research that when the mind is pulled off of its focus, it takes about 10 minutes to fully re-engage in that topic.

Certainly, some distractions are unavoidable. In those cases, the teacher needs practiced routines (Teacher says “1-2-3. Attention on me.” and kids follow with “1-2. Attention on you.”, Students repeating a couple of clapping sequences modeled by the teacher before s/he gives a precision direction as to what students should now do) in order to refocus the youngsters back task.

There is so much more to say about these important points, and I will do so in a future

Good teaching is a critical component in behavior management. A great deal of misbehavior occurs because the students are not interested in the lesson. Kids who are bored will create their own entertainment.
Here are some ways to engage youngsters in your lessons. Rate your proficiency on each item on a 0-3 scale. Set the professional goal of obtaining a higher score when you complete the checklist again in a couple of weeks.

___ My "do now" activity (something the kids start working on as soon as they enter the room) is designed to help kids prepare for my upcoming lesson.

___ My lessons start promptly. I do not answer questions unrelated to the lesson. Students are told that they can ask that question AFTER the lesson.

___ My lessons open with an interesting item, activity, question, or statement.

___ I am dynamic and entertaining in my presentations. If my students are going to be excited about learning, I have to be excited about teaching.

___ I make use of instructional variety by changing the manner of presentation often (media, guest speaker, group work, computer).

___ Activities are challenging and enjoyable.

___ My students realize that they are learning and making progress.

___ I keep the momentum of my lessons moving ahead.

___ I keep students attentive and involved.
   - mentioning that "someone" will be asked a question "on this" soon (group alerting)
   - involving kids in discussion and demonstration
   - everyone holds up a card with the answer to your question written on it
   - everyone writes an answer before youngsters are selected at random to read (the teacher circulates to observe the answers of non-reciters)
   - challenging the students
     - "You're really going to have to pay attention to even think about this one."
     - "I'm betting that no one can figure this one out, but anyone want to try?"

___ I catch kids being good... A LOT!!!!;!:
   - "That's using your noggin."
   - "Thoughtful answer."
   - "Thanks for volunteering to attempt a really difficult question."
   - "That's a good start to our complex answer. Who can build on Amy's contribution?"

___ I avoid:
   - focusing on one student for too long
   - choosing a particular student to answer before asking the question
I get rid of distractions from the lesson.
- loudspeaker announcements (Organize tenured teachers to complain to administration)
- intruders who "just want to make a quick announcement" (I tell them to return later)
- little reminders that interrupt students' concentration while they work
  - "Remember to place your name and date at the top of the paper."
  - "Remember that each paragraph must contain a topic sentence."

When "drill" is necessary, I engage the students in fast-paced, high-energy activities with high success rates.

If I use competition, students never compete against other students. They compete in groups or against a standard.

I make sure that I bring closure to the lesson, rather than stopping abruptly.
- quick review
- have kids tell three important points covered in the lesson

I prepare my students for the transition to the next task/class.
- "We'll be looking into community relations in our next period. You'll need to have a pencil, notebook and textbook on your desk to be ready."
- "Next up, we'll be discussing how the women's movement has changed society. In the next few minutes, discuss with your tablemates how sports, jobs, politics, and other areas have been influenced. I'll expect each table to be able to contribute four points to our discussion."
INFLUENCING GROUPS
TO BE PRODUCTIVE

Directions: Use the suggestions below as a checklist to determine your skill in managing the behavior of groups of students.

I'm aware of the roles played by each student in the group (e.g., leader, instigator, procurer of materials/food/items, negotiator, conscience, enforcer/intimidator)

I'm aware of the "glue" that holds each group together. I know:
- what is valued by them
- what behaviors are required of members in this group
- their interests and ongoing topics of conversation
  (e.g., cars, sports, academics, drugs, fashion, crime, certain types of music)

I list a "do-now" activity on the board or place it on desks/tables so that the kids can get started even before the upcoming lesson. This quick task, started as soon as they enter the room
  - prepares them for the lesson to come (effort, not correctness is requested)
  - continues their work on an on-going team activity/task

I make ongoing efforts to bond and connect with the group
  - greeting youngsters when I see them
  - engaging youngsters in conversation
  - talking to youngsters respectfully AT ALL TIMES!!!
  - giving pleasant reminders (with encouragement) to engage in a desired behavior (e.g., raise hand, do own work) before the class starts

I have developed a friendly or cordial relationship with the leader(s), instigators, and conscience within the group

I know that others will follow their leader, so I involve the leader(s) in preparation for the task (e.g., writing the assignment on the overhead projector, handing out worksheets, setting up the videotape machine, reading the directions for the assignment)

I keep the leader(s) and instigator(s) on task

I allow learning in teams (i.e., cooperative learning groups with assigned roles and time limits)

I allow group members to collaborate to come up with a team answer

I catch kids/teams/tables being good (e.g., points...group and/or personal, raffle tickets, non-verbal recognition)

I NEVER (EVER!!!) chastise or embarrass a youngster in front of others. That action might result in the student deciding that s/he has to rebel to protect his/her image, and would also turn the group against me.
**Make lessons interesting**

- I relate lesson material to their lives and interests
- I am enthusiastic and dramatic in my presentation. I have to be excited about teaching if I expect them to be excited about learning.
- I include props, pictures, etc. in my lessons
- I vary the mode of presentation (e.g., lecture, discussion, 5 minutes of video, writing)
- I use good natured expressive and receptive humor

**WHEN MISBEHAVIOR OCCURS IN GROUPS**

I determine the reason for the behavior.
- boredom with the lesson
- the level of the assigned work is too difficult or easy
- a group is losing in their competition with another group
- I have embarrassed/confronted a member of the group
- the group is mad at me for showing favoritism
- the group is mad with a "teacher's pet"
- continuation of an issue that emerged previous to this lesson
- contagion of a leader's behavior
- group reorganization/role changes/members leaving or joining the group
- scapegoating of another student/group
- a stranger entered the room
- I was unable to continue directing the lesson
- my students were trying to make me look bad because they don't yet like me

I use low-impact interventions at first to avoid escalation of the behavior
- the "teacher glare" (complete with furrowed eyebrow, frown & shake of the head)
- stopping in mid sentence and engaging in the "teacher glare"
- proximity/touch
- good natured humor (e.g., Students have not written anything on their papers: "Are you using that invisible ink again? Please switch over to blue or black ink.")
- encouragement
- reminiscing/remembering back to times when the group did well
- showing interest in the work of the students & encouraging their continued effort
- changing the lesson presentation to be more interesting than the distraction
Competitive vs. Cooperative Learning Formats

**PUT THESE KIDS INTO GROUPS?? YOU'VE GOT TO BE KIDDING. MADNESS WILL ENSUE! THEY'RE NOT READY TO WORK TOGETHER.**

That's the conundrum, isn't it? They not able, at present, to work productively in groups, but how can they become proficient unless they practice it?

Cooperative Learning practices help to bridge the gap.

<table>
<thead>
<tr>
<th><strong>Competitive Learning</strong></th>
<th><strong>Cooperative Learning</strong></th>
</tr>
</thead>
<tbody>
<tr>
<td>No interaction between pupils</td>
<td>Active interaction with others</td>
</tr>
<tr>
<td>Not accountable to others</td>
<td>Accountable to others</td>
</tr>
<tr>
<td>Responsible only to self</td>
<td>Responsible to the group</td>
</tr>
<tr>
<td>Homogeneous grouping, if any</td>
<td>Heterogeneous grouping</td>
</tr>
<tr>
<td>One student serves as leader</td>
<td>Positive interdependency</td>
</tr>
<tr>
<td>Social skills assumed or ignored</td>
<td>Social skills taught directly</td>
</tr>
</tbody>
</table>

### Implementing Cooperative Learning

Cooperative learning is more than merely having students sit together, helping the others do their work. Directing students who finish their work early to assist others isn't a form of cooperative learning either. Neither is assigning a group of students to "work together" UNLESS you assure that all will contribute their fair share to the product.

A true cooperative learning experience requires that a number of criteria be met. They are:
- Division of labor among students in the group
- Face-to-face interaction between students
- Assignment of specific roles and duties to students
- Group processing of a task
- Positive interdependence in which students all need to do their assigned duties in order for the task to be completed
- Individual accountability for completing one's own assigned duties
- The development of social skills as a result of cooperative interaction
- Provision of group rewards by the teacher

The introduction of "learning teams" into the classroom is an effective method for increasing the number of students willing to make an effort to learn in school. The teams usually work together on long-term assignments, although
sometimes students remain together in duos, triads or quadrants for the entire day. In these groups, each individual is responsible for assuring that the other team members learn the assigned material. Those who understand the lesson/material are responsible for teaching it to the others. Groups progress to a new unit of study when all members of the group have mastered the lesson.

Group members are also responsible for the behavior of all members. If a team member displays inappropriate behavior, it is the duty of fellow members to remind that student to `check' him/herself. The members attempt to refocus the misbehaving student by offering help and suggestions.

Initially, temporary grouping can help students to grasp the concept of long-term learning teams, and practice responsibilities while the teacher sharpens his/her skills and receives feedback from the students regarding how to improve assignments.

**Steps for setting up group learning experiences:**

**Before Implementation**

1. Develop a positive classroom environment. Devise ways for students to become acquainted early in the year. Have them work on a mural, newsletter, play or other project. Model and encourage polite, respectful behavior toward others. Reward students for such social skills as helping others, giving and accepting praise, compromise, etc.

2. Previous to organizing collaborative groups and assigning academic tasks, develop a cooperative climate and esprit de corp in the classroom. This can be accomplished by engaging students in fun team-building activities in which they support each other in a team effort to achieve non-academic or easily achieved academic goals. These activities might take the form of non-competitive, active games such as those described in the books like the one titled *Play Fair*.

3. Consider upcoming academic tasks and determine the number of students who will be assigned to each group. The size of the group will depend on the students' ability to interact well with others. Two to six students usually comprise a group.

   If students are new to cooperative learning, assign two or three individuals to a group. Increase the size of teams as the students become familiar with the procedures and practices. Although homogeneous grouping or random assignment to groups is sometimes used, the students should usually be on a range of levels, mixed by intellectual ability or achievement level. One novel way to form groups is to have students pick a puzzle piece out of a hat/box. Inside that container are several 3 or 4 piece puzzles. Students match up their pieces to see who will be in the group with them. Too random? Hand out sheets of paper with directions/material on it, and a puzzle piece attached. While appearing to be a random selection to the students, you have determined which kids will come together into a particular group.

   The teacher may also choose to consider interests or abilities in certain subject areas, personality, race, gender, or other factors when teaming students with each other. Perhaps the groups will choose names for themselves or decide to be referred to merely by number.

4. Decide how long the groups will work together. It may range from one task, to one curriculum unit, to one semester, to a whole year. Most often the teacher will vary the composition of groups every month or two so that each student has a chance to work with a large number of classmates during the term or year.

5. Determine the academic and behavioral/interpersonal objectives for the task.

6. Plan the arrangement of the room for the upcoming group-oriented tasks. Arrange group seating so that students will be close enough to each other to share materials and ideas. Be sure to leave yourself a clear access lane to each group.
7. Prepare materials for distribution to the group. Indicate on the materials that students are to work together. Avoid work activities that don't really encourage (or require) students to actively collaborate in a group. When student are working on independent tasks, simply clustered at tables, a revision is necessary.

8. Determine roles for group members. In addition to cooperating and "brainstorming" with others, each group member should be assigned a duty to perform during the project. For example, the positions of "starter" (first person to use the materials; supervises any assembly of materials), "encourager/taskmaster" (motivates others to work their hardest and contribute to the discussion), "reader" (responsible for seeing that all members begin with the same information and understand the nature of the task; reads print instructions and reviews record sheets aloud to the group), "praiser" (reinforces the responses of others), "researcher/getter" (locates and obtains needed materials and information; returns materials after use; in charge of inventory), "summarizer/reporter" (periodically explains what has occurred and later presents group findings to the entire class), "recorder" (writes down all important data, decisions, contributions, accomplishments, etc.; writes results on the board when sharing with the entire class), "understanding coach" (makes sure that everyone understands what has occurred to this point), and "checker" (assures that all have completed their task and looks for errors in data, writing, etc.) might be appropriate to the assignment. The teacher may have to explain and demonstrate/practice these roles previous to and during projects. Our junior scholars need to know what the roles actually look and feel like in order to play each role well, and re-direct their teammates when necessary in order to ensure productive performance.

Implementation
9. Explain what will occur. Explain the rules which include; contributing to the team effort; listening to teammates; helping other team members; and asking the teacher for help only if it is a question of everyone in the group. Previous to this, you should have devised a way to eliminate groans and complaints from high achievers and socially popular students who may not approve of the composition of their group. Arrange students into teams at tables or where desks have been pushed together.

10. Present and clearly explain the assignment that will probably take several class periods to complete. (e.g., Make a collage of items that start with the letter "M"; Plan and act out a play demonstrating how Thomas Jefferson might react if he were to be brought through time to see the United States as it exists today; Using an unabridged dictionary, make a list of words which can't be rhymed with other words etc.) Emphasize that positive interaction and cooperation will result in a group reward, and that meeting a set standard of performance beyond expectations will result in bonus points. Perhaps those points can be awarded frequently during the activity to motivate further cooperation.

Cooperative interaction can be more fully assured by giving only one copy of materials to each group, or by assigning each student one part of the materials with each part being needed for completion. Consider allowing groups that finish early to assist slower groups. This helpful support of other teams can be promoted through the understanding that if all groups reach a preset level, more bonus points will be given. The evaluation standard should be criterion referenced (judged against a certain standard reflecting degree of learning).

11. Avoid the temptation to "lead" the groups. Your role has changed from transmitter of knowledge to mediator of thinking. Praising and encouraging the less academically skilled team members is still indicated however.

12. Monitor and assist as needed. Move among the groups to assure that they are actively engaged in their roles and following designated procedures (unless free-form creativity is desired). Do not answer student questions unless the group members are unable to resolve the issue by themselves. Intervene as necessary to promote positive interdependence among group members. Frequently reinforce positive group interaction.

13. Evaluate each group's performance/product. Grades might be assigned based upon the average performance of the group (thus promoting positive interdependence) or the effort/quality of performance of individual members in the execution of their duties. In many cases, each group decides how it will demonstrate what has been learned. Each
group’s work is judged on its own merit rather than in comparison with the outcomes of other groups. If inter-group competition is involved, perhaps the winning and most improved teams will receive a prize. Recognition might also be given to groups that were the quietest, quickest, neatest, most creative, etc.

**After Implementation**
14. Have the learning groups assess how well they worked together and discuss how they can improve their functioning and performance.

**An Example of a Cooperative Learning Activity (2nd grade)**

Author: Melissa Jackelow

My second grade class has been learning about communities. They have already learned about Henry Ford and his use of assembly lines to make cars. They have also learned about Abraham Levitt who used assembly lines to build a planned community (now the town of Levittown, Long Island). Today they will be working in cooperative groups to simulate assembly lines. This activity will give the students a concrete understanding of how assembly lines work and their ability to build things in a faster manner.

At the beginning of the lesson, tell students they will be working in groups to make an assembly line (The students are already seated in 5 groups of 5: heterogeneously grouped). Review rules for working in groups by focusing their attention on the chart in the front of the room. Rules for working in groups are as follows: Speak in an “indoor” voice (quietly, not screaming); talk out problems; cooperate with others; encourage members in your group (say nice things to each other); materials should be used as tools, not toys; and stay seated. The students have seen these rules many times, but will need to review the meanings of each rule every time they work in groups (e.g. what does it mean to cooperate?).

Review with students what an assembly line is and in what ways Ford and Levitt used it. Stress that one of the main reasons assembly lines are used is to build things faster. Tell students that today they are going to pretend that they are part of an assembly line that is making widgets. Demonstrate how to make a widget.

**Step 1:** Fold paper (bottom to mid page)
**Step 2:** Staple the right side of the paper together (students have hands on their name tags showing them which side is left and right)
**Step 3:** Draw a star on the folded part of the paper
**Step 4:** Put a clip on the left side of the paper

**Example:**
Unfortunately, the diagram did not "paste" from Melissa's original document. It showed a fold line across, a staple in the lower right corner, a paper clip attached to the left side of the lower part, and a star in the middle of the bottom part.

Each step is written on chart paper and posted in the front of the room.

Explain to students that each person in the group will be responsible for doing only one of the steps. Once they complete their step they pass it on to the next person, who then completes their step. One person in the group will be responsible for making the widgets on their own (they will be the control). This person will need to do all of the steps. They are not part of the assembly line. Make sure that all students understand the instructions by randomly questioning them.
Tell students that they will have two minutes to make as many widgets as they can. Make sure students understand that they do not wait for one widget to be finished before starting the next. The first person should fold the paper and hand it to the next person. Once they hand it over they should immediately take a new piece of paper and begin making the next widget. The activity will be done several times, so that students get to experience different parts of the process.

Each table has a “table star” (these change each month). The star of the table is responsible for getting the supplies needed for their group. All of the supplies needed for each group are in a color-coded basket in the front of the room. Two sets of supplies are needed for each group because each group has an assembly line and a control. Supplies include: a stack of white paper, a container of paper clips, a stapler, and a marker. The control’s supply is in a plastic bag (in the basket) containing all the things he/she will need. The stars of each table are called up to the front of the room to get the basket that matches the color of their table.

Assign roles to students. Tell them that the table star will be the “control,” the one who will be working alone. The person next to him will have the role of step 1 (folding paper). Then going in order around the group the rest of the roles are assigned. Tell students they have 1 minute to get their supplies in order. To ensure that they are paying attentive, have them give you “five” (a predetermined signal for getting their attention). When all students are giving you five tell them that you are going to set the timer for two minutes. When the timer goes off they are to put down all materials and focus their attention on the teacher. Make sure all students are aware of their role. Ask if they have any questions and let them begin.

The teacher should circulate while the students are working to make sure that everyone is doing their job correctly. There is a clipboard with a sheet of paper containing each students name in a box on the teacher’s desk. This is to be used while monitoring student’s work. Any difficulties the students may have (e.g. working cooperatively, fine-motor skills, not participating...) should be written in the appropriate box. Praise should be given to students who are working together nicely and following the rules.

When the timer goes off, tell the students to stop working and give you “five.” Ask students to count how many widgets they made and how many the “controls” of each group made. Make a chart on the board with two columns, one titled assembly lines and one titled “controls”. Record the results. Give students one minute to switch roles. Repeat the activity a few more times, recording their results each time.

After repeating the activity several times call students’ attention to the chart on the board. Discuss the results (the assembly lines should have made many more widgets than the controls). Ask students to discuss with their groups why they think the assembly lines made more widgets then the controls. Give the students a few minutes to discuss their answers while the teacher circulates. When students seem to be finished talking about the results, ask them to give you “five.” Discuss each group’s answers. Ask if anyone has any questions. Tell students they have one minute to put the materials back into the basket. Have the table stars put the baskets away.

Thanks Melissa!

Cooperative learning is gaining popularity for a number of reasons. Evidence indicates that it raises achievement, promotes positive self concept, and raises regard for others. It appears to be especially useful for students from racial minority and low socio-economic groups who have not excelled to the same degree as middle income majority-culture pupils in the traditional competitive classroom. The performance of these previously less successful groups tends to rise in cooperative groups, majority culture students seem to achieve just as well as with the individually-oriented style of instruction and learning, often better. Cooperative learning may also help to lessen the fatalistic attitude toward schooling that is often found among students from minority groups and those who have experienced repeated failure in the schools. When these students notice the value of their input and effort, a more internal locus of control and belief in one’s ability is fostered. Social and work skills are imbedded.
Implementing full-scale cooperative learning is not a simple task. Teachers may wish to start with periodic lessons or units and build from there. The effort expended is probably well spent as "...what we know about effective instruction indicates that cooperative learning should be used when we want students to learn more, like school better, like each other better, and learn more effective social skills."

Activities and Discussion Questions

1. Locate and read books on the use of cooperative learning such as William Glasser's Control Theory in the Classroom (1986, New York: Perennial Library Press) or Roger Johnson's Circles of Learning (1985, available from the Cooperative Learning Center of the University of Minnesota, Minneapolis, MN).

2. Locate books on cooperative games as a way to build esprit de corp and promote the concept of cooperation in a fun format.

3. Join with a few other teachers who wish to learn more about cooperative learning. Form your own learning teams and give yourself the assignment of helping all members figure out how to most effectively use cooperative learning in their classrooms.

4. Decide whether cooperative or competitive learning methods would be best for the activities or areas of study below.
   - Painting a picture
   - Multiplication drills
   - South American geography
   - Simulated journey to the moon
   - Oriental architecture
   - Computer use
   - Baking bread

5. Think of material or concepts which are to be learned by your classes during the upcoming weeks or months. For which of these would cooperative learning best serve your purposes? For which of these would competitive practices work best in promoting learning among the greatest number of students?

6. Suppose you wish to have your students produce a class newsletter. What groups might you form and what would be the duties of each? What duties or roles might be assigned to members of the groups?

7. Consider the following statement and discuss with others how the concerns voiced within might be addressed. "One of the rationales of grouping children up in the classroom is that each child has some particular strength and that will be brought out by the wide variety of tasks that are assigned to the group. In this way, the thinking goes, students who are good at one skill can be a leader in that area, while another child, who has different strengths, will take over in a different area. A favorite example given is the child whose basic skills are very low but who draws very well. So the teacher enthusiastically groups her with one of the higher level students, knowing that she can contribute to the group via her artistic skills. She has something to offer the group that perhaps the others don't have, and it allows her to shine even in an academic project. It sounds great, but a few questions nag. Like, what if she doesn't always want to be the group artist? What if her drawing is a very personal thing to her and it embarrasses her to have it made public? In my training I have been told by many teachers that they always pair up the weakest student in the class with the strongest. In this way, the teacher can tap the resource of the strong students and use them to help teach their fellow classmates within the classroom community. I think that this is perhaps the problem that I have the greatest difficulty with. Why should the so-called quicker students be obliged to teach their fellow students all the time? Do they have a choice in the matter? I know many people who, in their school days, whizzed through their work, and then were able to do all sorts of extra reading and projects on their own. Is there something wrong with that? Many of these students, as well as the children I have observed in my own classrooms, were not quick in just one area, but had strong skills in almost all areas."
They were the kids who were ‘good at school’. If they were going to do a group project, they wanted to pair up with kids who were on a similar level, which in my assessment, was because on some level they understood that they would be stimulated by each other. I think it’s a mistake to think that a child who shows strong academic and/or leadership qualities wants to be in that situation all the time. Sometimes they want a break. And sometimes, they may want to coast. And sometimes they want to work alone. I find myself returning again and again to this notion of balance. When we stick to one model inflexibly, many personal needs are likely to go unmet.

Promoting A Climate of Positive Peer Pressure

Ideas that bring about cooperation on the part of your class and promote "positive peer pressure" (students motivating others to behave appropriately).

Devise a system of group rewards

1st way:
Use a kitchen timer (the type on which you twist the dial to a certain time interval and a bell sounds when it finishes the timing). Tell the students that you will be evaluating their behavior at the very moment that the bell sounds. Set the timer for any time between one minute and twenty minutes (shorter times for classes that misbehave more often). Do not let the students see the timer. You want the sounding of the bell to be a surprise. In this way, they are never sure when the "ding" will occur, and must stay on task and behave well at all times for fear that they might be off task or misbehaving when the bell sounds.

Upon hearing the bell, assess the behavior of the youngsters at that very moment. You can give each well behaved, on-task student (when the bell sounded) a point toward some prize, or give the whole group zero to 3 points depending on the percentage of students who were attentive, compliant, hardworking, and otherwise well behaved. A predetermined prize/privilege is earned when the group attains a certain preset number of points (make the amount to be earned a low total at first to give them success and encourage more compliance).

2nd way:
When the bell sounds, evaluate the group's behavior during the interval between bells. Award 0-3 points depending on their performance during that time period.

3rd way:
Use two kitchen timers set randomly. Have two different types so that the sounds of the bells are different. Use one to assess group behavior at the very instant that the bell rings. Use the other timer to assess behavior between bells. This double bell procedure provides double the incentive to behave well.

4th way:
Obtain a jelly jar and a large bag of marbles. Drop a marble into the jar whenever your class pleases you.
Drop marbles when they are attending well, being helpful and polite, after having walked quietly in the hallway, etc. When you can run a ruler across the top of the jar and knock a marble onto the floor, your class has earned a predetermined prize or privilege. Increase the size of the jar as the year progresses until you are trying to fill one of those big pickle jars from the cafeteria.

5th way:

Obtain a scale and some light weights (e.g., washers, bottle caps). Designate one side of the scale to be for the recognition of positive behavior. Designate the other side to be for emphasizing your disappointment with the group. Students attempt to keep the scale in balance or weighted to the positive side. Weights can be added spontaneously (remember to focus on the positive), or whenever a bell sounds or period/activity is nearly over.

The following is a graduate class assignment submitted by Elizabeth Harty (used with her permission). It describes the use of choice to promote positive peer pressure.

“The Use of Personal Choice in Classrooms:

The principle teachings of Thomas Gordon, *Discipline as Self-Control* focuses on the idea that students must have ownership of their problems so that they may create the solution. According to C.M. Charles in *Building Classroom Discipline*, he states that Gordon believes, “When an individual is troubled by a condition, event, or situation, that individual is said to ‘own’ the problem. How problems are resolved depends in part upon who owns the problem” (pg. 87). I decided to employ this technique while substitute teaching in a 6th grade Social Studies class. Each class had the same assignment to complete. They were to read pages from the textbook, complete a map, and answer questions about the reading and map. Whatever they did not finish was to be completed for homework. Therefore, I saw the students as having a critical choice. They could spend the period working on their assignment, or they could have more work to do at home.

When the students entered the classroom at the beginning of the period, I explained the assignment and directions that the teacher had left. I also stated that we would read the two pages from the textbook together. After we finished reading, the students would have an opportunity to complete the assignment. After I had finished explaining the directions, I would tell the class that I saw them as having a choice. Either they could spend the period working on their assignment and have very little or no homework, or they could talk to their friends and have more to do for homework. This was their choice. I would then ask the class, “What do you think is a good choice to make?” In each of the three classes that I asked this question to, the students would respond enthusiastically saying that they thought the best choice would be to do their work now. After reviewing the choice for the class, I would then need to take attendance. If the students were talking and generally disrupting the class, I would stop, look directly at the students who were talking and say, “Remember, this is your choice.” The other students would then ask the class to quiet down, because they didn’t want more homework.

I found this technique to work extremely well. Each student in the class was then responsible for his or her own behavior, as well as the behavior of their peers. The class didn’t want more homework; so it made sense that they would want to quiet down to complete the assignment in class. Hence, I placed the ownership of the problem or situation upon the students in the class, rather than myself. In reality, I wanted them to complete the assignment so that I could leave a favorable report for the teacher. At the same time, I did not want to scream and plead with the students to do their work. In this instance, the students exhibited self-control and restraint in order to complete the assignment. Additionally, I utilized non-controlling methods to promote behavior
changes. By saying that the class time was their choice, they students were receptive to completing their work. If I had entered the classroom stating that the students needed to finish the assignment or else, I don’t believe that the students would have been as receptive to my request.

In conclusion, when students believe that they have ownership of a problem or situation, they are more likely to comply with your wants or needs. This technique not only makes teaching a more enjoyable profession, but it also creates a student centered learning environment. The students did not become angry at me when they misbehaved, they were angry at each other, because it prevented them from completing the assignment. I was thoroughly pleased with the results of this experiment and will incorporate this approach into my teaching style.

References
http://www.teachervision.com (see lesson titled "The art of teaching: Put a spin on peer pressure")
"I WANT IT QUIET IN HERE!"

Our job is to place knowledge and skills inside the noggins of our learners. How frustrating that mission becomes when we are unable to do our job proficiently because our students are engaged in off-task conversations. At other times, it is the sound of learning that we are hearing, but it's many decibels too loud. How can we give ourselves a classroom noise "mute" button or volume control knob? Here are a few ideas, followed by an excellent resource for reducing noise levels:

**Entering The Classroom**

1. As you bring your students to the door of your classroom, stop just before entry. You or an assigned student moves down the line, using touch and finger to the lips to convey to talkers that it is time to be quiet. You have previously talked about and practiced the entry routine... walk with lips closed directly to one's desk, and place materials on the desk that are needed for the next class. (or similar procedure, depending on the nature of the upcoming class session)

2. If students enter individually, be at the door to greet them. Allow well-behaved, quiet voiced students to enter. Send loud and boisterous students back to a point about 10 yards/meters away. Have them approach you showing correct behavior and voice volume.

3. Each and every time that students enter your room, have a "Do Now" activity written on the board, projected onto the screen, or placed on each student's desk. You have practiced and promoted this "Do Now" activity. Upon entry to the room, students immediately engage in the task presented. That task is a review of what was taught previously (to bring your charges back up to speed, cognitively speaking), or something that will prepare them for the upcoming material that will be taught. (My favorite of the ones that I've seen: "Work with your partner to list words that rhyme with orange, purple and silver."... There are no English language words that rhyme with these! It'll keep them busy for awhile. Hey... how about "door hinge" as a sound-alike for "orange"?)

**In The Classroom**

1. Talk about noise levels during the first day(s) of the year. Have students practice different volume levels as they read something on the wall or repeat what you say. Compliment for effort and progress.

2. Help your students better understand the level of "quiet" that you desire for a particular activity. Operationalize what you mean by identifying the distance that their voices should travel... "With your partner, use your hand length voices.", "Use your arm's length voices please.", "Use your table voices for this activity.", "You may use your outside voice until we line up in 20 minutes to re-enter the building.", "As soon as your foot touches the school building floor, your lips are closed until you are back in your seat in the classroom."

3. Notice times when the students are displaying the correct attentive behavior and/or voice levels. Use specific praise that identifies the action that you appreciate. ("The red group is doing a wonderful job of using their table voices.")

4. Develop a signal system. When you want quiet and student attention directed toward you, show the signal (hand raise, finger to closed lips, etc.). Students acknowledge you by showing the same signal. Of course, this system needs to be practiced, and students need to be positively recognized for having followed your lead.
5. Develop a classroom chant that the students repeat when they hear you say it. They then close their lips and attend to you. For example: "One, two, three. Eyes on me." at which time the students reply, "One, two. Eyes on you."

6. Teach the students to repeat your clapping sequence. When you need their undivided attention, clap a rhythm. Students repeat that cadence. Then clap again using a different "tune". At that point students attend to you.

7. Count down from 5 to 1. At one, students should be silent and attentive to you. (Again, practice, practice, practice... and praise, praise, praise.)

8. Rather than getting louder to try to talk over noise, reduce the volume of your voice so that the students have to lower their volume to hear you.

9. Repeatedly set a twist-the-dial timer. Sometimes it will take 10 minutes before a bell sounds. Other times it will take 2 minutes. (Hide the dial from sight of the students) Evaluate whether the class was using the correct voice level at the time of the sounding bell. Give one point (toward the 25 or 50 that are needed for the group to earn a privilege/prize/reward) if the class was using the correct volume level. You will find that students remind their peers to "quiet down" in an attempt to earn the points more quickly. For more information, see the page on this site for "Promoting positive peer pressure".

DO NOT penalize the entire class for the loud behavior of one or two students. Recognize the efforts of the majority, and set up separate systems for the persistent offenders (see the page on this site for "Self-recording).

10. Model the voice level that you wish them to show.

11. Give warnings about being "too loud" in a non-verbal manner (so that we don't yell louder than the volume of our students). Say a student's name quickly (or otherwise gain his/her attention), and hold up one finger (symbolizing "first warning"). Hold up two fingers for the second warning. Wave the student to you for the third consequence (whatever you have decided upon and discussed previously with the students).

12. When the classroom is noisy, look for students who are using the correct voice levels. Recognize them positively.
REMEMBERING YOUR GOAL: 
THE ART OF COMPROMISE

By Mary Beth Hewitt

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1) You ask a student to open his book and read. He pushes his desk, swears, walks to the other side of the room and yells, “I’m not opening that book. If you’re so helpless that you can’t open a book, you might as well not even teach.”

2) A student finishes his part of the activity ahead of his classmates. He starts drumming his hands on the desk. You ask him to stop, but he continues.

3) You ask a student to leave the room. He does, but on his way out he turns off the lights.

4) A student arrives in class wearing his hat. You remind him of the rule but he continues to wear it.

Some students seem determined to disengage from their educational program and to alienate the people around them. Resiliency studies indicate that the single most important factor in determining a student’s success is the establishment of a supportive relationship with at least one significant adult. So how can we create an environment that supports and engages all of our students, even during their worst moments?

Rudolf Dreikurs first identified four basic motivations for behavior: avoidance of failure, attention, revenge and power. (Dr. Mac's note: For more information on these four factors, see the home page link titled “Figuring out why kids misbehave”.) He went further to state that a student’s motivation would create the same counter-feelings in the people around him/her. Students who are avoiding failure will cause the adults to feel inadequate, helpless and fearful. Students who are motivated by attention will elicit annoyance. Angry students will make the people around them feel angry and vengeful. Finally, students who are motivated by power will generate feelings of stubbornness and control. If helping adults become consumed by their own “counter feelings” they can easily become sidetracked from their original intentions. They may then respond from an irrational, emotional basis and make situations worse. If, however, they recognize their “new” feeling it can provide them with clues about students’ underlying motivations for behavior. The significant adults can then make rational choices, which will enable them to continue on their original course.

It sounds relatively simple, but a great many times the rational choice runs counter to our belief systems. What we “could do” seriously conflicts with what we “want to do” or what we’ve been taught we “should do.” Until we step back and look at the whole picture our behavior will not change. When I was first learning about this concept, someone told me that the art of adjustment or compromise was like water flowing in a stream. When it encounters a rock, it does not try to move or forcibly remove it; rather, it yields and flows around the rock to continue on its’ original course. The act of yielding eventually wears down the rock. Nothing in the world is as soft and yielding as water; Yet for dissolving the hard and inflexible, nothing can surpass it. (Tao Te Ching)
AVOIDANCE OF FAILURE

You ask a student to open his book and read. He pushes his desk, swears, walks to the other side of the room and yells, “I’m not opening that book. If you’re so helpless that you can’t open a book, you might as well not even teach!”

In my workshops I show a video clip of a boy who is working with a teacher for the very first time. All the teacher asks him to do is to open the book. The boy has a very intense reaction. As he pushes his desk and walks to the other side of the classroom he screams, “There’s no way I’m opening that book!” He swears at the teacher and tells her in no uncertain terms that she is a worthless teacher if she is so helpless that she can’t even open a book. He repeats his refusal, “I’m not opening that book!” The teacher responds by saying “I hear you. How about coming back over here and I’ll open the book for you.” Immediately, the boy returns, replaces the desk and begins to work with her.

When I show that clip, I ask the audience what they think about how the teacher handled the situation. Most people say that she “gave in” and that the boy “won.” The teacher’s act of compromise is seen as giving in or molly coddling. The basic belief seems to be that if a child responds to a situation in an inappropriate manner then his/her behavior should be addressed firmly, immediately, and directly. To do anything else is viewed as being permissive and weak.

I then ask the audience, “What do you think would have happened if the teacher did address the inappropriateness of the behavior at that time by saying something like: “That language is unacceptable.” “You can’t talk this way in here.” “Go to the office!”

Most people respond by saying that the boy probably would have made an inappropriate comeback, escalated his behavior or would have left the room. No one thinks that he would have stopped, apologized and tried to work with her. When students are upset and they are confronted, they rarely say things like, “Thank you for pointing out what a jerk I just was. You are absolutely right. What a wise teacher you are.” Instead, they defend their actions, rationalize their behavior and/or project blame on the adult. The cycle of conflict continues.

Next, I ask the participants to think about possible reasons why the boy responded in such a hostile manner to a seemingly innocuous request. They offer these possibilities:

1) he gets bossed around a lot at home and is sick of it
2) he had a problem before class and he’s upset about something else
3) he can’t read

In this particular case, the last reason is true. He can’t read. I ask, “Why doesn’t he just tell her he can’t read?” The response, “Because he is embarrassed.” Many of our students would rather appear bad than look stupid. I daresay that most adults, when faced with a screaming, verbally abusive student would have sent him out of the room. In this case he would have gladly complied. In the office he would escape the humiliation of being asked to read. What the adult would view as punitive, the child would view, if not a reward, at least a respite.

The teacher’s original goal of working with the child on reading would have been lost. The child’s unconscious goal of getting out of reading would have been fulfilled. The message communicated to the student might have been, “If you have a tantrum, then you don’t have to do the hated task.” By offering to
open the book for the student, the teacher sent the message “I am willing to help you with this task no matter what.” That was the message this boy received and is what prompted him to immediately return to the table to work with her.

In this scene the teacher’s original agenda was to read with this child. By offering what Fritz Redl would have termed “Hurdle Help” (the extra attention or assistance provided to help a student start an activity which might be frustrating or anxiety producing), she accomplished her goal. If you must think of it in terms of win/lose, I think that she won. Ross Greene, who wrote the book “The Explosive Child” advises that we need to take the phrase, “giving in” out of our vocabulary. We need to stop looking at things from the standpoint of winning and losing. We need to focus on our original goal and not get sidetracked. In order to accomplish this, I personally had to redefine “giving in” in my mind. Since I cannot control the behavior of another person, my definition has become, the power to change what I am doing to help me pursue my original goal. If, at the time of misbehavior I can focus on my original intention (What can I do to get this child to read with me?) then the act of offering help is a means to achieve my goal.

At this point in my workshop someone usually asks, “But what will the other kids think? If you don’t nip that type of behavior in the bud, the other students will think that it is an acceptable way to behave.” I ask the participants to put themselves in the positions of students who are looking on. Anyone who may find reading difficult might think, “This is a nice lady who will help you no matter what.” Anyone thinking that throwing a tantrum will get you sent out of the room so you can avoid work, might think that strategy wouldn’t work. Anyone who finds reading easy may think, “That kid was a real jerk but my teacher didn’t get mad at him. I may not understand what’s going on but I feel safer with her than with someone who yells.” The way we handle a situation also sends a message to the other students.

All too often, when a student violates a rule or misbehaves our immediate reaction is to exclude the child from the activity and/or withdraw our positive attention. Although this may solve the immediate problem of having a disruptive student in the classroom, it does nothing to change the long-term behavior and does not engage the child in the class. I strongly believe that the student’s inappropriate behavior needs to be addressed. The timing of when the behavior is addressed is all that has changed. Dr. Greene also makes the point that the adjustments we make are only temporary. He refers to them as “emotional wheelchair ramps.” Once we’ve accomplished our goal, we most definitely need to go back and teach the child a different way to get his/her needs met without misbehaving.

How do you go about addressing the inappropriate behavior? Once the child is working with you, you can share your observations, “Reading seems hard for you. How did you let me know you didn’t like to read? It’s OK to feel nervous when someone asks you to do something hard, it’s not OK to swear and push your desk. What do you think most people would have done when you did that? How can you let people know how you feel about something without swearing and pushing your desk? That’s what you can do next time. What’s the consequence for swearing?” The student is more likely to listen to a person that supported them when he/she was in crisis than to an adult who excluded him/her.

ATTENTION

A student finishes his part of the activity ahead of his classmates. He starts drumming his hands on the desk. You ask him to stop, but he continues.

I always say if what you’re doing isn’t working, don’t try the same thing harder, try something different. One of the things I love about my job are those times when a teacher recognizes that the way he/she handled a situation did not have the desired effect and asks for suggestions on what he/she could do differently. I was doing a consultation, observing a group of elementary students who were doing morning activities (calendar, show
and tell) at a table. One of the little boys, after having had his turn to share and listening to a few of his classmates, began drumming on the table. The teacher asked him to stop and listen. He continued to pound. The teacher reminded him of the rules and the consequences. He drummed louder. She warned him that if he continued to disrupt, he would have to leave the table and sit away from the group. He persisted in drumming. She told him to leave the group. He refused. He was told he could walk on his own or someone would escort him from the group. He wrapped his legs around his chair and continued to drum. Eventually, he was physically escorted from the group.

What the teacher was using to try to manage the student’s behavior was a pretty standard type of behavior management system consisting of warnings and consequences. This is a valid strategy that sometimes works. In this case, however, it was making the behavior worse, not stopping it. Her original goal to stop the disruption and get the student to re-engage was lost. She did not feel good about how the situation played out and asked me for ideas of what she could have done differently.

My first question was, “Why might the student have been creating the disruption?” She thought that he might have been bored and was having trouble waiting. She added that this was a typical problem for this student. Then asked her how she felt when the drumming started. She said she was annoyed. Annoyance is an indication that the behavior may be attention seeking. If the student is seeking attention, you can give it to him in one of two ways. You can focus on what he is doing wrong and try to get him to desist or you can engage him in a constructive activity. Constructive activities may be things like helping the teacher, running an errand, acting as the “host” for the Show and Tell show. In essence it’s employing a form of redirection. Many parents have told me that their children drive them crazy just before company arrives, however, they’ve learned that if they find a helping task for their son/daughter to do like preparing the salad or making place cards, the misbehavior stops.

The notion of giving positive attention to a student who is misbehaving runs counter to most people’s belief systems. Helping tasks are generally reserved as rewards for students who are behaving appropriately. Actually, those are the students who already feel part of the group and naturally get positive attention from their peers and teachers. It is the students who do not feel “a part of” that need these types of activities the most.

The fear in using this strategy is that the child is being positively reinforced for disruptive behavior and the incidents of disruption will increase. That might be the case if you continue to use the strategy in a reactive manner rather than a proactive manner. Proactively, you need to consider how you will keep a student busy who has a low boredom tolerance. If you create an environment that engages him before he becomes disruptive you can decrease the incidents of disruption. At the same time, you need to teach the child the skills of how to seek attention appropriately and how to deal with boredom.* When you are confronted with a situation in which the student is seeking attention, think to yourself, “I have a choice…I can give him negative attention or positive attention. Which choice will meet my goal at this time?” Later you need to consider, “What can I do in the future to be proactive and what skills do I need teach him long term?” (*A good resource for pro-social skills training is the Skillstreaming series by Arnold Goldstein published by Research Press)

ANGER/REVENGE

You ask a disruptive student to leave the room. He does, but on his way out he turns off the lights.

Your original goal was to have the student leave the classroom so the disruption would stop. He complied, albeit not the way you wanted him to. By turning off the lights he was expressing his anger through behavior. If you fly out of the room and order him to return to turn the lights back on, do you really think he’ll come back
happily and willingly? If he was angry when he left the first time, do you think he calmed down while he was in the hallway? Ask yourself this question, do you really want an angry child back when he’s still angry? If the answer to that question is “no,” then let him go.

The concept of “letting go” is probably one of the hardest concepts to swallow. Some of my workshops participants say, “But I have to do something!” I used to think that way too until someone pointed out to me that making the decision to do nothing right now is, in fact, doing something. By deciding not to deal with the issue now, you can return to teaching. Granted, the student’s behavior was disruptive and inappropriate but, by not missing a beat, turning the light back on yourself and continuing to teach, you have minimized the damage. Not only that, you are continuing to give attention to those students who need and deserve it instead of further interrupting their instructional day by engaging in a no-win power struggle with their emotionally charged classmate.

I had to realize that I had choices. I may not be able to control a child’s behavior but I can control mine. If I kept my head about me and was able to focus on my original goal, I no longer felt compelled to react.

This will also work when a student says something that you don’t like under his/her breath. If you heard it and didn’t like it the first time, do you really want him/her to repeat it? Employing the technique of “Planned Ignoring” (see CHOICES Newsletter Volume 7, Number 1) at the time students make parting shots generally works. When I suggested this strategy at a recent workshop, one of the participants was very concerned that her other students would perceive her as being weak if she did something like planned ignoring. I asked her what advice she gave her students when they complained about being teased. She said that she tells them to ignore it. I then asked, “Did you ever think that they won’t believe that is OK to ignore something they don’t like if they don’t see adults ignoring similar behavior?” If you recommend ignoring inappropriate comments to your students, they need to see you modeling that behavior. Again, remember that the behavior needs to be addressed at a later time.

POWER/CONTROL

A student arrives in class wearing his hat. You remind him of the rule but he continues to wear it.

Perhaps the most difficult time to do the types of things I’m suggesting is when you are dealing with a student who is motivated by the need for power and control. Power plays are a form of oppositional behavior. It is these types of situations that will elicit intense feelings of powerlessness in you. You will react to these feelings by wanting to force the student to comply. Students who feel powerless over the big things in their lives will seek to control the little things. You need to consider how much power you give a student if, simply by wearing a hat, he is able to bring the class to a screeching halt. In cases like this, you maintain your power by not allowing this to happen.

Before the student entered the room, the original goal was most likely to get the class started on time and begin teaching the lesson. You have a class of 20+ students who are on time and ready to learn and they need you to do your job. You have one student who, by violating a minor rule, is trying to sidetrack you from that goal. Are you going to let that happen? You addressed the violation when you reminded him of the rule. The proverbial ball is now in his court. He either continues to wear his hat or he takes it off. It is his responsibility. If he chooses to continue to flaunt the rule, he is subject to whatever consequences there are for that action. You also have a choice. You can be sidetracked from your original goal of teaching the class by making the issue the removal of the hat or, you can pursue your original goal. Ask yourself this question, “Do I want to get into an argument about a hat and give attention to someone who is misbehaving, or do I want to teach my lesson and give attention to those students who are behaving?” If you want to continue with your original intention, you will continue to teach. At the end of class, the student will be given the consequence for his behavior.
What will the other students think? If you have proactively taught your class that you use “Planned Ignoring” (the decision not to pay attention to the behavior at the time it happens) then they know that the rules have not changed and the behavioral infraction will be addressed later. If you have not discussed this technique they may be confused by your reaction but they may also be grateful that your attention focused on doing your job, teaching them!

SUMMARY

When things are flowing along smoothly and suddenly you encounter a “rock” in your stream, remember to ask yourself these questions:

1. What was my original goal?
2. What might be the student’s motivation for the behavior?
3. Will traditional interventions (warnings, punishments, exclusion, and orders) work now or make the situation worse?
4. What can I do to adjust my behavior right now to meet my original goal? (offer help, planned ignore, involve the student)
5. What type of follow-up is needed to teach the student new skills so he/she can learn socially appropriate ways to express himself/herself in the future?

REFERENCES:
In a crisis situation, we should avoid the danger, and seize the opportunity.

**APPREACHING A CONFLICT SITUATION**
(Between Others)

1. **ASSESS THE SITUATION AS YOU APPROACH:**

Think about these questions as you approach a conflict situation:

- What is happening?
- Who is involved?
- What do I know about them?
  - "triggers"/issues
  - type of fighter (e.g., martial arts training, brawler, hit and run)
- Are the parties in close proximity?

- How "contaged" are they?
- Might this youngster think that I'm:
  - an adversary?
  - an enemy?
  - an additional attacker?
2. DECIDE WHETHER TO SEND FOR ASSISTANCE, AND IN ORDER TO PROTECT YOURSELF AND OTHERS, :
- turn the stones of rings inward (to avoid scratching others)
- tuck in necklaces and ties (to prevent grabbing of them)
- remove dangling ear rings (to avoid them being pulled through the ear lobe...but be careful ..for some fighters this action is a fight preparation activity. If they witness you doing this behavior, they may assume that you are preparing to fight them.)

3. STAY OPEN-MINDED, INTENDING TO DEFUSE THE SITUATION WITH:
- no losers
- dignity left intact for all
- no injury

4A. IF POSSIBLE, REMOVE THE AUDIENCE & ONE COMBATANT
(Even if you are unable to do so, for legal purposes it is important to give the verbal commands for the students to leave and/or cease and desist.)

4B. IF THEY ARE STILL COMBATIVE, :
- Keep drawing attention to yourself, distracting them from their adversary by:
  - Yelling to them to listen to you
  - Using prepared odd actions or comments ("I've got a tattoo of Elvis on my butt!"
    "The President needs his green socks.")
  - Gradually increase limits on adversarial behavior
    - They can use any words, but must keep voice volume down
    - Keep voices down AND no curse words
    - Low voices, no cursing, AND no insults

5. TELL THEM WHY ITS BETTER TO RESOLVE VERBALLY &:
- Tell them while you can't stop them from conflict later, you'd like them to give you a quick opportunity to try to defuse things now
- Restate expectations for a positive outcome
- Remain persistent, and stay focused on a peaceful ending

6. HELP THE YOUNGSTER(S) TO MANAGE HIS/HER/THEIR EMOTIONS:

a. WHEN YOU OPEN THE DISCUSSION, DO NOT:
- Tell the student(s) to "Calm down."

Why wouldn't you tell someone to "Calm down."??

No one likes to hear this statement. If you're telling them to calm down, then you obviously (in their minds) fail to see the gravity of the situation (or you're siding with the other party). They think that they're not understood by you if you fail to see that their
emotional state is justifiable and reasonable (given the circumstances as they view them).

Instead, say something like: "I can see that this is very important to you. Let's talk about it." OR "Gee, I didn't realize that you were really involved in this issue. I'd be interested in knowing what happened."

The latter ways are more respectful, and more likely to help the student "calm down".

- Belittle or minimize the problem
  - Argue/blame/give orders/lecture/defend another
  - Touch without permission

- **INSTEAD**, present a non-threatening appearance by:
  - sitting
  - actively listening
  - asking questions

b. **LET THE STUDENTS "VENT" WHILE YOU**
- Listen sympathetically:
  - leaning forward
  - giving eye contact
  - nodding in recognition of what's said (showing we're listening, not necessarily agreeing)
  - using short verbal acknowledgments ("Uh-huh", "Hmm", "Whew")
- Write down or repeat what is said (if this action is OK with the student...it shows that we see the importance of the situation...but could be perceived as documenting the case against them)
- Ask the pupil to explain vague/confusing complaints
- Exhaust the student's list of complaints (Let him/her talk out all the issues and emotions)
- Show or repeat the list to the student. Ask if it's complete.

c. **HELP THE STUDENT DEVISE POSSIBLE SOLUTIONS BY**:
- Writing down or repeating suggestions
- Providing a dignified way out of situation:
  - "I have to check the parking lot (or store room, hallway). Would you like to walk along with me?"
  - "It looks like you might not be feeling too well. May I feel your forehead? It's a little warm. Would you like to lie down in the nurse's office?"
  - "Let's go talk somewhere private. There are too many people around here."
IF THE STUDENT ISN'T CALMING DOWN:

Leave an avenue of escape (unless s/he's a danger to self/others). Follow the student in a non-chalant manner and supervise from a distance.

WHEN YOU ARE THE FOCUS OF ANGER

1. **REMAIN CALM** (even if you're shaking in my boots).

2A. **DON'T ARGUE, ACCUSE, OR TELL TO "CALM DOWN"**

   (These actions just add fuel to the fire)

2B. **INSTEAD**, you should:

   - Act assertively (but not aggressively)
   - Look for:
     - common ground
     - points of agreement
     - remembrances of happier times
     - Ignore verbal abuse or politely (but firmly) stand up for yourself with
       - "I messages"
       - expressions of concern about words/actions
     - Acknowledge the validity of the concerns
   - Clarify his/her feelings (Identify the feelings you believe are involved)
     - "You seem really concerned about this issue."
     - "I can see that you're really upset with Fran."
   - Offer to talk (now or later)

3. **IF THE YOUNGSTER IS YELLING**, SAY: "It's easier for me to listen when people talk more softly and slowly."

4. **HELP THE YOUNGSTER STAY OPEN** to negotiation, counseling, and positive resolution of the issue by saying something like: "I can see you feel strongly about this. Help me to understand what happened."

5. **KEEP STATING:**

   - your belief in the youngster's ability to resolve the situation without violence
   - your expectations for a successful outcome in which all parties leave with their dignity and reputation intact.
IF ALL IS GOING WRONG & YOU FEAR ATTACK:

1. MOVE TOWARD AN EXIT OR OPEN WINDOW

2. TAKE A NON-OBVIOUS PROTECTIVE STANCE
   - body turned sideways to protect vital organs
   - hand held up near neck/face in a manner that appears to be gesturing, not a defensive action (even though you are preparing to intercept a punch if thrown)
   - feet spread apart for stability

3. STALL FOR TIME (while expressing my belief in the youngster’s ability to resolve the issue in a non-aggressive way)

4. POINT OUT ADVANTAGES TO DEFUSING THE SITUATION

IF THE YOUNGSTER IS ABOUT TO ATTACK YOU!

1. INTERRUPT HIS/HER APPARENT PLAN OF ACTION
   - "NO! STOP!" & tell why:
     - "I'm bad for your reputation. People will think less of you if you beat up someone:
     - with a bad back/knee/heart."
     - as old as me.
     - as small as me
     - "You'll end up in jail, and that's not how you should be spending your teenage years."
     - Etc.

2. OR...DISTRACT him/her by asking:
   - If s/he has "Heard this joke?" (always have one ready..."A horse walks into the guidance counselor’s office. The counselor asks: "Hey, why the long face?"Get It? Long face!?) When the kid says "That's stupid", agree and say that arguing and threatening is not very smart either and that you want to help him/her make a smart decision.
   - About local professional/school team that s/he likes to follow
   - About his/her hobbies/recreation

IF YOU'RE ATTACKED

1. Defend myself
2. Consider pressing charges. American/Canadian (and probably other) citizens have the right to take an assailant to court...even a student labeled as "emotionally disturbed"
AFTER A YOUNGSTER HAS BEEN VIOLENT

(After s/he has "cooled down")

1. DEBRIEF HIM/HER:
   - "Why were you willing to:
     - hurt another?"
     - fight?"
   - "What was your purpose in that situation?"
   - "How else could you have attained that goal?"

2. ASSIST IN THE "FUNCTIONAL BEHAVIOR ASSESSMENT":
   - Where and when did it happen?
   - Who was present?
   - What event(s) preceded the action?
   - What behavioral signals did the youngster show before the outburst?
   - What actions were taken to prevent the crisis & were they effective?
   - What factors influenced/supported this behavior?
     - Lack of:
       - social skills
       - anger control
       - staff supervision
   - Absence of effective school penalties
   - Absence of a school action plan
   - Lack of staff training in:
     - recognizing and defusing escalating situations
     - relating with kids in a positive, non-bossy/non-wimpy manner
     - behavior management

3. HELP THE IEP/SCHOOL-BASED SUPPORT TEAM:
   - IDENTIFY BEHAVIORAL IDIOSYNCRASIES & PATTERNS
   - DEVISE A PLAN FOR DEALING WITH THEM:
     - I teach better ways via instruction in:
       - social skills
       - anger management
       - conflict resolution
       - value re-orientation
   - Devise a plan to help the youngster attain desired goals while avoiding conflict
     - engage him/her in role playing of the plan
     - instigate spontaneous "tests" of the youngster's ability to use the new actions
     - continue the program until the appropriate actions are "automatic"
     - involve others in supporting the youngster
       - peers
       - favorite teachers/para professionals/teacher aides
       - janitor
       - bus driver
It was after the Napoleonic wars that Johann Pestolozzi suggested that the highest pedagogical skill was to be able to confront unacceptable behavior while at the same time building positive bonds with the offender.

**Tips for Handling Aggression in Younger Kids**

(and those who will listen to you)

1. For younger kids, say: "There is no hitting in our room. You have to leave." Send him/her to time out. Upon return ask: "What is our rule?" (Use words or get a teacher. No hitting)

2. If you catch kids in mid-argument, tell them to talk it out and come up with a solution. They are to tell you what the solution is.
"I would walk 3 or 4 blocks out of the way in order to approach the school from a direction where I hoped the bullies wouldn't be standing. If they were around, they'd comment on my weight, my breasts, my clothes, and even spit on me. Even now the memories bring me pain." Recollection of a woman who was maltreated by fellow high school students on the way to school..

"One day, arriving home in tears, my father asked me what happened. I told him that Stevie, the neighborhood bully, refused to let me play in a game that day, pushing me away. This was just one of the many ways that Stevie controlled the neighborhood.

Dad took me to the basement where we filled an old duffel bag full of clothes. He hung it from the rafters and told me to hit it. Over and over again, I practiced hitting that bag... hard! Proud of my punch, my Dad then said: "Are you gonna let that kid push you around any more?" I assertively said "No" and went back outside powered by a head of steam.

Prowling through the neighborhood, I finally spotted Stevie up in a small tree. The sight of him enraged me! The hierarchy in this neighborhood was about to be shuffled.

I ran over to the tree, reached up, grabbed his pant leg and dragged his ass out of the branches. He landed with a thud on the ground where I kicked and beat him until he begged me to stop. He got up, fell back into the arms of a couple of other wide-eyed kids who had gathered, rubbing his forearm across his bloody lip. He listened while I told him if he ever gave me crap again, I'd beat him even harder. He never bothered me again. In fact, we became close buddies as often happens after combatants fight. It's a strange male trait.

After that day, I became known as "GIANT killer". I guess that the success in my first stand and deliver, the great nickname, and the adulation of others, spurred me go after bullies wherever I saw them. There was David, the new big kid who moved into the neighborhood who felt my wrath when he tried to extort me for money, and heard my threats if he played too rough with the younger kids. Jackie D., another bully, took a blow to the kisser after refusing to get back in the batting order when he cut in front of Jackie (a younger boy), and then repeatedlly pushed the smaller boy down to the ground as he bravely tried to take his rightful place at home plate.

I now had an ingrained behavior pattern when the stimulus presented itself. As a young adult I intervened when I saw a man grabbing the clothes of a woman and throwing her about on the street corner. I ran over with a friend, pushed the man back and told him to leave her alone. My friend attended to the lady who told us it was alright... that this ruffian was her boyfriend. We stood stunned as she entered the car with that guy.

Another time, now in my early 50's, I saw a gang of four cycle-riding teens chasing a frightened man on a bike who was delivering Chinese food. The man rode his wheels up on the sidewalk and where he was then surrounded by the threatening youths. I broke inside their ring and told them "Back off! We don't put up with this crap in this part of town." They backed off and rode away when other pedestrians stood behind me in a show of solidarity. They hated bullies too. Ah... the power of the group when harnessed for good."
The above three events are recollections of Dr. Mac

What Is Bullying?

Bullying can be defined as ongoing verbal, physical, or written harassment/abuse that occurs in community and/or school settings. Bullies use aggression or threat of it, to gain dominance over peers. They tend to repeatedly target children who are "different" in some way. Non-assertive youngsters who will not defend themselves (or seek assistance) can also become prey.

Nearly all children experience bullying to some degree (Didn't you?). It occurs most often in younsters between the ages of 10 to 14 years. It certainly exists among older kids as well, however, its nature tends to become more subtle.

Physical bullying tends to occur when adults are not present to prevent or stop it. When adults are present, the bullying tends to take a verbal form of intimidation and condescension if the adult is distant, or non-verbal/non-physical (e.g., threatening looks and gestures, silently mouthing words) if the adult is near. However, the influence of the adult depends greatly on his/her awareness, prestige, and power.

Who is a Bully?

A person (child, youth, or adult) who engages in repeated intentional actions that hurt others physically or emotionally.

Facts and Figures

A review of the literature shows the following:

More than 1 in 3 girls, ages 10 to 18, report that they don't feel safe at school. Then consider that boys are more fearful in school than are girls.

Perhaps the above findings can be explained by this finding: 27% of students 10 to 14 years of age and 31% of students 15 to 18 replied that they "agree" or "strongly agree" that it is acceptable to hit or threaten someone who makes them angry.

More than 16% of U.S. school kids say that they have been bullied by another youngster during the current school term.

Bullying appears to be most prominent during ages 11 to 14.

There appear to be no differences in bullying rates between rural, suburban, town, and urban areas.

Of students aged 12 to 16 years:
-62% reported being bullied through the belittling of one's looks or speech.
-60% report being the subject of rumors.
- 56% report being hit, slapped or pushed
- 52% report being the subject of sexually inappropriate comments or gestures
- 26% report being belittled about their religion or race

15% of absenteeism is believed to be due to avoidance of bullying

60% of former bullies have at least one criminal conviction by the age of 24.

Characteristics Of Bullies
It's important that teachers, parents, and members of the community be aware of the signals that suggest a child might be a bully. Some of the common indicators include:
- Lacks empathy and concern for others
- Demonstrates a strong need to dominate and subdue others
- Hot tempered, quickly becomes enraged
- Teases others in a hurtful manner
- Picks on others who are weaker; not done in self defense
- Intimidates others through threats or reputation
- Committed acts of physical aggression
- Defiant, oppositional, and aggressive towards adults

Is My Child a Bully? Questions for Parents (and teachers) to Ask Their Children

1. Have you ever tried to make someone cry or feel scared?
2. What did you do to hurt someone or make them feel bad?

Do you or your friends make fun of anyone at school?

Do you or your friends make fun of anyone outside of school?

3. How often do you try to hurt other kids? Daily? Weekly?

How does it make you feel when others are afraid or you?

How does it feel when you make another person feel bad?

Does anyone do hurtful things to you? (tease, insult, touch wrongly, exclude you from groups, send hurtful e-mails/texts)

If so, how does that make you feel?

What do you do during recess? Lunch?
Causes Of Bullying

Opinions regarding the etiology of bullying vary. Some believe that bullies learn their intimidation tactics from their parents/guardians, and are displaying behaviors that serve a function in their home environments. Others believe that certain environments directly or indirectly reinforce aggressive behaviors demonstrated by children. Aggression may allow the child to avoid tasks (negative reinforcement) or gain privileges/rewards (positive reinforcement). As a result of being reinforced, the behavior is maintained and strengthened. A third belief is that bullies have a poor social perception of situations. They may interpret other people’s behaviors as being hostile towards them when in fact, there is no such intent. For example, if another student accidentally knocks over a bully's pencil or book, this event is viewed as having a hostile intent. The bully then retaliates.

Bullying has long-term effects on both the victims AND the bullies. Victims are at risk for developing low self-esteem, anxiety, and/or fear as a result of having been bullied. In extreme cases, victims have committed suicide in order to escape the continual harassment. The victim's academic performance may be negatively affected as well. On the other hand, children who bully other children are more likely to become involved in the criminal justice system at an early age. They are also at risk for becoming involved in illegal drug use and other anti-social behavior.

The Victims

Bullies tend to harass children who are vulnerable in some way. Dressing differently, being from a underrepresented cultural group, learning more slowly than others, or being unskilled in a valued ability can make one a target for bullies. Weaknesses and differences are exploited by these aggressors.

What makes victims so vulnerable to bullies? There seems to be three factors that contribute to becoming susceptible to being preyed upon. One factor is poor social skills. They have difficulty interacting productively with their peers or fail to pick up on social cues. This lack of social awareness and interaction skill contributes to them being viewed as odd or different. While most children will simply avoid the youngster who is seen as undesirable as a friend or playmate. Bullies may attack these socially unskilled youngsters.

This lack of desirability can lead to a second common trait of victims; few or no friends. Since they have no friends (or not enough), they lack a support network when bullies engage in harassment. New arrivals to a school may not have made friends yet, increasing the chances that they might be viewed by bullies as easy prey.

Finally, the third contributor to victimization is a tendency to be non-confrontational. Failing to verbally (or physically) assert oneself can encourage a bully to continue intimidation behaviors. Members of small non-confrontational groups may also be viewed by aggressive youngsters as potential victims. Common non-assertive reactions (i.e., crying, giving in to demands, asking for lenient treatment, and avoidance) often bring on repeated incidents because bullies are able to engage in their coercive actions. They are reinforced by these non-assertive responses.

Victims of bullying can be classified as "passive" or "proactive". Passive victims did nothing to provoke the bullies, but are singled out. They then agree to the demands of the aggressor.

Proactive victims tend to be socially unskilled youngsters who irritate other children. This behavior seems to attract others to pick on them. What makes proactive victims different from socially unskilled bullies who victimize others is that the proactive victims are not accomplished fighters. They do not fight (or fight well) when verbally or physically confronted by others. Also, since socially irritating proactive victims "provoke" incidents, others (both children and adults) often feel that the attacks are justified. Proactive victims are commonly diagnosed with ADHD.
It is believed that the hyperactivity is a contributing factor to the irritating (to others) nature of their behavior. Children who are diagnosed as "oppositional" or "conduct disordered" could also become potential proactive victims because they share some of the symptoms of ADHD.

In order to identify and help children who are victims of bullying, it's important for parents and teachers to notice signals that suggest a child might be a victim (or be at risk for victimization). Some signals are:

**PERSONAL CHARACTERISTICS**
- Underdeveloped social skills
- Shyness or lack of assertiveness
- Few or no friends
- Never or infrequently invited to parties/gatherings of other children
- Small physical stature

**PHYSICAL EVIDENCE OF BULLYING**
- Missing belongings
- Missing money, or what would be bought with those funds
- Unexplained bruises, cuts, and abrasions
- Torn, bloodied, or dirtied clothing

**BEHAVIORS**
- Feigning illness to avoid environments where bullies are present
- Fear of going to school
- Skipping school or cutting certain classes/activities
- Avoiding unstructured settings (Lunch, recess, bus loading/unloading)
- Sadness/depression
- Nightmares
- Drop in grades
- Carrying weapons

 Victims need to learn how to seek help from adults. They may also need to improve their social skills to assist them in making friends.

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**School Approaches To Bullying**

To many adults, bullying is viewed as an unavoidable right-of-passage through childhood. It may be that bullies will always be around. However, as educators and parents become more aware of the negative effects of bullying, they are trying to find more (pro)active approaches to reducing its presence in schools, sparing many the long-lasting hurt, or for bullies, an errant life.

While everyone has served in the three roles of aggressor, victim, and bystander, when repeated patterns happen in any of the roles, intervention is necessary on a systematic and individual basis. Educators cannot sit by while the children in their charge are harmed, do harm, or allow harm to others.
A sad, real-life incident: In an American State that requires all school districts to have an anti-bullying curriculum in place, a small city has none. Incidents of bullying are ineffectively addressed.

Example 1: Moving two bullies to another classroom to distance them from the victim, although the two classes still combine for instruction several times per week when the bullies continue their actions under the noses of teachers who have received no training in the matter. Other pupils fearing for their safety, fail to interrupt the bullies or support the victim.

Example 2: In the city's middle school, a hallway supervisor on patrol enters the student bathroom and finds two boys attempting to force a third boy into giving oral sex. The district fails to notify the parents of the victimized child, and fails to engage in any productive responses until word of the incident reaches the community (Did they think that middle school students wouldn't talk about it?). A community meeting is held at which worried and angry members of the community are dissatisfied with the few answers that are provided in-between statements that issues can't be discussed for legal reasons. Two months later, no anti-bullying programming has yet been implemented.

Increasingly, communities are exploring school-based bullying intervention programs to help reduce bullying or eliminate it all together. There now are many effective strategies for countering bullying. In addition to providing warnings and protection to all, a good anti-bullying program implements immediate disciplinary consequences for intimidation and aggressive behavior, and re-orientation instruction for the bullies, their victims, and bystanders. However, for the programs to succeed, adults and children must be aware of signs and interventions. From that point, they then need instruction in how to prevent, detect, and react to bullying. Many of the strategies found below are derived from the Colorado Anti-bullying web site at http://www.nobully.com

INTERVENTIONS

Once it is established that a youngster is a bully (or that bullying is a problem in a school), it's important for parents, teachers, and members of the community to promote positive pro-social behaviors and decrease anti-social ones. There are curricula, that combined with self-change strategies, counseling, and monitoring, can produce those outcomes in aggressive youngsters. Comprehensive programs also include education and training for victims and bystanders.

Strategies For School Administration

It is paramount for school administrative personnel to increase awareness of the effects of bullying and reduce it's presence in their schools. The first step is to create a bullying prevention committee. The committee should contain teachers, counselors, paraprofessionals, parents, administrators, and students.

The committee should assess the prevalence of bullying in its schools by:
- Having students complete surveys
- Conducting naturalistic observations (non-intrusively observing settings)
- Reviewing records
- Interviewing involved parties, etc.

After the committee has gathered information about the level and types of bullying in its school, it should search for an anti-bullying program that is suited to the needs and characteristics of this particular school setting.
School administration should also increase awareness of bullying in the local community. This approach might involve holding a conference day that involves staff, parents, local merchants, community leaders, police, and students. This instructional event could help people understand the effects of bullying, how to recognize it’s presence, and how to intervene when they witness it. Students might devise realistic presentations (skits) or engage in other activities that help to promote awareness of bullying.

Knowing that bullying is most likely to occur during unstructured times of the days (i.e., transitions, recess, lunch, hallway passing to next classes, etc.), supervision of students should be increased on the playground and in the cafeteria and hallways. Having more supervision during these times not only helps to reduce bullying, but also improves intervention response time if an incident should occur.

Finally, it is important to remember that parental participation is an integral part of successful anti-bullying programs. Parents should be informed of the bullying program used by the school (or under consideration). They should also be aware of the procedures used by administration in order to address and react to bullying incidents. The school administration should also encourage parents to become involved in the program (and in the school operations in general).

Classroom Strategies

Teachers serve on the front line in the campaign against bullying. Here are some tips you can use to keep bullying at bay:

1. Discuss the rules with the students, or better yet, involve them in making the rules. Students are more likely to abide by and promote rules they helped to create.

2. The rules should be written in a positive manner. Instead of focusing on what the students should NOT do, give them rules that identify the desired behavior. For example, instead of "Don't disrespect others", word the intent as "Talk nicely to others".

3. When making rules, it's also a good idea to discuss the consequences for failing to follow them. Create consequences that will help the bully to learn pro-social skills. The consequences should be something functional. For example writing: "I will not hit Jane." 250 times on a sheet of paper is not functional. While indicating what not to do, it provides no description of the desirable behavior. In that case, the bully doesn't really learn anything new. It neither identifies or promotes an alternative behavior (such as "When I'm angry, I will use I messages to express my feelings."). The bully should be taught to accept responsibility for his/her actions, and engage in more appropriate actions.

4. Hold regular classroom meetings so that students and teachers can clarify or change bully-related rules if necessary. This gathering can also help students and teachers become more aware of bullying and what they should do if it happens to them. Every classroom dynamic is unique and that factor should always be considered when creating rules and consequences. Sometimes rules also have to be modified because of that uniqueness.

5. Develop and/or use a curriculum and materials (see the resources listed below) that actively promote positive assertiveness, communication, respect for others, camaraderie, and friendship within the classroom.

6. Talk regularly with parents and inform them of how their child is behaving and performing school. Inform parents of any bullying occurring to or from their child, and discuss how actions taken to help their child are or are not working.
What To Do In The Midst Of Bullying

Once aware of a bullying incident and which child is the aggressor, speak to the bully. Let the offender know that this kind of behavior will not be tolerated in school. Remind him/her that everyone has a right to be safe in school (including him/her).

Very often the bully will deny or minimize his/her involvement in the situation. Regardless, describe to the bully what s/he did and why it is not acceptable. Discuss the consequences s/he will have to face as a result of the behavior, and advise the bully that s/he will be closely monitored by staff in the school. Document what happened. The document should establish who, what, when, where, and why of the bullying occurrence as well as how the school handled the incident. Encourage other staff to closely monitor this student.

It is also important to have a serious talk with the victim as soon as possible. Make sure that the bully is not there. Use a concerned and supportive approach. Find out the victim's story and document his/her version as well. Assure the victim that consequences will be given to the bully and if the bully or anyone else bothers him/her (the victim) again, s/he should inform staff so that they can help him/her handle the situation.

Arrange a meeting with the parents of both the victim and bully. Depending on the situation or the parents' preference, the meeting can occur with parents of the bully and victim together, or at separate times/places. Administrative personnel should be present. Security personnel might also be asked to wait nearby. School personnel should discuss consequences the bully will face as a result of his/her behavior and ways parents can help to prevent this event from happening again (but not by bullying their child bully). Anger management and social skills training should be offered for the bully. The school may also want to suggest ways to help the victim become more assertive and advocate for himself/herself when confronted by a bully. Social skills training for the victim should also be considered. If the bullying continues despite interventions, it would be a good idea to discuss moving one of the students to another classroom (if they are classmates). If possible, move the bully instead of the victim. However, it's important to discuss this move with both parents before it is undertaken.

Building Self-Esteem

Victims often have poor self-esteem previous to, and/or develop self-doubting after the bullying incidents. It's important to help them build their self-confidence and boost their self image. This transition is often accomplished by encouraging them to explore hobbies or topics that interest them. Consider whether these interests could help them interact more with people. For example, if a child is interested in martial arts/self defense, perhaps his parents could encourage him to participate in a club that would encourage his/her interest in the sport and help him/her meet children outside of the school setting. Remember, whatever after-school activity is encouraged, it should be one that the child truly wants to do. If the child is a quiet or inward soul, it may be a good idea to select programs that meet in small groups or are individualized to the his/her needs. This approach can help the child focus more so on the activity and positive socialization than competitiveness and who is doing the task better.

Summary

Bullying is all too common in our society. Given the strong negative effects on the present and future of both the aggressors and victims, it is important for educators to intervene promptly and productively. The resources provided below can assist in those efforts.
Swearing (Cursing, Cussing), Racial Insults, & Other Inappropriate Language

Author: Elana Cohn (with Tom McIntyre)

Brenda realizes that he has just completed 6 calculus problems using the wrong procedures. Disgusted with this realization, she impulsively reflects her self-anger by saying “Son of a b-----”.

Kyle and Cecil do not like each other. One day, they bump into each other trying to enter through the classroom door. Kyle calls Cecil a negative term used to describe people of his (Cecil’s) heritage/race/country of origin.

Jackson, a four year old, uses the “F word” in preschool. While we’re sure that he doesn’t understand what it means, we certainly don’t want to hear it said within the building.

Whether they’re uttered out of frustration; or used to gain attention, present a “tough” image, or hurt another, certain words and phrases are inappropriate in the school setting (and other gatherings that demand restrained and respectful phrasing). Typically, the behavior is ingrained, a bad habit so to speak, and requires intervention on our part. Typically, we must first make the student aware of the behavior and it’s inappropriateness in the classroom. Once awareness is developed, our attempts to change the behavior will be more effective. This page contains a wide selection of strategies to use with students who curse, cuss, and use negative terms to insult others.

1. Praise the student for any appropriate use of language

2. Use self-monitoring: Have the student rate his own behavior.
   - Have the student mark down a minus for each time he curses in a day or a class period, and give him a reward if he gets less than 5 minuses (or another number based on your observation of the frequency of the behavior). Lower the goal number closer to 0 as s/he improves.
   - Or have him rate himself on a Likert scale after each class period or activity from 0-5 (a 0 translates to “frequently cursed” and a 5 converts to “did not curse at all”). Reward him/her each time s/he gets a certain number of points that have been set a goal.

3. Identify the antecedent that brings about the undesired language. Try to eliminate that stimulus, or teach the student substitute words to use in such a situation. S/he can even make use of invented words to express the anger and frustration (e.g., “Oh, shmeckeldoody”).

4. Dr. Mac’s book, The Behavior Survival Guide for Kids discusses making smart choices for dealing with emotions in chapter 4. It suggests teaching the student to “Stop, Think, Choose, Think Again.” In this method, the student stops before speaking, thinks about what he is about to say, chooses which words he wants to use, and then thinks about whether or not this choice was a good one. Give the student visual cues to remind her to make good choices.

5. Talk to the student’s parents and find out if there is anything new or stressful going on at home. Ask the parents if they have heard their child talking in this manner and if so, how they react to it. Encourage them to hold the youngster to similar standards of acceptable language at home. Ask them to model non-caustic language for their youngster.
6. Respond to inappropriate language with a simple, calm response... or just ignore the language all together. You might matter-of-factly say, “Those aren’t very nice words to say.” Or consistently give a one word response, like “Inappropriate”, or a one-word reminder, like “Language”.

7. Teach your students that words can hurt others as with physical violence. Children by nature are caring and sympathetic beings. However, they sometimes need to be taught how to avoid destructive verbal violence.

8. Have a zero tolerance policy towards such language. Respond with a matter-of-fact, “That’s a word we don’t use in our classroom” and never accept that kind of language. Once you set limits, stick to them. Penalties may have to be implemented, but progress should receive a positive reaction. Do not get frustrated if the behavior escalates before it becomes extinct. Often, the behavior worsens before it goes away. Nevertheless, remain consistent in your expectations and response in order to promote extinction of the language pattern. Remember that it can take a very long time to change verbal behavior, which has become instinctive and habitual.

9. Be consistent in how you respond to the undesired behavior. Once you choose a strategy to address the inappropriate speech, use that strategy each and every time the student exhibits the inappropriate behavior for at least one or two weeks before implementing a different strategy.

10. Let your students know that if they are unsure about whether something is appropriate to say, they can ask you for guidance. By making the teachers the authorities on appropriate and inappropriate language, the students can find out which words are appropriate and which are not without disturbing the class by verbalizing the undesired word. Allow students to ask the teacher about the words privately and then wait for the teacher’s response before using the word in front of the whole class.

11. Set up a classroom rule about language. Then convene a class discussion about appropriate and inappropriate language and making good choices about language. Review the classroom rules and standards often, perhaps using examples of appropriate and inappropriate language.

12. Make use of “the sandwich technique”. Start a conversation with with the student by saying something positive. Then give constructive criticism and suggestions. End the conversation with a positive statement. For example, “It is great that you were able to identify your emotion and told me that you were angry. I hope that next time you will use appropriate words even if you are mad. What are some more acceptable words that you could have used in that situation? (Have the student list them, then practice their use with you). I know that for next time you will try to choose even more descriptive appropriate words to express your emotions, because I have seen you do it before.” Make sure that the student hears that you believe in his/her ability to utter the correct language.

13. Give students two good options in order to eliminate the bad one. For example, say, “That word is not okay in school. I can see that you are upset, so you have two choices: You can (a) take a deep belly breath and find your words, or (b) talk to a teacher about what is making your upset.” Model and practice how to take a deep “belly breath” and find “good words” to express emotions.

14. Give proximity praise. Ignore the child’s inappropriate language, and praise the students around him for using appropriate words. As one example: “I love how Jane is working quietly.”, or “Tyrone, thanks for using polite words during the disagreement.” As another example: “I like how you are talking nicely with your table partners! You are using respectful words to decide on how to proceed with the project!” Hopefully, the student of concern will notice the behavior of the praised students and try getting attention in that manner (instead of using inappropriate language). This technique also helps keep the other students focused on what they should be doing, so that they do not seek teacher attention via inappropriate language usage.
15. Talk to your students about the environments in which their language may be acceptable (i.e., on the streetcorner), and in which environments it is not appropriate (i.e., in a future workplace, at an interview, meeting a boy/girlfriend’s parents, on school grounds, etc.). Explain to them that it is difficult to switch gears from speaking and acting one way, to talking and behaving in another. Therefore, they can start to practice switching gears by withholding hurtful or caustic language when in school, even though they may use it at home or on the streets. Make the rule that: “If you can’t say it in church, you can’t say it in our classroom.”

16. Ask the students to use more creative language in their insults. Print out copies of the Shakespearean Insult and teach the students how to use it to come up with more artistic language for their insults. Every time that a student uses an “old” insult, ask him to rephrase it in more poetic language. Another good example of well-worded insults can be found in the famous phrases of author Mark Twain (e.g., He’s a good man in the worst sense of the word.”)

17. Implement bibliotherapy. Select a book that addresses word usage and choosing more appropriate .

18. Utilize the Ten-R. After each time that the student uses inappropriate language, go through the following tens steps in order:

1. **Response cost (penalty).** When a non-acceptable action is displayed, remove a pre-determined amount of reinforcer (e.g., free time, points) as the student states which rules were broken. The amount to be lost is known to all students because of your discussions with them.

2. **Relaxation.** Have the student go to a pre-assigned place (e.g., a mat, carrel, or corner) and relax himself/herself. S/he summons you when calm. If the voice is excited or sarcastic in tone, or if the muscles appear tense (You may want to lightly shake his arm or leg to monitor muscle tension. The arm should "wobble".) tell him/her to continue to attempt to become calm and relaxed.

3. **Rectify.** Have the student provide restitution for any physical/emotional damage done. This payback may involve repair of items, an apology to another, or repayment for damage.

4. **Recognize.** Help the student to recognize the cause of his misbehavior and identify more appropriate responses for that situation

5. **Rehearsal.** Have the student practice the alternative behavior(s) identified in Step 4. The roleplaying situation should be similar to the event which was handled inappropriately by the student.

6. **Reinforce.** Reinforce, praise or otherwise reward the student for having demonstrated appropriate behavior. Encourage more of the behavior in the future. Also reinforce the behavior when it is later displayed by the student.

7. **Reflect.** Ask the student to identify the consequences of his disruptive behavior and compare them with the possible consequences of the desired action. This analysis helps the student to see the benefits of proper behavior.

8. **Re-enter.** The student has missed anywhere from a few minutes to a few hours during this session. S/he should finish all work missed, or be returned to the least pleasant activity that was missed. This action ensures that these sessions do not become a learned way to avoid certain schoolwork.

9. **Record.** Record data to assist in evaluating the long term effectiveness of this intervention.

10. **Repeat.** Use this technique as necessary to change behavior.

19. Schedule a meeting with the student and his/her parents to discuss the student’s verbal behavior and attempt to devise solutions.
20. Teach the other students how to cope with and handle this student’s negative verbal comments. Inform them that this student actually conveying, via his/her language, that s/he is experiencing difficulty in handling his/her emotions. Provide them with verbal responses to this language so that they can help the youngster phrase things more appropriately (e.g., “I don’t like to hear those words.”, “Please tell me what you want so that we can solve this problem.”, “If you want something, you’re going to have to talk to me nicely.”).

21. Record the student’s performance in withholding negative utterances. Place the data on a monthly chart in order to monitor progress toward the goal.

22. To draw attention to the behavior in older students, say “Is that the same mouth that you eat with?” Or “I hope that that isn’t the same mouth you use to kiss your mother.” After attention has been gained, open a discussion on when and where the words are appropriate and not.

23. Investigate whether the student may be experiencing verbal tics over which there is little control. Cursing is rarely, but sometimes a symptom of Tourettes Syndrome.
Strategies for Dealing with Defiant, Rude & Oppositional Students

**Defiant**: Challenging; non-compliant; confrontational; openly and boldly challenging and resisting authority

We have 5 available choices when we don't want to follow a direction:

1. Deny or swallow our feelings & comply passively.
2. Refuse in a rude manner. (This is the common choice for our defiant kids.)
3. Withdraw or run away.
4. Avoid complying by use of trickery and manipulation.
5. Make our feelings and decisions known in an respectful manner.

*We want to help our kids adopt patterns #5.
(Sometimes #1 is an appropriate choice, given certain circumstances)

Why Do People Defy Directions?

1. Transitional phases of human development

    *-Ages 2-3*  Hey, it's your fault. You taught them the NO word. Now they're using it to test their environment and try to maintain their prestigious place in the world. Think about it...you're the king/queen of the world...everyone jumps through hoops for you until that dreaded moment...the start of toilet training. Previous to that time, you pretty much got to do things the way you wanted, when you wanted. Now society places it's first demands on you. There is a time and place for something. As the eminent Dr. Freud might describe it: The superego (society's rights and wrongs) is imposed on your id (the part of you that is impulsive and self-centered). Kids resist this restriction on their free world. Defiance is an attempt to keep the known world the way it was.
(Side note: Most of us no longer hold a grudge against our parents for imposing restrictions during toilet training. In fact, I often thank my parents...Being toilet trained has really come in handy for me over the years!)

-Adolescence  I'm sure I'm not telling you anything you don't know here. With emerging new mental and physical abilities, pre-teens and teens want to have a say in their world. They want to influence what happens and have their opinions considered. This desire, mixed with a lack of life experience, and a not-yet-fully-developed frontal lobe (the part of the brain that helps us to recognize danger and fully feel empathy for others), especially in boys, often results in them wanting a longer leash than parents and educators feel it is wise to give.

-Senior years  Imagine that your once strong body and nimble mind now start to fail you. (I don't have to imagine it...it’s happening!) You're much valued independence is something that you see fading. You must rely on others for things that you once did capably on your own. There is resentful at one's failing capacities. Many voice: "I don't want to be treated like a child!" (What does that statement say about our society if we don't want to be treated like children? Consider the RoseBud Sioux [American Indian nation] language in which the word for child means "Sacred Being").

-Newly married?  It's not unusual for newly weds to exhibit defiance as they adjust to a new state of being. It's difficult to adjust to a lifestyle in which independent decision-making is sometimes viewed negatively by the spouse. How many of us felt that the other person was placing "unreasonable" demands upon us. (I love you...now change.)

2. Defense of assigned personal image
Many children has been assigned identities by the important adults in their lives. They have been called "bad", "not very bright", "rude", etc. Maybe the behavior pattern resulted in the assignment of the label, but maybe the label promoted the behavior... Imagine it, you hear someone who is in charge of raising you and has lived in this world much longer than you telling you that you are not doing well as a child. They are all-knowing beings. If they say that you are something, then you accept that they are right. You adopt that identity. What do rude people do?...RUDE THINGS! We have created the very type of person we were trying to prevent!

So which came first? The egg or the rubber chicken? Doesn't matter. Whatever happened before the youngster reached you, it's now up to you to do things right: NEVER, NEVER, NEVER  Say that a child IS a particular type of person. You can say that the behavior is rude or that the action was thoughtless, but never say that the kid is rude or thoughtless (or some other negative identity tag). See the link on this site titled "Nice ways to build self discipline in kids" for more information and strategies regarding this advice.

INTERVENTIONS:  (Ways to get our messages imbedded in the youngster's mind, and improve our connection with the student so that we are more likely to have our requests followed)

-Avoid using positive labels (e.g., "You're so smart.", "You're a good boy.") because they will be rejected by a youngster who sees them as being incorrect (given his/her life experience).  So what do we do in place of labels? How do we break down old image (and build a new one)? Disprove the image (and build a new one) with non-disputable evidence and point out factual evidence of good choice making.

-"Thanks for holding the door for us. That was a kind gesture on your part."
-"Your patience with Ivan really helped him to understand the material. Thanks."
-"You showed a lot of restraint & self control in that situation. Proud of self."
-"Wow. You got it! Tell me how you figured it out."
-Set up the youngster for success  So if your eyes are peeled and he's not showing pro-social behavior? What do you do? Arrange opportunities for the student to do well. Set him/her up for success, and then recognize the good choice (or some approximation of it).

-Reminisce  If a potentially frustrating event for the student is about to occur, you can remind the youngster about times when the s/he made a good choice (perhaps times when you rigged the situation for success) and state your belief in his/her ability to make a good choice in this particular situation that is about to happen.

When I was a kid, I remember overhearing people saying positive things about me. I know now that my parents waited for me to walk by a conversation they were having with others at which time they would utter a compliment about me ("Other other boys were going to go swimming in the river rapids today, but Tom remembered that it wasn't safe and told them he had to meet a friend somewhere else."). Did this happen to you too? Devise opportunities to say positive things about how one of your students followed the directions or made a good choice. Be sure to state the actions that occurred. Do not label the student.

-Model values and behaviors you'd like the kids to adopt  Are you on time for class? Do you treat others with respect? Your kids are watching. You are a role model.

-Interpret the behavior by placing the unknown or scattered feelings into perspective. Use "symptom estrangement" (Fritz Redl's term for separating the inappropriate behavior from the youngster...in other words "I hate the behavior, but I believe in your ability to change for the better.") Here's an example:

  "Lee, you're a kid with a lot of potential, but this behavior isn't helping your popularity with others. I suspect that the reason you did it is because you were feeling victimized. We need to learn better ways to handle these types of situations."

  (Symptom Estrangement: Dislike the behavior while expressing belief in the kid's ability to change for the better.)

  
  "It's a hard for you to hear people say nice things about yourself, isn't it?"
  Kid: "Don't nobody mean it when they say it."

  "It's hard for you to believe that people can care about you, huh?"
  Kid: "Ain't nobody cares about me."

  "Are you saying that because you don't trust that I'm telling you the truth?"
  Kid: "Hey, I've heard it all before."

  "You've experienced a lot of failure in your young life, but that doesn't mean that you're a failure. I see your potential, and I'm here to help you reach it. There's still time."
  Kid: "BUG OFF. Leave me alone."

  -Below that superficial rejection, which was an automatic response on the kids part, is a thought that perhaps someone does care about his/her welfare. You've make a small pinhole in the dark cover over his/her psyche.

-Prepare the student for your positive feedback (In order to prevents the automatic negative reactions found above)

  "I have something nice I'd like to tell you. Wanna hear it?"
  Kid: "NOPE." (but s/he is wondering what you were going to say)

  "I'd like give you compliment. How're you gonna react if I do?"
  Kid: "Not well."
  Teacher: "That's OK... I'll take my chances."
-Make a quick retreat  Provide praise in written form (or make a very quick verbal commentary) and walk away. In this way, there is no chance for the student to give you an automatic nasty retort.

3. Defiance due to Conflict Between The Student and Educators

If your student is known to be "rude", "defiant", or "oppositional", s/he probably has a long history of negative experiences with authority figures. You belong to a group of people who have made his/her life miserable and said nasty things to him/her. Then s/he meets a nice person like you, but immediately categorizes you as being "one of them". Expecting the rejection s/he has experienced before from teachers who initially said "I care about you and we'll have a good year.", but then became enemies in the behavior battle, s/he striking out at you.

Defiant kids will try to force you into that "mean teacher" role to keep their concept of the world intact. It's a coping strategy: They are trying to manage a negative and unpredictable life. They are trying to protect their injured self from further harm. They want to get the "inevitable" rejection over quickly and on their terms. They decide to reject you before you reject them. They will try to prove that you are like the others in order to keep their world view intact (however distorted). They will do things to make you take off your behavior management halo and pick up a disciplinary pitch fork.

Will you be able to maintain your caring approach when this student challenges you? Will you be able to avoid taking these comments and actions personally? Will you be able to stand back and say "Here is a child in crisis (again). What should a caring professional such as myself do in this situation? What reaction on my part is ethical, moral, professional, and in the youngster's best interests?"

The idea that I'm trying to convey is that educators often create the very behavior that they complain about. Many times oppositional behavior results from getting tired of hearing corrections, chastisement, complaints and other negative comments about oneself all the time. At some point, kids get fed up and tell negative people to "take a hike" (or some other wording). If we are going to change the defiant behavior, we must set kids up for success, catch them being good when they do succeed, and focus on progress, however small. Changing these kids to be more cooperative is a series of small victories (in which both sides win and feel good). If you're a bossy teacher, don't expect to make much progress with these kids.

Often times, if we are to break a student's negative behavior pattern, we must break our own "dark side" ways first. Many of us hold the view that we are the masters and the students are our slaves...that we are the hammer and the students are the anvil (I would remind you that the hammer wears out long before the anvil). Pupils are expected to obey our every direction without question. Certainly that form of compliance would be nice, but does it teach our youngsters to think, reason, develop self-regulation of behavior, and become thoughtful citizens? (The answer is a resounding "no")

As students get older, they want to contribute to the environment in which they find themselves. They want to influence the events in their community (the classroom and school). They also want more responsibility within that arena, and respect for their views. Certainly we teachers (in general) have more experience and wisdom than our youngsters, but part of being a wise elder is helping the younger generations to develop into thoughtful societal contributors, not automatons who robotically follow commands (except perhaps in emergency situations). Refrain from escalating a minor incident into a major battle. Talk privately, NEVER in front of others. Avoid bringing up past failures and infractions.

Youngsters who feel that they have no control over a situation will fight for control. Often, they are able to disrupt our classes, gain the support of others, and be viewed as a champion for student rights. Many "oppositional" young people,
perhaps due to life circumstances or familial/cultural upbringing (more on this topic in the future) may be more sensitive to being "ordered" to engage in actions (e.g., starting work, completing work in a certain prescribed manner, ceasing behavior deemed inappropriate).

**INTERVENTIONS**

- **Recognize** the "wounded animal" that doesn't trust and is trying to prevent deeper hurt. This child is afraid, but showing you other behaviors to disguise that fear. If we could just place ourselves in their shoes...we would look funny and our feet would hurt...but let your empathy for others who are hurt win out over caustic reactions.

- **Avoid coercive "Do it dammit!" directions.** Use requests and the word "Please" before politely stated directions.

- **Avoid toxic penalties.** When we engage in behavior battles with kids, we are at risk for coming to view them as the enemy. Then we decide to "get tough with them to teach them a lesson". Odd...we don't learn lessons that way and would refuse to do what others want us to do (or at least resent them)...but somehow we think that everyone else will learn a lesson is we "get tough with 'em".

- **Use "Symptom Estrangement"** (see above).

- **Don't take it personally.** The behavior is part of the student's disability. Let these oppositional things bounce off of you.

- **Never give up on a youngster.** Keep believing in their ability to change for the better...now that s/he has a persistent, and caring teacher like you.

4. **Fear of failure upon seeing teacher's assignments**

Imagine that you are in a group of peers. You are presented with a task that you know you are not able to do well. You are afraid of being publicly exposed as not being able to accomplish what others can do. You have a choice: You can be "bad" or "dumb". Which one would you choose? Certainly, the "bad" badge has more prestige to it than the "dumb" label. Many of our kids will choose the former when faced with failure.

Are you sure that the material is on your student's level? Could your student be avoiding imminent failure? Do you know your students' instructional levels (if they were motivated to show it)? Are you able to identify this student's learning preferences (hands-on, video, etc.) and learning style (auditory, visual, global, inductive, etc.) so that you can teach to his/her strengths? If not, what will you do to seek out this information?

**INTERVENTIONS**

- Modify assignments so that reading/writing level do not come into play.

- Focus on effort, not accuracy. If kids are trying their best, we should be happy teachers doing cartwheels! With effort will come accuracy and acquisition of knowledge. Promote "best effort" over grades and scores. You'll find that exactness will increase over time if kids don't fear grades. Can't focus solely on effort due to the school's requirement that you must submit grades? Could you build effort into the academic grade (sort of like a daily quiz)? If not, at least focus on effort in your classroom, even though you must eventually assign a grade. That grade will probably be higher.
than if you focused on the grade obtained on assignments. Kids will learn more if they're engaged in the task. Requiring only one's best effort results in progress.

-Get them started first with some help and support.

-Break down the task into sections and have each part checked before next part.

-Offer options for completion. Provide acceptable ways (to you) for showing one's knowledge.

-Have the student place his/her answers/thoughts onto audio tape. Then score those answers for content. Use written work as an exercise to improve that particular skill. In other words, separate the information from the skill that gets in the way of showing one's knowledge.

-Implement cooperative learning, peer tutoring, and/or cross-age tutoring (see the link on this site titled "cooperative learning")

OTHER GENERAL STRATEGIES TO USE WITH KIDS WHO DISPLAY DEFIANCE

The Event That Never Happens

Prevent and Analyze

Be proactive. Based upon past experience and analysis of the youngster's behavior, predict situations in which the behavior might arise and attempt to prevent it's occurrence. Become skilled at identifying the goal or function of the student's behavior.

Defusing Refusing

Say it nicely

We all like to be shown respect by others. If "non-compliant", "defiant", and "oppositional" kids feel that their view point has been considered or that they have been "asked" rather than "told" to do something, they are more likely to comply. Consider your own life: How would you prefer that bosses, spouses, elder siblings, parents, principals, and professors gain your cooperation? Don't you respond better to a friendly, supportive supervisor? You can find tips on saying it nicely in the following links on our home page:

- Nice things to try (before using "do it or else" interventions)
- Gaining and getting respect
- I messages

If these strategies fail, you can always follow them with the usual coercive interventions. If the less intrusive strategies don't work initially, don't give up. Keep using them before implementing penalties. Kids will, over time, notice the progression of events and recognize the benefits of responding to your earlier, gentler attempts to gain their
cooperation.

**Offer a selection of choices that are acceptable to you**

"Non-compliant" pupils wish to have some degree of influence or control in a situation. They rebel against adults who they view as being oppressive. Instead of demanding that the work be completed in a prescribed manner, give the youngster "power" in a situation while still getting what you want (displaying knowledge). Just provide the youngster with a choice of several ways of completing the assignment.

Suppose you want Jasmine to write in her daily journal, but she refuses. You might offer her the following options which you deem acceptable:
- Write in pencil instead of pen
- Use a green ink pen
- Use a felt tip pen
- Compose the essay on a computer, print it out, and paste it in the journal
- Draw a picture of what she would otherwise write about (ask for a caption and short summary later)

A picture???!!!! How can I suggest such a thing???? OK, then don't offer that option. However, please consider that a picture represents her story, and if she's going to rebel against your demand to write in blue ink, you're not going to get anything from her when she rebels (and the argument will ruin your day, irritate the principal when you send Jasmine to the office, and upset the other kids). Isn't the submission of something better than nothing at all (at least as a start)? Once you have her product, thank her for submitting it, find something to compliment, and encourage further compliance. Perhaps after some positive commentary, you can say "Now I realize what you're capable of doing. I know I'm going to see more of this super work in the future. Right?" Or compliment the product and try to get a bit more out of the youngster right then ("This is a well drawn and realistic rendering. Would you mind writing a caption to it so that we know what it's about?" OR "This essay is very strong in content and your penmanship (is this a sexist term?) and writing mechanics are excellent. You know what would really distinguish this piece from ordinary ones?... More colorful and vivid words that enhance your images. Remember our lesson on adjectives? Can you fit in 3 or 4 descriptive words for your nouns? Don't worry about writing your piece over again, just write the adjectives above where you want them to go. I'll know where they belong.")

Another example: "Josh, you're on the cleanup crew today. Do you want to be the gum scraper, paper picker upper, broom pusher, dust pan holder, or mopper? Graffiti remover? Oh...thanks for reminding me of that. What's your plan for removing it? ("Paint over it.") That will certainly get that scribbling out of our site, but then we still have a messy wall. Would you like to use soap and water or spray chemicals and a rag? ("Spray chemicals.") OK, but you realize that you'll have to wear goggles and rubber gloves, before you use the spray bottle right? (OK)"

**Allow the student to self-monitor and self-evaluate**

Allowing student to evaluate their own work gives them "power". You might provide a checklist to be completed, or ask the students to list the strong and weak points of their academic products. For behavior in general, visit our page on "self monitoring". This procedure involves the student in his/her own behavior change for the better.

**Send a note**

Notes are a great way to prevent misbehavior, nip it in the bud, or address issues. The permanent and novel (at least between teachers and kids) form of communication often makes a more dramatic impact upon the behavior and emotional state of our students. Below, you'll find examples of different types of notes. Just remember though: watch
the wording (remember that this note might be shown to others) and be aware that it is more difficult to convey emotion in writing...add a smiley face to the note (or to your face as you deliver the document).

**Pre-emptive/Preventive Notes (Present these to the student(s) before the activity/event)**
"Svetlana, remember to raise you hand to offer an answer or comment."

"Group 2: Bring your discussion to a close soon. Have your projects put away by 2:10pm."

**After-The-Fact (Present these to address a behavior/event after it has occurred)**
"Chandra, please see me at your convenience, but before the bell rings."

"I was saddened to hear of your family's loss. If you want to talk, I'm available."
"T.J.: Insightful answers in class today. Thanks for contributing."
"Shoshana, thanks for helping me yesterday. It's greatly appreciated."

"Calvin, I let some rude remarks pass today. I expect respectful behavior tomorrow."

**Humorous Reminders (To address issues that need resolution now...or in a couple of minutes)**
Dear Willie: Please stop using invisible ink.

   Your ledger.

Dear Josie: I get lonely without words.

   Your notebook.

Dear Ali: I can't think straight. I need my mind organized.

   Your locker.

"Offers Of Assistance"
Here's a typical scenario: The teacher says "Hector, open your book to page 14 and answer the questions please." Hector says "I ain't opening no stupid book. This is baby crap." Hector is sending a false message to his peers...he's too bright for this material and rejects you for asking him to do the assignment. The true message is that the material is much too difficult for him. He knows that it is better to be "bad" than "dumb". Here's how to use notes to gain cooperation...

If you detect that the youngster needs assistance:
- Continue to teach the lesson while moving slowly toward the student.
- As you teach, write on a "post it" (sticky back) "Do you want help?" (Be sure to use the word "want"...he can't admit that he "needs" help)
- Keep walking, but look back to the youngster in a couple of seconds
- Wait for a cue from him/her as to "Yes" or "No"
- If "Yes", write another note: "From me or another student?"
- Watch for a non-verbal reply (e.g., nod of head, pointing to someone)

"Offers of assistance don't force kids to reveal that they need help and give "personal space" to oppositional kids while being supportive."
Q: Which is worse...
Ignorance or apathy?

A: I don't know and I don't care.

"I'm a teacher. Be nice to me or I'll mess with your head!"
(An imposing threat, but let's try some other things first. Take a look below for explanations and strategies.)

I don't give a sh----!

That comment (or an equivalent one) is difficult for a teacher to hear. How could youngsters who started out out in kindergarten with such enthusiasm for learning have fallen so far from the learning tree? Teacher comments like this one: "I've tried everything. This kid just doesn't care about anything - - - grades, success, penalties. NOTHING!" These kids can be among the most frustrating for us serve. We, as lifelong lovers of learning and sharers of society's archived information find it difficult to comprehend why someone wouldn't want to drink deeply from the fountain of knowledge.

There are a number of reasons why kids give up in school. Many of them are listed below. Essentially though, here are the major reasons for why students lack motivation:
1. Fear of failure

2. Feelings of inadequacy; that one is incapable of doing well, so therefore why should one even make the attempt (Perhaps due to past failures in which others ridiculed them instead of promoting the failure as a chance to learn)

3. Believing that schooling is unrelated to their lives and therefore has nothing to offer them.

4. Dislike of the school due to the interpersonal experiences they have encountered therein (mean natured teachers, bullying, ridicule from others when attempts were made to learn)

They Fear Failure

No one wants to appear inadequate around others...especially when those others might judge us or ridicule our less-than-stellar performance. Kids who experience difficulties in learning or do not have the background knowledge to do well in your class may engage in "defensive behaviors" in order to avoid submitting work or offering commentary that might reflect poorly upon them. In their minds "I'd rather appear to be bad than dumb." For pre-adolescents and teenagers, being "bad" might even bring them admiration from peers! There are a number of ways in which we can
encourage involvement on the part of "unmotivated" students who fear failure:

**Decrease the focus on individual grades**

Fearing a poor grade and possible ridicule by others, students may refuse to work in order to protect their frail self concept (with regard to academics). If we place the focus on effort, not grades, any youngster can be a success. The fear of failing evaporates (although it may take a week or two to convince the youngster that academic judgment is no longer an issue), and participation increases. You may still have to submit a grade at the end of the academic term, but in your classroom you focus on effort and progress, not grades.

**Create an accepting and supportive atmosphere**

Create a classroom environment in which it is OK to make mistakes, and where other students are encouraged to support their classmates, not belittle them. Teachers don't just say "No, wrong answer" or correct student contributions that are incorrect. Errors are used to teach, not just evaluate. In the words of Bernard M. Baruch: "I have found that failure is a far better teacher than success." I'm sure that he meant "learning from failure".

**Self evaluation of effort**

When the youngster submits a product/paper/assignment to you, ask: "Did you give it your best effort?" If the youngster says "Yes", then we say "Thanks for trying so hard. You should be very proud of yourself". If youngsters are trying as hard as they are able, then we should be jumping for joy and doing back flips...happy teachers! Kids who put forth strong effort naturally learn and do better. Effort will result in the attainment of more facts, knowledge, and abilities...our goal as educators. Follow up on your recognition of effort by asking the youngster what s/he did well (or better than before) and what s/he needs to do in order to make the product even better. Then have the student revise the paper.

But what about grades?!!! Why bother worrying about them? Your unmotivated student was probably receiving failing grades anyway. And isn't it our job as teachers to get information inside of kids' noggins, not just to evaluate performance?

We continue to encourage the youngsters and catch them being good (be sure to read the links on the home page about "Problems with catching kids being good...and how to do it right" so that we don't destroy motivation while attempting to build it).

If a youngster reports that s/he did not give his/her best effort, ask "What prevented you from putting forth your best effort?" and provide assistance/support.

**Use cooperative learning groups**

When we structure assignments and activities so that kids can make at least minimal contributions to a project and share whatever knowledge and abilities they possess, we become mentors and facilitators of learning, not just lecturers. The pressure on students to perform perfectly, and fear of individual judgment are both lessened when kids cooperate to produce a product. To be sure that every student in the group participates actively, assign each one a role or duty.
Offer Help

In private time with the youngster, say: "I know that no one wants to fail. You are. You shouldn’t be. What would you need to be motivated to try? What can we do to get you excited about trying again.

They Don't View School As Being Pertinent to Their Present or Future Lives

I personally don't study the digestive systems of ants because I don't see it's relevance in living my life. Kids too can "shut down" on learning about subject matter when they don't see the relevance of the information being presented. When kids say "Why do we have to know this stuff?" we ought to be able to point out how it will help them in their lives (present or future). We should have a better answer than "You gotta learn this material so that you can learn the material I'm going to teach you next week." To this day, I cannot figure out how being able to divide fractions is useful to me (when you cut a recipe, you are really multiplying fractions, not dividing them...so that example isn't valid).

Educate them

Tell the students why the material is important

...and not just "Because it's on the test." At the beginning of the lesson, before you teach even a smidgen of information, tell them what they are going to learn and why it is so important for them to know it. Whenever possible, use examples that are present in their daily lives. Forget the example in the math book about Jennifer and Todd going to the supermarket to buy bananas and apples. Place the same functions in an example in which Wei Chu and Kong Ting go to the market place to buy eel, bok choi, and ginger root. Or use the example of Juanita and Julio going to the bodega (corner store) to purchase red beans, rice, and plantains. Whatever the background and experiences of your kids, use it when first teaching new material (Have you walked around their neighborhood to see what their daily lives encompass?). Once they gain an understanding of the material, then we can move to more abstract examples.
**Have them determine why schooling is important**

Find some private time to meet with the youngster. In a respectful, concerned manner (talking TO, not AT him/her) ask: "What job/career can you envision yourself doing when you're older?" (If the youngster doesn't know, make an appointment for him/her to see the guidance counselor to take a vocational skills and interests survey in order to identify possible occupations for which the youngster might be qualified or might enjoy.) Then ask "What do you think you need to know to be successful at that career?" (You're thinking about how your subject matter might be important here). In fact, ask: "Can you think of any career in this world where it is better to be uneducated than educated?" (I can't think of one.) They may mention professions that require a great voice, a strong body, quick reflexes, bravery, etc., but then say "Yes, but is that person better off being dumb or smart?". Even if they do come up with something, you can ask "Do you want the job?" (probably not) The next step in the conversation would be to ask why teachers like to have an orderly and civilized classroom (It's not just for us, but also for the benefit of THEM and society).

You also might ask if the behavior that was displayed will help him/her to be successful in life. If s/he says "Yes", ask how so. If the youngster plans on living the life of a criminal or street thug, discuss how s/he will be better at that undesirable life style with knowledge and information to triumph over others in arguments, obtain the affections of another, etc. (Don't worry about creating a better criminal. We obviously don't want kids to enter or remain in this lifestyle, but if we can convince them to learn, they are more likely to avoid/escape it.)

Another approach is to say: "What will you do when you're older?" Obtain an answer about the chosen profession/job. Then have the student investigate that position (e.g., surfing the internet, reading professional books and job announcements for that profession, interviewing those who are employed in that profession) to determine what must be learned in school to be successful at the chosen career.

Other approaches are also possible, depending on the age and interests of the student. We might talk about how humor becomes funnier and wittier when more advanced wording is used, how being knowledgeable impresses those to whom s/he is attracted, how someday his/her children will think their daddy/mommy is so smart and thus be very proud of them, etc. In fact, ask if s/he can think of any plausible situation in this world in which it is better to be under-informed and mal-educated.

**Help students connect with the school**

Our greatest psychological need in life is to "belong"...to be accepted and valued by others, and to be given increasing responsibility within our "tribe". Pre-adolescents and adolescents will do just about anything to gain and/or maintain the acceptance of the peer group. Those who are at-risk for embarrassment in front of the group, or damage to their self concept will do what is necessary to protect that social or personal image. If the youngster feels separated from peers or the school, resentment, retreat, rebellion, or retaliation can be expected. Students will not put forth their best effort for teachers who point out their shortcomings (Do you put out your best efforts for those who berate your performance or treat you poorly?).

Bring the "Golden Rule" to class (Paraphrased: Treat others as you would like to be treated). Treat all youngsters with respect at all times. As Mark Twain said: "I am a fool, but I am God's fool, and all God's work must be contemplated with respect." In the words of some of my former students: "God don't make trash." (Although if s/he doesn't make mistakes, I sometimes wonder if s/he has some bad days or was working working with a hangover. I would sometimes think of Nathan Hale, an American Revolutionary War hero, and modify his words somewhat: "If I have but one life to give for my country...let it be James in the second row.")
Take the time to form a relationship with the youngster. Kids who like and respect their teachers are more likely to work for them (Some fella named McIntyre did research on this subject). Give youngsters "the time of day" (congenial interaction). Find out about their lives and interests. Develop a sense of community in your classroom. Promote teamwork and esprit de corp. Arrange for special efforts to be made to include alienated and unpopular kids in the activities and governance of the school (e.g., clubs, conflict resolution mediators, student council representatives, peer tutors, helper to younger kids, etc.).

**Defend our schools**

Tell the youngster (respectfully) that "For centuries and all over the world, societies have set up schools. They realized the importance of educating their young so that when the kids grew up, they would know how to be successful. In our country, experts have gotten together to decide what's really important for our citizens to know. That's what we teachers teach. Kids all over the nation who are your age are learning the same thing. Now here's my concern: Wise people for a thousand years have seen the need for education...and those people were kids who grew up and said 'Yep, our parents and teachers were right...we need to educate our children.' Then their kids grew up and said the same thing. Then their kids! Now you, at age __, have decided that school isn't valuable. Do you think you're really in a position in life right now to know that? Think about those millions of people who for thousands of years have said: 'We care about our kids so much that we want to be sure they are ready to become intelligent citizens who can get a good job and raise good kids.' I really want you to question your decision to be a failure in life. Our world needs you too much to lose you. What do you think about your view versus the views of the millions who have come before you?"

**Talk about their future**

State/Ask the following: "Your grades and what you know will determine what you will do for a living. It will determine how much money you make, the nice things you can buy, and where you will live. It will determine who you work with on your job. Do you want to work with the best and brightest, or do you want to serve them?...Do you want to be their peer or their gopher? Right now, you're going to live in a shabby house, drive a banged up old car, and hang out with others who are underemployed...all because they didn't think ahead. You've still got a chance to make your future better. I hope you'll take this chance to be able to do nice things for your grandchildren who will be able to be proud of their granddad/mom has accomplished in his/her life."

**Bond with them**

State the following: "I wanted to speak with you today because I'd like to see you become a success in life. Right now you're making a decision to have a lousy adult life. So I just want to be sure that when you have no money, an old beat up car spewing out oil and smoke, and a run down apartment in a bad area of town, you'll think back to this day and say that it was your fault, not mine. However, if you ever do decide to have a good life, I'm here to help you."

**Use surprise to get their attention** (but then become supportive quickly)

(In a loud voice, say:) "SLAM!" (Then in an excited, but lower volume voice, say:) "Did you hear that? You know what that was? (Now in your usual voice, say:) Another career door just closed on you, because you didn't try to learn something that is necessary for certain jobs. Each and every time you're not doing your very best, job opportunities close on you. The only way to keep the remaining doors open is to start applying yourself to your academics, and improving your ability to get along with your supervisors...like me. The more doors that close on you, the less happy and wealthy you'll be, the less desireable you'll be to ladies/guys, and the lousier your life in general will be. I'd like to help you keep those remaining doors open...and maybe even kick down a few of those ones that closed on you. I'm always here whenever you decide to turn things around.
(Use this approach as a way to convince the student to re-engage. Don't use it as a condescending put-down.)
**Appeal to their patriotism**

State the following (If you're in the U.S. If from another country, I'm sure that you can devise something of a similar nature): "You saw what those terrorists did to our country. If our country is going to survive, we need well educated citizens who can make us strong. We need you to apply yourself so that someday you've got the brains to become part of a group that tracks down these nutzoids, or just contributes to our government or economy so that we can continue to have a place that values freedom. We need you." (I can guess that some folks won't like this one. I happen to feel that it is honest and correct.)

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**Important Questions to Consider**

Do you know your student's instructional level? (If s/he were motivated to show it) Are you able to identify this student's learning preferences (hands-on, video, etc.) and learning style (auditory, visual, global, inductive, etc) so that you can teach to his/her strengths? If not, what will you do to seek out this information?

**Individualizing materials for different levels of ability?**

Artwork by Mark Parish
Preface (by Tom McIntyre): While I’m not sure that what I’m going to help share below is totally valid, I do believe that the material is worth consideration. The condition known as SID was first brought to my attention by my co-author in a paper he wrote for one of my graduate classes in special education. I was motivated to read more on the topic. The claims for the existence of the condition and the validity of practices are primarily testimonials or based on related area research. In summary, the topic is controversial. I’m still skeptical, but will consider SID as a possible explanation for many “behavior problems”.

Preface (by Robert Van Vorst): The occupational therapist in my school mentioned that many of my students who exhibited the symptoms found below might have a sensory integration disorder (SID). I read the material that she provided, and came to believe that it was indeed the case for my pupils. My newfound awareness and knowledge has changed the way I interact with my students and troubleshoot their individual needs.

INTRODUCTION

Long associated with autism, and often mistaken for ADHD and other disorders, SID is now thought (by its believers) to be more widespread. According to advocates, it is common as a co-morbid condition with such disorders as autism, Asperger’s syndrome, pervasive developmental disorders, ADHD, fetal alcohol syndrome, Tourette’s syndrome, acute anxiety, and others, although it can exist by itself. It is estimated (Biel & Peske, 2005) that there is at least one student with SID in each classroom.

Ayres defines well functioning sensory integration as “the neurological process that organizes sensations from one’s own body and from the environment and makes it possible to use the body effectively within the environment” (Bundy & Murray, 2002, p. 11). In simpler terms, sensory integration (SI) refers to the way in which the brain interprets information sent to it via the senses. The processing of incoming sensory stimuli is accurate and effortless for most of us. We find no difficulty in tuning out the slight hum of our computer or the passing traffic outside our window. Most of us feel pain when we stub our toes and become dizzy when we spin around in circles.

For those of use with intact sensory systems, it may be difficult to conceive, understand or recognize SID. However, some individuals have a dysfunction in interpreting and appropriately responding to the stimuli gathered by their senses. They experience the world differently. They have difficulty making sense of what is happening inside and outside of their bodies. People who experience malfunctions in the interpretation of sensory input may have Sensory Integration Disorder (SID). In SID, the brain either has problems with “facilitation” (attending to the most important sensory input) or “inhibition” (filtering out or dampening unimportant sensory information). Jean Ayres (1973), an occupational therapist, originally developed a description of this condition.

“When I was in elementary school, the school bell ringing hurt my ears like a dentist’s drill hitting a nerve. Loud noises such as balloons popping terrified me. Scratchy petticoats and wool clothes were like sandpaper against my skin. I still wear my underwear inside out so that the stitching does not rub against me. I wear old, well-washed, soft T-shirts under my new shirts to make them tolerable.”

(Temple Grandin, 2005, p. ix)
Because they have difficulties making sense of the world, individuals with SID may react to it in ways that seem odd, lacking in confidence, defiant, rude, or “wacky”. Students with SID might show the following maladaptive responses to ordinary situations handled well by others:

- be distractible, with problems attending to directions or remaining focused on a task
- have a high activity level in order to gather stimuli to send to the brain
- be impulsive, showing little self control
- difficulty attending to directions and lessons
- fidgeting in the seat
- frequent touching of nearby objects
- be lethargic and slow due to problems organizing what is occurring
- tune out or become withdrawn in order to escape over-stimulation
- react in a manner that is out-of-proportion to the frustrating situation
- appear inflexible and stubborn, engaging in the same activities in the same manner
- resist group activities, especially those that occur out of seat
- have difficulty with transitions to the next activity, or from an active level to an inactive one (or vice versa)
- appear clumsy and/or careless
- utter self-deprecating remarks (“I’m stupid.”, “I can’t do this stuff.”)
- utter negative remarks about the request/activity
- playing with items that are unrelated to the lesson

It can be frustrating when children persist with these behaviors even after multiple redirections. Negative impressions can pop into our heads as we imagine that they consciously decided not to listen to our directions, or were voluntarily defiant. Those of us with educational and psychological training would probably investigate emotional or environmental influences. Some of us might consider a biological etiology, but probably not in the same way as some of our school-based occupational therapy colleagues who mention “sensory integration disorder” (SID).

**What Does SI Dysfunction Feel Like?**

Imagine yourself making a spaghetti dinner. Using your eyes, you look around the kitchen and see your cooking equipment and all the ingredients for your meal. Your ears hear the whooshing sound as you open the refrigerator door and the crackle of the garlic peel as you unwrap it. Your skin senses the smooth, hard handle of the knife and the moist surface of the garlic clove as you chop. Your joints and muscles sense the weight of the cleaver and your body position as you move around. Your nose senses the aromas, and as you pop a sliver of bell pepper in your mouth, you enjoy its sharp flavor. And, though you are unaware of it, your body senses the earth’s pull of gravity. You might savor all these sensations or you might be oblivious to them because they’re so, well, ordinary. Because your nervous system is functioning normally, you are processing all the sensory input well. Little pieces of sensory information are flowing into your brain in the form of nerve impulses. How do you derive meaning from all these tiny bits of sensory input? You bring all the parts together to make a whole. It’s kind of magical, as if a multimillion-piece jigsaw puzzle scattered around your home suddenly transformed itself into a recognizable picture. Sensory integration allows you to focus on the "big picture" of what you are doing: in this case, preparing dinner.

Now imagine that your senses aren't working efficiently. The fluorescent light gives you a headache,
and you can't find the tomato sauce in your crowded pantry. The lettuce in your hands feels slimy and repulsive. The smell of garlic makes you queasy. You don't hear the boiling water on the stove, and it bubbles over, flooding your pilot light so the stove won't relight. You bump your head on a cabinet, trip over the cat, and spill the salad. By the time dinner is on the table, you're a nervous wreck and you've yelled at everyone. All you want to do is crawl into bed and sleep.

What if you were to experience this disastrous dinner scenario every night, and no one seemed to understand? After all, everyone else is able to see the can on the shelf and the cat on the floor, so why can't you? Strong smells don't upset them and flickering, harsh lights don't give them headaches. In fact, they can prepare dinner under all these conditions without missing a beat, dropping a spoon, or feeling a moment's discomfort. And, when you try to describe why you are so stressed out doing such tasks, people think you're being ridiculous or difficult or lazy. If you can bring yourself to suffer through this unpleasant cooking experience again, the next time you decide to make the exact same meal because as difficult as it is, at least you have some experience making it. You definitely don't want to try something new and risk even more unpredictable annoyances.

This is what everyday experiences can be like for a child with SI dysfunction. For her, getting distracted and annoyed by her environment and her own body's response is the norm. To make matters worse, the sensory input she receives isn't consistent, and neither is her nervous system's response. The world seems like an unpredictable, frustrating, even dangerous place, and yet people expect her to happily go about the business of learning and focusing, and doing what Mom asks the first time she asks. No wonder kids with SI dysfunction are often highly distractible, anxious, or irritable. They may shut down and tune out or throw tantrums when yet another unpredictable stressor comes into their lives—a change in school routine, an unexpected cancellation of their plans for the morning, a favorite Elmo sippy cup unavailable for afternoon juice. They might become controlling and demanding: the Elmo cup must be found or else!

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Things are difficult for these youngsters. Low self-esteem and a negative self concept are likely to emerge. You can imagine how scolding, chastisement, and disappointment/avoidance from others might affect a SID child’s sense of self. Adults who work with these youngsters need unswerving patience and consistently even-natured demeanors.

Dysfunctions in sensory integration might be caused by several different factors, including genetic predisposition/determination, prenatal circumstances, premature birth, birth trauma, and environmental pollutants. Every sensory disorder affects its host differently, creating different problems as it affects one or a combination of sensory systems. Some kids are hypo(under)sensitive, while others are hyper(over)sensitive to touch, sights, sounds, movements, tastes, or smells. A hypersensitive child might have an emotional meltdown when entering the cafeteria due to the sensory overload of sight, sound, and smell (and fear of being touched/bumped). This wild response (as with withdrawal in some situations) is an attempt to shut out the high load of incoming stimuli.

A hyposensitive child may constantly fidget and touch things in an effort to send more information to a sensory starved brain. On the other hand, s/he might also be lethargic and slow because the brain has filtered out too much information and doesn't react to the environment “at the correct speed”
Advocates for SID talk of seven senses (any of which can be hyper or hypo sensitive). There are the “far senses”; hearing, sight, taste, and smell. There are also the “near senses”; tactile (touch), vestibular (balance and movement), and proprioceptive. The latter are also known as “the hidden senses” because they are not under the control of the individual. You can shut your eyes, plug your ears, wear nose clips, or by-pass the taste buds. You can’t shut down the far senses. They operate with or without your consent. In all the systems, the sensors take in the information from the environment and send it to the brain for processing and determination of how the body should respond. More information on the “near senses” is provided next.

**The Auditory System**

While the auditory systems may be intact in students with sensory integration disorder, the ability to use the systems may be impaired. In other words, they can “hear” adequately, but they can’t “listen” well.

A student with problems in processing (making sense of) auditory input that arrives at the brain might:

- report static (white noise) in the environment.
- find certain pitches/frequencies to be excruciating.
- cover the ears to shut out sounds/voices
- seek out “noisy” environments for their extra stimulation.
- not be able to understand when teachers talk fast.
- follow written directions perfectly, but have great difficulty following oral directions.
- have problems with “figure-ground” listening (being able to filter out unimportant sounds and focus on the important one such as attending to the speaker when an overhead fan makes a clicking noise at every rotation, or being able to locate which person in a group is talking).

**The Visual System**

Kids who are visually hypersensitive might become overly excited in visually stimulating environments. Hyposensitive kids might not perceive all the visual cues available and have to touch/hold the object to gain information gathered by others who merely viewed it.

A student with problems in processing (making sense of) visual input that arrives at the brain might:

- squint.
- look at objects out of the corner of the eye.
- report that:
  - black print on white background vibrates or jiggles.
  - fluorescent lights and computer monitors flash on and off.
  - there is “snow” or static in their sight.
  - have trouble following moving objects.
  - have trouble refocusing the eyes to objects at different distances (as when copying from the board to their paper).
  - have trouble seeing objects in the periphery of the item being observed.
  - be overwhelmed by the visual input such as when sent to a closet to retrieve crayons, but can’t find them among the many other items and packages on the same shelf.
The Olfactory (smell) and Gustatory (taste) Systems
If the information sent from the nose to the limbic system of the brain doesn’t get processed properly, smells can be a far different sensation from what others are experiencing. Muffins and cookies baking in the oven may smell foul. On the other hand, the scent of rotten meat or skunk might be enjoyed. While preferred and non-preferred smells certainly have an experiential/memory/learning component to them, smell also serves a survival function...one should avoid gas fumes, spoiled milk, etc.

The sense of taste is closely connected to smell. Hold your nose and you won’t taste the onion you’re biting. Get a cold, and foods just don’t taste as flavorful. Kids with taste issues may dislike or prefer certain textures, temperatures, or levels of spiciness (outside of family food preparation practices). The result is that they reject many food offerings enjoyed by others, and seem “picky” with regard to the food that is enjoyed. For example, the French fries served in the cafeteria might not be juicy or flavorful enough (in comparison with the youngster’s preferences), may be of the wrong size, shape, color, or temperature, or not be palatable because the smell of the cooking oil is different than that of the favorite restaurant.

The Vestibular System
The vestibular system senses movement of the body, balance, and vibration. It is though this system that we know whether our bodies are moving, the direction of travel, and the speed. We use this system as we attempt to walk around our darkened bedrooms looking for the light switch, or run along side a child learning to ride a bicycle (who is also using the vestibular system along with other ones).

The sensors for this system exist in the inner ear in a part known as “the semi-circular canals”. Small hairs with crystals attached, shift position in fluid as the body moves, bends, turns, etc., sending this information to the brain for processing. A student with a hypoactive dysfunction in the vestibular system might be able to spin excessively without becoming dizzy, or may move constantly. A hypersensitive child might not be able to enjoy a see saw/teeter totter, use a swing, or climb the ladder of a slide due to the resulting disorientation and nausea. A very hypersensitive child might resist moving or being moved unexpectedly.

The vestibular system needs to be connected well to the other senses in order to validate the information received. If senses fail to agree on what is occurring, disorientation can result. For example, when traveling in a plane or sailboat (or reading in a moving car...but not while driving!!), your environment (walls, seats, magazine) appear to be stationary while your vestibular system tells you that you are moving. Many folks start to become nauseous (airsick, seasick, carsick) when their systems fail to validate one another.

The Proprioceptive System
The proprioceptive system provides feedback as to where specific body parts are placed, whether the muscles are stretching or contracting, and whether the joints are bending or straightening. The information is sent to the brain for interpretation from receptors located in the muscles and joints. The stimuli for these receptors are movement and the pull of gravity. Well-functioning proprioceptive systems give us a sense of where the body is placed in space. For example, right now, your proprioceptive system might be telling you that your feet are flat on the floor, buttocks and upper legs are in contact with the horizontal surface of a chair, and that your thumb and fingers of one hand are pressing in opposition while touching the sides of a page. You are able to remain stable, even without thinking about it.
People with proprioceptive difficulties would not have this same bodily awareness and sensations. They would instead have to rely on movement or vision to provide feedback regarding the position of their body parts. Hypersensitive individuals might appear rigid and tense, while hyposensitive youngsters may slump or slouch. Clumsiness and awkward movements result.

The Tactile System
The tactile system receives the sensations of pressure, temperature, and pain through receptors in the skin, mouth, throat, ear canals, etc. There are two types of tactile sensations to be assessed: whether the child can use touch to evaluate objects (for example, pulling a pencil rather than a pen out of his/her desk without looking) and whether the child can identify which area of the body is being touched while his/her eyes are closed. Breakdowns in the tactile system can manifest themselves in one of two ways, depending on whether the children are hypersensitive or hyposensitive to tactile input.

Hypersensitive kids “overreact” to touch (sometimes referred to as being “tactually defensive”). Physical contact might result in the youngsters screaming or striking out. They do not like being in groups, being physically close to others, or being seated in a high-traffic area due to concerns about being touched. They may withdraw socially, even finding parental hugs to be uncomfortable. Those concerns can affect concentration in the classroom.

On the other hand, hypoactive kids are under-responsive to touch and may have difficulty discriminating between different types of tactile input. They may even have difficulty registering pain and pressure. They might unknowingly bump into objects and other people, appearing clumsy or inconsiderate. They may not feel the same degree or type of pressure or pain as others in the same situation. They may seek touch to such a degree that adults become irritated at the seemingly constant need to be touched and held.

Kids with tactile concerns (of either hyper or hyposensitivity) might also be unwilling to try new fine and gross motor activities (due to the irritating feelings in hypersensitive kids or the desire to avoid feeling clumsy in hyposensitive students). It may also be because of co-ordination problems or difficulty in motor planning (doing physical acts in the correct sequence of movements).

Sensory problems in the mouth/brain connections can affect the ability of the student to speak or make his/her needs known to others. Those same problems could result in the avoidance of certain food textures.

In a tactually hyposensitive child, it could result in mouthing of objects, licking others, or biting. In a similar vein, hand sensation problems could affect the desire/ability to use eating utensils, or the intensity of contact with others (hitting or pushing when “just touching” others). They may brush their hair or teeth too hard, wear clothing that seems uncomfortable in fit, or scratch itches too intensely.

Some children have a mixture of the two sensitivities, being hypersensitive to one type of touch (for example, sensations in the mouth) while being hyposensitive to another type of touch (for example, sensations on the skin and pulling of hair strands). Some children’s sensitivities also change from day to day and situation to situation. Each youngster has his/her own idiosyncratic sensory makeup when it comes to the senses.
OVERALL INDICATORS OF SID
A sensory integration disorder is suspected when the child is exhibiting one or more of the common symptoms with greater frequency, intensity, and/or duration than is common among the vast majority of kids. It is important for teachers to understand that if their students display behavior indicative of SID that this behavior lasts for several minutes at any one time and recurs frequently throughout the day over a long period of time. Its persistence despite disciplinary interventions is a key indicator.

After considering the behaviors that are common for students with SID, it is probably apparent that some of these behaviors could be a manifestation of other disorders. For example, learning disabilities and attention deficit disorder (ADD) can produce behaviors similar to those displayed by children with SID. The behaviors could also reflect the interaction or co-morbidity of SID with other conditions. However, if SID is present, it will not respond positively to the same interventions. It is therefore treated differently than AD(H)D and learning disabilities.

One of the most telling ways to distinguish SID from other conditions is to implement sensory intervention and observe whether symptoms subside. If a student responds positively to these sensory techniques, then his or her sensory system was craving the input that you provided. A sensory deficit is “confirmed”.

Most of the compensatory strategies that can be provided within a school setting are appealing to students at first, making intervention a pleasurable experience. If after a few trials with the compensatory strategy, the student continues to seek it, then you can be fairly confident that a sensory system dysfunction was at the root of the displays of “inappropriate behavior”. These students will often seek out the use of the sensory equipment when they are in need of it. The use of these strategies helps to regulate the sensory system and allow their bodies to function better. Given that the severity of SID varies from student to student, multiple strategies might have to be implemented in a trial-and-error manner.

Classroom Interventions for Students with SID
Anyone interested in assessing the sensory profile of a youngster and then intervening, should seek out other sources beyond this web page. The book by Biel and Peske (see below) is an especially good resource.

Herein, we offer a few examples of some common interventions. The following activities are organized by the various sensory systems for which they are intended. These activities should be carefully monitored by the teacher and occupational therapist in order to determine the degree of effectiveness. These sensory suggestions would probably benefit all students in the classroom because kids tend to respond to a “sensory rich” environment. Therefore, the activities do not need to be limited to students suspected of having sensory processing issues.

Visual Interventions
For this type of disorder:
- Suggest that parents make an appointment with an ophthalmologist familiar with the prescription of tinted lenses designed to assist in improvement of reading vision
- Try tinted plastic overlays on printed pages in order to determine if they assist in stabilizing the print that appears to be vibrating.
- Obtain flat-screen computer monitors and television screens which seem to decrease the perception of flickering light.
- Provide incandescent desk lamps or natural lighting, and reduce fluorescent lighting.
**Proprioceptive (Heavy Work) Interventions for the Classroom**

For this type of disorder, provide sensory “satisfaction” or “satiation” (in order to reduce the striving for it during lessons) by having the students:
- Erase or wash the chalkboard. Direct the students to use both hands to perform this activity.
- Wash the desks using both hands at the same time.
- Help rearrange desks in the classroom.
- Fill crates with books to take to other classrooms or the library. You can ask students to move these books back and forth as needed.
- Help the physical education teacher move mats and other heavy equipment.
- Staple papers onto bulletin boards.
- Perform “wall push-ups” (face the wall, move feet out, use arms to push away from wall and return one’s head to it).
- Perform chair push-ups or animal walks such as the “crab walk” (face/chest up with arms and legs stretched backward) and the “bear walk” (moving same side arm and leg at the same time).
- Enter active activities involving running and jumping.
- Open and hold doors for the students in the class.
- Open or close classroom windows.
- Use a bean bag chair during quiet reading time (allow the youngster to lie over or under it).
- Color on paper placed on the floor while they position themselves on their hands and knees.
- Use playground equipment (crawling under bars, hanging from bars, running up steps).

**Vestibular (Movement) Activities for the Classroom**

For this type of disorder, during the lesson have the students:
- Rock in rocking chairs.
- Stretch/shake body parts.
- Shift their weight in their chairs using a disc-o-sit cushion/donut cushion.
- Sit on a large therapy/exercise ball or T-stool in place of a chair.
- Roll their necks and heads slowly in circles.
- Fidget productively so that they can then attend.
- Allow them to hold/squeeze a small ball (perhaps a “kush-ball”...the type of rubber sphere with rubber strands that emanate from the ball).
- Stretch a large rubber band (1 to 2 inches wide) between the front legs of a desk. They can then bounce their legs/feet against the tense band.

Between lessons, have the students:
- Deliver “pretend” notes to other teachers or the office. Preferably, the destination should be a good distance from their classroom.
- Propel themselves on scooter boards.
- Swing on suspended equipment such as platform swings, hammocks, inner tubes, or tires.

**Tactile Activities for the Classroom**

For this type of disorder, have the students do the following during lessons:
- Fidget with any of the following: straws, paper clips, pencils/pens, stress balls or putty.
- Engage in the hands-on lessons you have designed to incorporate more touch.
- Make things to show acquisition of knowledge/skills taught during your lesson.
Between lessons, have the students:
- Retrieve objects through sand, rice, beans, or other highly tactile stimuli.
- Use their hands (no brush...just hands) to paint with shaving cream or finger paints.
- Engage in activities that involve many tactile sensations and use of hands or fingers to poke, draw, open, close, differentiate, and follow a pattern.
- Draw shapes into a zip-lock bag filled with hair styling gel.
- Perform activities that involve glue, glitter, and painting. Bottled glue should be used rather than glue sticks (so as to promote the squeezing motion).
- Submit to deep tissue massage (as opposed to light touch), as kids with tactile issues often respond more positively to gentle, but deep pressure.

**SUMMARY**

This page provided general overview information on SID. You will want to engage in further study and locate an occupational therapist that is knowledgeable in retraining the nervous system. S/he will be able to make suggestions on how to create a more sensory-friendly environment.

Why go through all these elaborate modifications? Because we care about our kids! Additionally, while the changes may require some time and effort, if effective, they will make your job more rewarding and enjoyable. Imagine the child with ADHD that is sent to school without medication. Strategies used for SID might help to calm that active and distractible youngster and help him/her focus on the lessons and activities. Time and effort will actually be reduced over time.

**Direct quotation from a research review (November, 2012):** "New research is casting doubt on the merits of a popular autism treatment which relies on weighted vests, bouncy balls and other sensory stimuli.

Researchers reviewed 25 existing studies looking at sensory integration therapy and found that the method is not scientifically supported.

“Rigorous, methodologically sound studies do not indicate that it helps and, in fact, the majority of studies that were reviewed reported no benefits for children with ASD,” said Mark O’Reilly of the University of Texas at Austin who worked on the analysis, which was published in the journal Research in Autism Spectrum Disorders.

Sensory integration therapy is intended to address the atypical responses that many with autism have to sight, sound, touch and other sensory stimuli. Therapists utilize swings, balls, brushes and other specially-designed tools to help those on the spectrum learn to cope.

The review is not the first to question the value of sensory integration therapy. Earlier this year, the American Academy of Pediatrics issued a policy statement indicating that support is lacking for the method, but did not go so far as to advise against it.

“Parents should be informed that the amount of research regarding the effectiveness of sensory integration therapy is limited and inconclusive,” the pediatrics group said.

If a student has a problem with his "6th sense", will we have problems talking to him telepathically?
THE TEN STEP APPROACH

William Glasser, renowned psychiatrist and educational theorist is best known for his earlier work, titled "reality therapy". This treatment approach, rather than seeking to discover the past happenings which influenced one's behavior, focuses on the present behavior and changing it for the better.

His approach was extended from the clinic into the classroom. There, appropriate behavior is expected, and excuses for inappropriate behavior are not accepted. Misbehavior is viewed as result of a bad choice on the part of the student (His later work also found fault with the educational system, not just the student). The teacher provides consequences (positive and negative) to help promote good decision making on the student's part. Over time, the student comes to accept responsibility for his/her own behavior and makes better behavioral choices.

Students are made aware of which behaviors are appropriate in the classroom and thereafter are expected to display them. According to Glasser, students are in control of their behavior and teachers should not accept explanations as to why the misbehavior occurred.

The ten step approach is a sequentially implemented system which becomes more directive and restrictive if the student fails to make better choices about school behavior.

How to Use the Ten Steps

1. Set aside a quiet thinking time for yourself. Mentally select a student whose behavior is in violation of school expectations. Make a list of things you do when s/he is disruptive.

2. Review your list of interventions. Have they been effective in improving the student's behavior? If not, make a commitment to stop using them. If they're not working, why use them? It's time to find a strategy that will work.

3. Make a plan to help your student start tomorrow on a positive note (e.g., pat on the back, personal compliment, a personalized greeting, sending him/her on an errand, etc.).

4. If a problem behavior is shown, ask "What are you doing?" Glasser believes that thinking about a behavior helps the student to recognize it's existence, own it, and prepare to stop it. When you get an answer that states the actual behavior (his/her words accurately describe the behavior), say "Please stop it." Do not accept statements such as "I'm not doing anything." and do not let him/her take you off on a tangent/distract you from your task. If s/he tries to distract you from the issue, keep repeating "What are you doing?" (perhaps varying the wording to be sure the youngster understands your expectation) until the student describes the behavior.

5. If after steps 3 and 4, the behavior continues, have a conference with the student. Say "What are you doing?", Upon receiving a response, ask "Is it against the rules?" Upon receiving an accurate description, ask "What should you be doing?" Obtain an accurate description of classroom/school expectations. This practice helps the student to realize that s/he is displaying inappropriate behavior and causes him/her to reflect on expectations.

6. If step 5 fails, repeat all of 5 except for the last question. Substitute "We have to work this out. What kind of a plan can you make to follow the rules?" The plan must be a positive action plan (a description of the behavior to
be displayed) rather than a lack of action (What the youngster will stop doing). The student must tell you what s/he will do in same/similar situations.

7. If the student disrupts again, isolate him/her or place him/her in time out in the immediate classroom. The student may rejoin the class after having devised a plan for following rules, informed you of this plan, and made a commitment to follow it. If the student disrupts the class while in the quiet part of the room, this results in his removal from the room.

8. If step 7 does not work, in-school suspension is implemented. Say, "Things are not working out for you here. You and I have tried to this problem, but now it's time to talk with some other people. Please report to the principal's office." In-school suspension continues until an approved plan of action appropriate behavior is formulated.

9. If the student is completely out of control, the parents are asked to take him home for the rest of the day.

10. If step 9 is continually ineffective, the student must stay home or is sent to another placement that is better able to meet his/her educational/behavioral needs.

(Note: Steps 9 and 10 may not be workable and feasible for many schools. One option is having the student stay after school or come in on weekends to sit until a plan is devised. Administrative and parental permission is necessary for this approach.)

Activities

1. The ten step approach may not be feasible in many classrooms/schools. Create a modified version with fewer steps or changes in procedures that might work in your situation.

2. To what extent is it important for teachers to know about/discover the reasons why kids misbehave? Does it help us and the youngsters to better understand the behavior and thus change it? Does it merely provide an excuse for misbehavior? Should someone just "suck it up" and "quit complaining" about life's circumstances, or should we consider the influence of the events?

3. What might Glasser say about the requirement in IDEA about conducting a functional behavior assessment (FBA)?
THE 10-R TECHNIQUE

The prosocial response formation technique, often referred to as the "10-R" technique was developed by Patrick Sloss to assist in the control and change of aggressive or non-compliant behavior. It is promoted as an alternative to traditional approaches of punishing disruptive behavior. The approach, which is best suited to students in Kindergarten to grade 4 (or students with mental retardation at developmental ages up to 8 or 9 years of age) recommends the implementation of a sequence of ten steps to be followed whenever a student's misbehavior is unreceptive to warnings and mild interventions. The 10-R technique involves the student in the correction of inappropriate behavior by having him/her analyze why it was wrong or non-productive, and requiring the practice of proper actions.

How to Use the 10-R Technique

For maximum effectiveness, it is recommended that all ten steps be followed consistently after each behavioral incident.

1. Response cost (penalty). When a non-acceptable action is displayed, remove a pre-determined amount of reinforcer (e.g., free time, points) as the student states which rules were broken. The amount to be lost is known to all students because of your discussions with them.

2. Relaxation. Have the student go to a preassigned place (e.g., a mat, carrel, or corner) and relax himself/herself. S/he summons you when calm. If the voice is excited or sarcastic in tone, or if the muscles appear tense (You may want to lightly shake his arm or leg to monitor muscle tension. The arm should "wobble".) tell him/her to continue to attempt to become calm and relaxed.

3. Rectify. Have the student provide restitution for any physical/emotional damage done. This may involve repair of items, an apology to another, or repayment for damage.

4. Recognize. Help the student to recognize the cause of his misbehavior and identify more appropriate responses for that situation

5. Rehearsal. Have the student practice the alternative behavior(s) identified in Step 4. The roleplaying situation should be similar to the event which was handled inappropriately by the student.

6. Reinforce. Reinforce, praise or otherwise reward the student for having demonstrated appropriate behavior. Encourage more of the behavior in the future. Also reinforce the behavior when it is later displayed by the student.

7. Reflect. Ask the student to identify the consequences of his disruptive behavior and compare them with the possible consequences of the desired action. This analysis helps the student to see the benefits of proper behavior.

8. Re-enter. The student has missed anywhere from a few minutes to a few hours during this session. S/he should finish all work missed, or be returned to the least pleasant activity that was missed. This action ensures that these sessions do not become a learned way to avoid certain schoolwork.

9. Record. Record data to assist in evaluating the long term effectiveness of this intervention.
10. Repeat. Use this technique as necessary to change behavior.

Activities and Discussion Questions

1. You are leading Kristen through the ten steps. She refuses to apologize to Shirley for having hit her. Kristen becomes angry again. What can be done?

2. Dan refuses to go to the relaxation mat as directed. What can you do?

3. How could these ten steps be revised or condensed if the student (or the teacher) can't remember all-ten?

4. How could two simultaneously misbehaving students be handled at one time by a teacher using this technique?

5. What information do you want to record in Step #9 of the 10-R technique?

6. What might be done if your recording indicates that this technique has not been effective in changing a student's behavior.

7. With a partner, role play the use of the 10-R approach. Have your partner imitate a student who is of concern to you.

8. Do you think someone was trying a little bit too hard to devise 10 steps that all start with an "R"?
WHY ARE YOU DOING THAT?
(The devil made me do it.)

Part of resolving a problem situation is making sense of it.

This page presents five views on how to figure out why a youngster is misbehaving. The first model represents the views of Rudolph Dreikurs. The second represents the views of behaviorists who advocate for the process and procedures of applied behavior analysis. The third involves discussion with the student. The fourth is a procedure known as "Functional Behavior Assessment". The fifth process is based upon the "Circle of Courage" model.

But first, some items to answer in order to start the process:

-The first (given) name of my most persistently non-compliant student: ______________

-This student’s defiance usually takes the form of: (Please be specific in your description. Elaborate upon general descriptors such as "rude", "defiant", and "pesky". Identify observable actions that are displayed, such as "Direct verbal refusal of teacher directions.", "Tearing up of assignment after initial attempt to begin.", "Asks ‘Why’ after directions to engage in an action.")

-I remember one time when: (Provide an illustrative example of the persistent behavior)

-My best guess as to the cause of his/her pattern of behavior:

-Things that seem to "set off” or instigate this behavior:

-What signals/signs cue me to an impending episode:

-Things I've done to prevent the occurance of the behavior include:

-When the behavior is displayed, my usual response is to:

-Things I’ve tried that didn’t work:

-Things I’ve tried that had some degree of positive influence on the behavior:

-Things that work well all or most of the time with other kids:
ASSESSMENT MODELS

VIEW #1 DREIKURS

According to Rudolph Dreikurs, kids misbehave and seek "mistaken goals" when they do not have a sense of belonging or being valued by important people in important life settings. He provides a way to determine the function of/reason for a youngster's behavior. The system applies to behavior that results from a desire to socially and emotionally connect with others. It is not intended to explain all behavior. It provides guidance in understanding youngsters who have "internal" reasons for their behavior (a need to be psychologically attached to others), versus "external" causes. Kids misbehave for reasons unrelated to gaining personal contact with others. They might be bored with the lesson; the assignment may be too difficult (or simple); medication reactions may lower tolerance levels and behavioral restraint; poor parenting failed to teach "manners"; love of learning, and respect for others; desire for money/material goods; etc. We should also keep in mind that some youngsters have not learned how to behave in the manner expected in schools. Many low income, immigrant, and/or culturally different youngsters may have learned other "right ways" to behave in certain situations and group settings. They may need to be taught the behaviors that you expect them to display in your classroom (or you might have to change your ways to be more accepting of diversity and differences).

According to Dreikurs, kids act up due to a need for belonging...being a valued, contributing member in settings where they find themselves (home, school, after school activities). Here's a little background before solutions are presented.

ATTENTION SEEKING

Pesky, attention seeking behavior results when kids aren't getting the recognition they feel they deserve. If they can't get attention for their positive behaviors (e.g., being on-task, completing work, arriving on time, being nice to others), they'll seek it with inappropriate behaviors. They feel important if the teacher pays attention to them and provides them with extra services. While they desire positive attention, if they aren't skilled at bring it to them (or the adult fails to give positive notice to appropriate behavior), they will engage in inappropriate actions. Negative attention trumps no attention at all. It at least provides the surface trappings of being "important" and "belonging": the person pays attention to you. They may:
- continually call out
- refuse to work unless a teacher hovers over them
- ask irrelevant questions

So be sure to "catch 'em being good".

SEEKING POWER

If attention seeking doesn't work, youngsters, out of spite, may try to make your professional life miserable. They may:
- argue
- contradict
- lie
- refuse to work or follow directions
- throw a temper tantrum
- tell you to "go take a flying leap"
- behave hostilely toward you

These actions usually bring your undivided attention, giving him or her power over your actions.
SEEKING REVENGE

If attention or power seeking doesn’t work, kids may seek revenge against you or others. Unable to gain power in a face-to-face struggle, they retaliate in secret. Their belief is that: "I can only feel significant if I hurt others. I'm just doing what they've done to me. I don't care if I'm disliked. They deserve this behavior. It is a noble act to stand up to them. It is a victory of sorts to be disliked and to undergo punishment." These kids may:
- treat others cruelly
- set themselves up to be punished
- engage in pranks or vandalism behind your back

DISPLAYING INADEQUACY

Underneath the bravado of seeking revenge is deep discouragement. The continued rejection by others eventually makes them feel worthless. They think: "Why even try anymore?" They guard what is left of their self esteem by removing themselves from public and social tests. They think: "If I pretend to be stupid or refuse to cooperate, people will leave me alone." They may:
- passively refuse to participate in class activities
- sit silently and engage in no interaction
- request to be left alone

SO WHAT DO WE DO

1. Do things and conduct activities in a manner that will help the youngsters to develop a sense of belonging and esprit de corp, and a feeling of being valued by others in your classroom/school. Focus on developing a supportive team spirit in your classroom.

2. Identify the "mistaken goal" by analyzing the situation in the following ways:

<table>
<thead>
<tr>
<th>If you are:</th>
<th>The student is probably seeking</th>
</tr>
</thead>
<tbody>
<tr>
<td>Annoyed</td>
<td>Attention</td>
</tr>
<tr>
<td>Threatened</td>
<td>Power</td>
</tr>
<tr>
<td>Hurt</td>
<td>Revenge</td>
</tr>
<tr>
<td>Powerless</td>
<td>Inadequacy</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>If Student:</th>
<th>Then their probable goal is:</th>
</tr>
</thead>
<tbody>
<tr>
<td>Stop a behavior, but then repeat it.</td>
<td>Attention</td>
</tr>
<tr>
<td>Refuse to stop and increases the misbehavior</td>
<td>Power</td>
</tr>
<tr>
<td>Become violent or hostile</td>
<td>Revenge</td>
</tr>
<tr>
<td>Refuse to cooperate, participate, or interact</td>
<td>Inadequacy</td>
</tr>
</tbody>
</table>
3. Address the mistaken goal in a friendly, respectful, non-threatening manner. This course of action removes the power of the mistaken goal. Try this approach using concerned, polite, non-sarcastic wording and tone.

- "Could it be that you'd like me to spend more time with you?" (attention)
- "When you try to prove that nobody can make you do things if you don't want to do 'em, is it possible that you're showing that you're upset with us?" (power)
- "When you did that, were you trying to hurt me because you're angry with me? (revenge)
- "When you pretend that you're not capable of doing this work, are you trying to make me go away?" (displaying inadequacy)

4. Explain that experts know about this behavior, have studied it for generations and know of better ways for youngsters to get their needs met. Discuss the faulty logic involved in the youngster's thinking/actions, and help him/her devise a plan to meet his/her needs in appropriate ways.

5. Change your actions when confronted by the various behaviors:

**ATTENTION**
- Provide the youngster with acceptable ways of gaining the attention that is sought.
  - Role play those new ways to increase the chances of them being used. Give signals/hints to prompt the behavior in the real life situations.
- Set up a plan with the youngster which allows him/her to earn time with you.
- Provide the youngster with supports (e.g., a peer who will help the youngster if academic difficulties occur)
- Remind the youngster of what must be done to get your attention (e.g., raise hand). If this is not yet a usual behavior for the youngster, give your attention immediately to reinforce that correct behavior. Verbally praise the youngster for displaying the appropriate behavior. Wean the student from the immediate reaction on your part by telling him/her that you see his/her appropriate behavior and that you'll be there in just a minute (after attending to the other hand raisers first, or finishing the writing of a note, etc.)

**POWER**
- Avoid power struggles. Stay out of the "Conflict Cycle". Prevent escalation of the event. Seek solutions, not blame.
- Acknowledge the youngster's need for power.
- Involve the student in making decisions.
- Give responsibilities and positions of influence to the youngster.
- Use an "I message" followed by a question:
  - "I'm hearing some offensive language. Would you be kind enough to restate your opinion in more polite terms?"

**REVENGE SEEKING**
- Design activities in which the student and others come to view each other positively.
- Bond with the youngster. Give him/her the time of day. Build a friendly relationship.
- Expect resistance to your efforts at first. Persistence is required.
**DISPLAYING INADEQUACY**
- Offer encouragement and support.
- Blame the lack of success on the curriculum, materials, or the way you taught the lesson, but do not blame the youngster.
- Set the youngster up for success and recognize his/her efforts.
- Have the student self evaluate what s/he did right and wrong and develop a plan for improvement (or have him/her redo the task well). Assist as needed.
- NEVER show your frustration as this reaction may reinforce the sense of worthlessness.

**VIEW #2 THE BEHAVIORISTS' A-B-C MODEL**

Those who advocate for "applied behavior analysis" would offer the following advice when trying to determine why a youngster demonstrates certain behaviors: Identify the behavior of concern, defining and describing it. Next, try to determine what event(s) happened right before that behavior. Finally, note what happens as a result of the youngster's behavior. With this information, you should be able to make a good guess at what brings about and maintains the youngster's behavior. This information can also be used to modify or eliminate the behavior.

The behaviorist paradigm for determining the "why" of a behavior is identified by the symbols A, B, and C, representing "Antecedent" (the stimulus that caused or "sparked" the behavior), "Behavior" (the student's action that followed the antecedent), and "Consequence" (the reward that followed the behavior). Behaviorists believe that people show behaviors because they get some sort of reward for doing so (e.g., attention, power, recognition, money, release from assigned duties, physical pleasure, etc.). In their minds, behaviors (your's, mine, and the kids') continue and become ingrained because those actions bring something desirable to us, or remove something undesirable from our midst.

When dealing with student misbehavior, the trick is to figure out what is maintaining the behavior and then manipulate the environment so that behavior no longer receives that reward.

If the behavior receives no reward, it will cease (after an initial escalation of the behavior in continued and intensified attempt to obtain a reward in the way that has worked previously).

Another approach is to require a new behavior in order for the student to get the desired reward. We ask the student to demonstrate a replacement behavior if he or she wishes to obtain the desired reinforcement.

A third approach is to manipulate the situation so that the antecedent never occurs. The behavior won't happen if there is no stimulus for it to occur.

You see that you can change the A, B, or C (or combinations of them).

**Example**

The teacher asks a question to the class (Antecedent). Raheem yells out an answer (Behavior). Teacher tells Raheem to raise his hand next time (as s/he always tells him to do), but accepts the answer and goes on with the lesson (Consequence - Raheem got to show how smart he was, beat out his competition...other kids, and even got a bit of personal interaction from the teacher during the lesson).
In this situation, the teacher could eliminate the antecedent by calling on particular students (after the question is said, not before...or all the other students will let their minds wander). The teacher might also change the consequence by ignoring the answer (“I only hear the answer of students who raise their hands and wait to be called upon. I’m looking for a hand.”) or penalizing "calling out" behavior (while praising the hand raising of other students). The teacher might also work with Raheem to develop a new behavior to get the reward/reinforcement. Each time Raheem raises his hand (whether he knows the answer or not, and whether he is called upon by the teacher or not) he gets a point. Twenty points allows him to present information to the class tomorrow, or gives him five minutes of personal time with the teacher (allowing him to receive the desired rewards of appearing knowledgeable or gaining personal contact with the teacher).

VIEW #3 Dr. Mac's Compassionate Questioning

Why don't we just ask the youngster? Easier said than done. Remember back to when you have been questioned about personal issues by those you didn't know, didn't like, or didn't trust. Were you be totally honest? Did you avoid saying some things? Did you mislead them?

Certain conditions must be present if you are to gain useful information from youngsters:
1. The student has to like you, value your input, and trust that you will use the information in a caring way.
2. You must ask in a way that evidences concern, caring, and respect. This interview is not an inquisition. Really listen...don't give into an urge to lecture or badger. Avoid making judgements. Simply gather information.

Certain practices will help the youngster to share his/her thoughts, view, and insights:
1. Active and non-directive listening
2. A systematic approach

VIEW #4 Functional Behavior Assessment

A functional behavior assessment attempts to figure out the purpose of the behavior (Why would someone show a behavior if it didn't have a purpose such as bring a reward or avoiding something undesireable?) Once we know the reason, we can design interventions.

View #5 The Circle of Courage

The "Circle of Courage", a psychoeducational model, attempts to explain why kids misbehave. It can be used as an assessment device AND guidance for intervention.
CLASSROOM CONFERENCING

When we see misbehavior in the classroom, it is oftentimes necessary to call the student aside to discuss his/her inappropriate actions. While other counseling techniques provide specific types of responses or a general focus, classroom conferencing (McIntyre, 1985) is different in that it offers an outline or format for conducting a "long talk" with the student. These procedural guidelines provide structure to the counseling situation while allowing you to use the interaction or counseling style with which you are most comfortable.

This flexibility is important due to our differing personalities and philosophies which make some of us more directive, reflective, reserved, understanding, non directive, collegial, or authoritarian than others. Classroom conferencing provides a series of steps to assist you in directing behavioral changes in misbehaving students. This approach actively involves the pupil in the change of personal interaction behavior, thus giving him/her a "stake" in the behavior change program. Over time, by reasoning with the student, one can promote inner control of behavior and effect more permanent changes.

How to Use Classroom Conferencing

1. Meet with the student as soon as possible after the incident. Arrange for a minimum of distractions by meeting in private or inform other students that they are not to interrupt. Assure that your conference cannot be overheard by others.

2. Ask the student to review what happened (Use a respectful and concerned voice). Listen closely (truly LISTEN) to the youngster. Hear his/her viewpoint...Remember, there are two sides to every pancake. Immediately (and respectfully) correct any misconceptions, differences of opinion, or lies so that both of you are dealing with the same perceptions of the situation.

3. Discuss morality and common courtesy, and question the student as to what was right and wrong in that given situation. Discuss whose rights or privileges were violated and by whom.

4. Discuss the student's pattern of behavior (Each student with behavioral or emotional issues tends to have his/her own stereotypic reaction to frustration). Let the student know that his/her idiosyncratic behavior is unacceptable in the classroom/school/playground and cannot be tolerated.

5. Agree on a new reaction pattern. Have the student suggest other possible ways of handling the situation should it occur again. Ask the student to list as many alternative reactions as possible, even if s/he disagrees with their use. Write these possible solutions on paper. Ask the student to identify one that s/he will use in the future. Discuss the pros and cons of that decision. Choose another if that one is not acceptable.

6. Expect "back sliding". Reconvene your conference as necessary to review the student’s progress. Expect change to take time and perhaps many conferences. Never give up on the student. Recognize any improvement or effort.
Another System to Consider
"PROBLEM SOLVING"

1. Identify and define the problem or situation. Do so by asking the student(s) the following question: "What problems are we having?" Work on avoiding blame. Focus on actions and reactions. Work on objectivity in describing the problem.

2. Generate alternatives for solving the problem. Say: "What can we do to help you (and others) to display appropriate behavior?"

3. Evaluate the alternative suggestions with the suggestion. Ask the student to elaborate by asking "What do you think of this suggestion?" Go over pros and cons of each alternative.

4. Implement the decision agreed upon.

5. Conduct a follow up evaluation. Ask "How effective was this decision?" Adjust the plan as necessary.

Activities and Discussion Questions

1. With others, discuss the importance of steps one, two and three of the classroom conferencing.

2. How many classroom conferences do you conduct and how long do you wait for behavior to change before you give up and decide upon another intervention?

3. What do you do if the student fails to cooperate during the conference?

4. Fran reacts to teasing by others by hitting them. The following is a listing of alternative solutions given by Fran for handling the teasing:
   a. kick them
   b. spit at them
   c. give them "the finger" while cursing at them
   d. call the teacher
   e. call them names in return
   f. ignore the teasing

   When asked which s/he will use in the future, Fran sees them as being in order of his/her preference. What are the concerns you have with each? At which point will you say, "OK. This one sound good."?

5. What other solutions might you recommend for Fran's consideration? (See #4 above)
6. With a partner who plays the part of the student, practice classroom conferencing. Use a real life situation, or one of the following situations:

a. During a softball game, a ground ball gets by Nick and rolls toward the far end of the playground. Nick chases after it, and runs through an area where other students are playing with marbles. After throwing the ball too late to tag the runner at home plate, Nick, in anger, blames the marble players for slowing him down. He kicks a pile of marbles and throws a few over a distant fence. You call Nick over to you. He approaches you, but is still contaged by his angry feelings.

b. Penny leaves her seat to throw away a wad of paper. Because you are teaching a lesson, you tell her to sit down. After a short argument and a repeating of your direction, she reluctantly returns to her desk while mumbling. A few minutes later, Nancy arises again and despite your command for her to return to her seat, she throws away the paper before doing so. In your conference you find that she asked the teacher aide/para-professional if she could throw away the paper after you told her "No". The aide said "Yes". (Will you also talk to the aide?)

c. Two boys make faces, groan, and say rude remarks when a rather plump girl enters the room or is called upon during a lesson. She often becomes angry and belligerent because of the boy's actions.
INSTRUCTIONAL STRATEGIES AND CLASSROOM RESOURCES

LANGUAGE ARTS

- READING
- ENGLISH
- WRITING

(Lesson Activities giving an example of the strategy are in yellow)
Using "KWL" in the Classroom

What Is It?

KWL charts assist teachers in activating students' prior knowledge of a subject or topic and encourage inquiry, active reading, and research. KWL charts are especially helpful as a pre-reading strategy when reading expository text and may also serve as an assessment of what students have learned during a unit of study. The K stands for what students know, the W stands for what students want to learn, and the L stands for what the students learn as they read or research.

Topic: Cheetahs

<table>
<thead>
<tr>
<th>K: animal</th>
<th>Where do they live?</th>
<th>L: hunter</th>
</tr>
</thead>
<tbody>
<tr>
<td>Where do they live?</td>
<td>They live in Africa in grasslands/plains areas.</td>
<td>Are they more like dogs or lions?</td>
</tr>
<tr>
<td>How and what do they eat?</td>
<td>They hunt mammals using a &quot;chase - trip - bite&quot; method.</td>
<td>Cheetahs evolved from cat-like mammals that lived more than four million years ago.</td>
</tr>
</tbody>
</table>

Why Is It Important?

Donna Ogle asserts that KWL helps students become better readers of expository text and helps teachers to be more interactive in their teaching (Ogle, 1987).

KWL charts help students to be active thinkers while they read (Carr & Ogle, 1987), giving them specific things to look for and having them reflect on what they learned when they are finished reading.

In learning, metacognition involves the active monitoring and conscious control and regulation of cognitive processes. It involves thinking about thinking, self-awareness, and self-regulation (Flavell, 1979).

The metacognitive strategy of self-questioning is used to ensure that students comprehend the text. When students set their own purposes for reading, they are more motivated and active as readers. Each student has a schema, or a framework for how they view the world. Accessing a student's prior knowledge is the first step in integrating new concepts into their existing schema. KWL charts help activate background knowledge and provide an opportunity for students to set their own learning objectives.

How Can You Make It Happen?

An ideal time to use KWL charts is before the class starts working with expository text. Begin by modeling the use of a KWL chart. Place a transparency of a blank KWL chart on an overhead projector, and write the topic of the expository text at the top of the chart (Cheetahs). Fill in the chart as you think out loud, describing your thought process. After completing the "Know" and "Want to Know" sections, read aloud a brief expository paragraph. Complete the "Learned" section of the KWL chart after reading the text, once again thinking out aloud and describing your thought process.

To guide students in completing a KWL chart, choose another topic, place a blank KWL transparency on the overhead, and distribute a copy to each student. Allow the students to independently complete the "Know" section of the chart. As a class, share individual answers, brainstorm other ideas, and discuss responses. This allows students to benefit from their collective experiences, jog some prior knowledge, and reveal any misconceptions students may have. Students often believe they have factual information about a subject that is proven incorrect through reading, researching, and exploration. Be cautious about correcting students in the initial completion of the "Know" section of the chart as
discovery of information often leads to long-term retention. Encourage students to correct their "misinformation" as they complete the "Learned" section of the chart, and model this strategy for them. Next, collect all information that is known, and fill in the "Know" section on the transparency based on student responses.

Allow the students to independently complete the "Want to Know" section. Then share and discuss responses as a class. This is an excellent opportunity to model and to show students the value of inquiry. Having students form their own questions often results in longer answers, and provides an opportunity for you to help students ask good questions. Fill in the "Want to Know" section on the transparency based on student responses.

Have students read the text independently, aloud, or in pairs, as appropriate. Then have students complete the "Learned" section independently. Ask students to share their findings, and have a discussion about the responses, encouraging students to elaborate on their answers. Be prepared to correct misinformation by referring to the text or by having students make a plan to find out if an idea is accurate. Discuss how their knowledge has changed as a result of reading or research, and encourage students to reflect on their learning. Fill in the "Learned" section on the transparency based on student responses.

Model the use of KWL charts and complete several as a class. Once you have provided guided practice opportunities for students, you may begin to encourage independence using shorter pieces of text. Save challenging, lengthy text for when students are quite comfortable with the use of the KWL strategy and can use it independently.

A KWL chart may be used as a short introduction to a lesson, to stimulate prior knowledge, or at the start of a research paper or project. This can help students push beyond their existing comfort zone to learn new and different material.

Another use for the KWL chart is to assess your instruction informally. Have students complete the "Know" and "Want to Know" sections of the chart prior to the lesson and the "Learned" section after the lesson is finished. Did the students successfully master the goals of the lesson?

**How Can You Stretch Students' Thinking?**

Consider adding an "H" column for "How to Find Out" the information in the "Want to Know" column. Discuss with the students appropriate resources for acquiring information in various subject areas, which may lead to a discussion of bias in text. Discuss matching needs with resources, keeping in mind that sometimes a face-to-face interview may glean more information on a particular issue than reading a text.

Another variation is to organize the information in the "Learned" column. Students can categorize the information, create names for their categories, and use the categories when writing about the topic and what they learned.

**When Can You Use It?**

**Reading/English**

KWL can be used before reading a novel or section of text. Select an author and have students complete the "Know" and "Want to Know" sections of the chart. Read a brief biography about the author and see if the students have all attained the information they wanted to learn. If not, make a plan for further investigation to answer their questions.

**Writing**

Students can use KWL charts to reflect on their learning after completing a written piece. After completing their writing, students can write an explanation of what they learned and examine whether they were incorrect about any
information. This can be an opportunity for students to reflect on their learning and to articulate their thought processes.

Math

When beginning a new unit of study (e.g., fractions) complete a KWL chart as a class or individually. Encourage students to use mathematical terms and concepts. Throughout the unit, check the KWL chart and consider having students complete brief journal entries explaining what they have learned and what their reasoning was as they completed problems.

Social Studies

Use a KWL chart to begin a new chapter or unit or as a framework for a short project. Have students explore various cultures or regions. Groups of students can research various aspects of a culture and use KWL charts to organize their information. As a class, groups can share their learning and engage in a discussion about cultures.

Science

KWL charts can be useful when students are using the scientific process. Pose the experiment question (e.g., "Which brand of paper towel is stronger?") and ask students to complete the KWL chart as a starting point. Consider adding an "H" column for "How to Find Out" as students design an experiment.

Lesson Plans

What Do You Know About Bugs?

This is a primary lesson plan using a KWL chart to activate prior knowledge about bugs.
What Do You Know About Bugs?

Grade Levels: K - 3

Lesson Summary

This lesson is for students in a third-grade science class learning about the animal kingdom. Students should have already been introduced to the topic, and should be prepared to explore the phylum arthropoda (jointed-foot invertebrates).

Objective

1. The students will use a graphic organizer to prepare to gain information on a topic.
2. The students will read expository text, using a graphic organizer to guide their reading.
3. The students will reflect on what they learned and summarize.

Materials

- One copy of the book *Bugs* by Nancy Winslow Parker and Joan Richards Wright for each student
- KWL chart on an overhead transparency and marker
- Overhead projector
- One printed KWL chart for every two students
- Slips of paper, each labeled with the name of one of the various bugs listed in the book

Procedure

1. Demonstration

The teacher should begin the lesson by reviewing the scientific symbols located in the front of the book. Arrange the class into pairs and provide a copy of the book to each student. Place the KWL transparency on the overhead and write "horsefly" at the top. Elicit responses from the students to complete the "Know" section and the "Want to Know" sections of the chart. At this point the class's KWL Chart may look similar to this:

<table>
<thead>
<tr>
<th>Know</th>
<th>Want to Know</th>
<th>Learned</th>
</tr>
</thead>
<tbody>
<tr>
<td>It flies. It is not a horse. It bites. It is a bug.</td>
<td>Why is it called a horsefly? What does it eat? Are they poisonous? Is a horsefly more like a bee or a mosquito? Does it have a cocoon like a moth?</td>
<td></td>
</tr>
</tbody>
</table>

Read aloud the selection from the book about the horsefly. Allow the students to discuss the selection in pairs. As a class, complete the "Learned" section of the chart. Refer students to the text as they provide responses. Correct any misinformation that was given initially and create a plan to locate any information that was not
gained by reading the text. At this point, the class's KWL Chart may look similar to this:

<table>
<thead>
<tr>
<th>Know</th>
<th>Want to Know</th>
<th>Learned</th>
</tr>
</thead>
<tbody>
<tr>
<td>It flies.</td>
<td>Why is it called a horsefly?</td>
<td>They live near swamps and in stagnant water.</td>
</tr>
<tr>
<td>It is not a horse.</td>
<td>What does it eat?</td>
<td></td>
</tr>
<tr>
<td>It bites.</td>
<td>Are they poisonous?</td>
<td>Bites from females last longer because their saliva has a chemical that prevents blood from clotting.</td>
</tr>
<tr>
<td>It is a bug.</td>
<td>Is a horsefly more like a bee or a mosquito?</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Does it have a cocoon like a moth?</td>
<td>The horsefly goes through three stages: egg, larva, and pupa to become an adult.</td>
</tr>
</tbody>
</table>

2. **Guided Practice**

Have students close the book and set it aside. Have each pair choose one slip of paper with the name of a bug on it. The following bugs each have a brief expository page and illustration in the book: cicada, ant, tick, flea, slug, spider, moth, mosquito, centipede, roach, cricket, termites, louse, firefly, and dragonfly. Distribute the KWL charts and have each pair complete the "Know" and "Want to Know" sections. Allow time for each pair to read the appropriate section concerning their bug, and allow time for them to discuss what they read as well as the illustration. Ask each pair to complete the "Learned" section of the KWL chart. When students are finished, have them discuss each bug in turn and share what they learned with the class. Based on what they learn in the class discussion, encourage students to make connections and draw comparisons between the bugs.

3. **Independent Practice**

For independent practice, have students select a new bug to read about and complete the same process individually. You may want to allow time for students to come together as a group to share what they learned about the bugs they researched.

4. **Assessment**

To demonstrate understanding, students should be able to complete the KWL chart appropriately and with minimal teacher direction. You might ask students to summarize their learning in a science journal entry. Another suggestion is to have students read about two kinds of bugs, complete a KWL chart for each, and then compare the bugs. Students can use a comparison chart or a Venn diagram to organize their thinking, and then write a paragraph comparing the two bugs.
Think Aloud Strategy

What Is It?

The think-aloud strategy asks students to say out loud what they are thinking about when reading, solving math problems, or simply responding to questions posed by teachers or other students. Effective teachers think out loud on a regular basis to model this process for students. In this way, they demonstrate practical ways of approaching difficult problems while bringing to the surface the complex thinking processes that underlie reading comprehension, mathematical problem solving, and other cognitively demanding tasks.

Thinking out loud is an excellent way to teach how to estimate the number of people in a crowd, revise a paper for a specific audience, predict the outcome of a scientific experiment, use a key to decipher a map, access prior knowledge before reading a new passage, monitor comprehension while reading a difficult textbook, and so on.

Getting students into the habit of thinking out loud enriches classroom discourse and gives teachers an important assessment and diagnostic tool.

Why Is It Important?

By verbalizing their inner speech (silent dialogue) as they think their way through a problem, teachers model how expert thinkers solve problems. As teachers reflect on their learning processes, they discuss with students the problems learners face and how learners try to solve them. As students think out loud with teachers and with one another, they gradually internalize this dialogue; it becomes their inner speech, the means by which they direct their own behaviors and problem-solving processes (Tinzmann et al. 1990). Therefore, as students think out loud, they learn how to learn. They learn to think as authors, mathematicians, anthropologists, economists, historians, scientists, and artists. They develop into reflective, metacognitive, independent learners, an invaluable step in helping students understand that learning requires effort and often is difficult (Tinzmann et al. 1990). It lets students know that they are not alone in having to think their way through the problem-solving process.

Think-alouds are used to model comprehension processes such as making predictions, creating images, linking information in text with prior knowledge, monitoring comprehension, and overcoming problems with word recognition or comprehension.

By listening in as students think aloud, teachers can diagnose students' strengths and weakness. "When teachers use assessment techniques such as observations, conversations and interviews with students, or interactive journals, students are likely to learn through the process of articulating their ideas and answering the teacher's questions"

How Can You Make It Happen?

Modeling Thinking Out Loud

Asking students to use a strategy to solve complex problems and perform sophisticated tasks is not enough. Each strategy must be used analytically and may require trial-and-error reasoning. Thinking out loud allows teachers to model this complex process for students.

For example, suppose during math class you'd like students to estimate the number of pencils in a school. Introduce the strategy by saying, "The strategy I am going to use today is estimation. We use it to . . . It is useful because . . . When we estimate, we . . ."
Next say, "I am going to think aloud as I estimate the number of pencils in our school. I want you to listen and jot down my ideas and actions." Then, think aloud as you perform the task.

Your think-aloud might go something like this:

"Hmmm. So, let me start by estimating the number of students in the building. Let’s see. There are 5 grades; first grade, second grade, third grade, fourth grade, fifth grade, plus kindergarten. So, that makes 6 grades because 5 plus 1 equals 6. And there are 2 classes at each grade level, right? So, that makes 12 classes in all because 6 times 2 is 12. Okay, now I have to figure out how many students in all. Well, how many in this class? [Counts.] Fifteen, right? Okay, I’m going to assume that 15 is average. So, if there are 12 classes with 15 students in each class, that makes, let’s see, if it were 10 classes it would be 150 because 10 times 15 is 150. Then 2 more classes would be 2 times 15, and 2 times 15 is 30, so I add 30 to 150 and get 180. So, there are about 180 students in the school. I also have to add 12 to 180 because the school has 12 teachers, and teachers use pencils, too. So that is 192 people with pencils."

Continue in this way.

When reading aloud, you can stop from time to time and orally complete sentences like these:

- So far, I've learned...
- This made me think of...
- That didn't make sense.
- I think ___ will happen next.
- I reread that part because...
- I was confused by...
- I think the most important part was...
- That is interesting because...
- I wonder why...
- I just thought of...

Another option is to videotape the part of a lesson that models thinking aloud. Students can watch the tape and figure out what the teacher did and why. Stop the tape periodically to discuss what they notice, what strategies were tried, and why, and whether they worked. As students discuss the process, jot down any important observations.

Once students are familiar with the strategy, include them in a think-aloud process. For example:

Teacher: "For science class, we need to figure out how much snow is going to fall this year. How can we do that?"
Student: "We could estimate."
Teacher: "That sounds like it might work. How do we start? What do we do next? How do we know if our estimate is close? How do we check it?"

In schools where teachers work collaboratively in grade-level teams or learning communities, teachers can plan and rehearse thinking out loud with a partner before introducing the strategy to students. This is especially useful when the whole school is focusing on the same strategy, such as using learning logs or reflective journals in content area classes or applying fix-up strategies when reading informational and story texts.

**Reciprocal Think-Alouds**

In reciprocal think-alouds, students are paired with a partner. Student take turns thinking aloud as they read a difficult text, form a hypothesis in science, or compare opposing points of view in social studies. While the first student is thinking aloud, the second student listens and records what the first student says. Then students change roles so that each partner has a chance to think aloud and to observe the process. Next, students reflect on the process together,
sharing the things they tried and discussing what worked well for them and what didn’t. As they write about their findings, they can start a mutual learning log that they can refer back to.

**Assessment**

After students are comfortable with the think-aloud process, use the strategy as an assessment tool. As students think out loud through a problem-solving process, such as reflecting on the steps used to solve a problem in math, write what they say. This allows you to observe which strategies students use. By analyzing the results, you can pinpoint the individual student’s needs and provide appropriate instruction.

Assign a task, such as solving a specific problem or reading a passage of text. Introduce the task to students by saying, "I want you to think aloud as you complete the task: say everything that is going on in your mind." As students complete the task, listen carefully and write down what students say. It may be helpful to use a tape recorder. If students forget to think aloud, ask open-ended questions: "What are you thinking now?" and "Why do you think that?"

After the think-alouds, informally interview students to clarify any confusion that might have arisen during the think-aloud. For example, "When you were thinking aloud, you said . . . Can you explain what you meant?"

Lastly, use a rubric as an aid to analyze each student's think-aloud, and use the results to shape instruction.

For state-mandated tests, determine if students need to think aloud during the actual testing situation. When people are asked to solve difficult problems or to perform difficult tasks, inner speech goes external (Tinzmann et al. 1990). When faced with a problem-solving situation, some students need to think aloud. For these students, if the state testing protocol permits it, arrange for testing situations that allow students to use think-alouds. This will give a more complete picture of what these students can do as independent learners.

**How Can You Stretch Students' Thinking?**

Reflective journals and learning logs are a natural extension of thinking out loud. By jotting down what you say, you can model the journaling process as you model thinking out loud. As students start to keep journals or learning logs, review them on an ongoing basis to monitor the students' metacognition and use of essential strategies.

**When Can You Use It?**

**Reading/English**

The process of thinking out loud can be used in K-12 classes during all phases of the reading process. Before reading you may think out loud to demonstrate accessing prior knowledge or to make predictions about the text. During reading, model reading comprehension using fix-up strategies or examining text structure to maintain meaning. After reading, model using the text to support an opinion, or analyze the text from the author’s point of view.

**Writing**

Thinking out loud can be used to model all phases of the writing process. In pre-writing, model the strategies writers use to get the process started; during the drafting process, model creating "sloppy copies"; during revision, model how to ask questions and think about readers’ needs; and during the editing process, model how to use conventions to help readers understand the message. As students engage in reciprocal think-alouds, they dialogue about their texts. This dialoguing helps students to internalize their sense of audience and fine-tune their craftsmanship as writers.
Math

When teaching a new math process or strategy, think aloud to model its use. Ask students to work with a partner to practice thinking aloud to describe how they use the new process or strategy. Listen to students as they think aloud to assess their understanding.

Social Studies

In classroom discussions of difficult social studies topics, such as capital punishment or affirmative action, ask that students not only give their opinions but explain their reasoning by thinking out loud. Model thinking out loud yourself as you read a difficult text or express your own opinion on a complex issue.

Science

Think-alouds can be used to model the inquiry process in science. During instruction, have students continue the inquiry process using reciprocal think-alouds and then reflect upon the process in their journals or learning logs.
Questions Before, During, and After Reading

What Is It?

To aid their comprehension, skillful readers ask themselves questions before, during, and after they read. You can help students become more proficient by modeling this process for them and encouraging them to use it when they read independently.

Why Is It Important?

Dolores Durkin's research in 1979 showed that most teachers asked students questions after they had read, as opposed to questioning to improve comprehension before or while they read. In the late 1990s, further research (Pressley, et al. 1998) revealed that despite the abundance of research supporting questioning before, during, and after reading to help comprehension, teachers still favored post-reading comprehension questions.

Researchers have also found that when adult readers are asked to "think aloud" as they read, they employ a wide variety of comprehension strategies, including asking and answering questions before, during, and after reading (Pressley and Afflerbach 1995). Proficient adult readers:

- Are aware of why they are reading the text
- Preview and make predictions
- Read selectively
- Make connections and associations with the text based on what they already know
- Refine predictions and expectations
- Use context to identify unfamiliar words
- Reread and make notes
- Evaluate the quality of the text
- Review important points in the text
- Consider how the information might be used in the future

Successful reading is not simply the mechanical process of "decoding" text. Rather, it is a process of active inquiry. Good readers approach a text with questions and develop new questions as they read, for example:

"What is this story about?"
"What does the main character want?"
"Will she get it?" "If so, how?"

Even after reading, engaged readers still ask questions:

"What is the meaning of what I have read?"
"Why did the author end the paragraph (or chapter, or book) in this way?"
"What was the author's purpose in writing this?"

Good authors anticipate the reader's questions and plant questions in the reader's mind (think of a title such as, Are You My Mother? by P.D. Eastman). In this way, reading becomes a collaboration between the reader and the author. The author's job is to raise questions and then answer them – or provide several possible answers. Readers cooperate by asking the right questions, paying careful attention to the author's answers, and asking questions of their own.
How Can You Make It Happen?

To help readers learn to ask questions before, during, and after reading, think aloud the next time you are reading a book, article, or set of directions. Write each question on a post-it note and stick it on the text you have the question about. You may be surprised at how many typically unspoken questions you ponder, ask, and answer as you read. You may wonder as you read or after you read at the author's choice of title, at a vocabulary word, or about how you will use this information in the future.

You should begin to model these kinds of questions in the primary grades during read-aloud times, when you can say out loud what you are thinking and asking. Read a book or text to the class, and model your thinking and questioning. Emphasize that even though you are an adult reader, questions before, during, and after reading continue to help you gain an understanding of the text you are reading. Ask questions such as:

"What clues does the title give me about the story?"
"Is this a real or imaginary story?"
"Why am I reading this?"
"What do I already know about___?"
"What predictions can I make?"

Pre-select several stopping points within the text to ask and answer reading questions. Stopping points should not be so frequent that they hinder comprehension or fluid reading of a text. This is also an excellent time to model "repair strategies" to correct miscomprehension. Start reading the text, and ask yourself questions while reading:

"What do I understand from what I just read?"
"What is the main idea?"
"What picture is the author painting in my head?"
"Do I need to reread so that I understand?"

Then reread the text, asking the following questions when you are finished:

"Which of my predictions were right? What information from the text tells me that I am correct?"
"What were the main ideas?"
"What connections can I make to the text? How do I feel about it?"

Encourage students to ask their own questions after you have modeled this strategy, and write all their questions on chart paper. Students can be grouped to answer one another's questions and generate new ones based on discussions. Be sure the focus is not on finding the correct answers, because many questions may be subjective, but on curiosity, wondering, and asking thoughtful questions.

After students become aware of the best times to ask questions during the reading process, be sure to ask them a variety of questions that:

- Can be used to gain a deeper understanding of the text
- Have answers that might be different for everyone
- Have answers that can be found in the text
- Clarify the author's intent
- Can help clarify meaning
- Help them make inferences
- Help them make predictions
Help them make connections to other texts or prior knowledge

As students begin to read text independently, you should continue to model the questioning process and encourage students to use it often. In the upper elementary and middle school grades, a framework for questions to ask before, during, and after reading can serve as a guide as students work with more challenging texts and begin to internalize comprehension strategies. You can use an overhead projector to jot notes on the framework as you "think aloud" while reading a text. As students become comfortable with the questioning strategy, they may use the guide independently while reading, with the goal of generating questions before, during, and after reading to increase comprehension.

**How Can You Stretch Students' Thinking?**

The best way to stretch students' thinking about a text is to help them ask increasingly challenging questions. Some of the most challenging questions are "Why?" questions about the author's intentions and the design of the text. For example:

"Why do you think the author chose this particular setting?"
"Why do you think the author ended the story in this way?"
"Why do you think the author chose to tell the story from the point of view of the daughter?"
"What does the author seem to be assuming about the reader's political beliefs?"

Another way to challenge readers is to ask them open-ended question that require evidence from the text to answer. For example:

"What does Huck think about girls? What is your evidence?"
"Which character in the story is most unlike Anna? Explain your reasons, based on evidence from the novel?"
"What is the author's opinion about affirmative action in higher education? How do you know?"

Be sure to explicitly model your own challenging questions while reading aloud a variety of texts, including novels, subject-area textbooks, articles, and nonfiction. Help students see that answering challenging questions can help them understand text at a deeper level, ultimately making reading a more enjoyable and valuable experience.

As students become proficient in generating challenging questions, have them group the questions the time they were asked (before, during or after reading). Students can determine their own categories, justify their reasons for placing questions into the categories, and determine how this can help their reading comprehension.

**When Can You Use It?**

**Reading/English**

Students who have similar interests can read the same text and meet to discuss their thoughts in a book club. Members can be given a set of sticky notes to mark questions they have before, during, and after reading the text. Members can then share their question with one another to clarify understanding within their group. Since students' reading level may not necessarily determine which book club they choose to join, accommodations may need to be made, including buddy reading, audio recordings of the text, or the use of computer-aided reading systems.

**Writing**

Good writers anticipate their readers' questions. Have students jot down the questions they will attempt to answer in an essay or short story before they write it, in the order that they plan to answer them. Stress that this should not be a
mechanical process – as students write they probably will think of additional questions to ask and answer. The key point is to have students think of themselves as having a conversation with the reader – and a big part of this is knowing what questions the reader is likely to ask.

**Math**

Students can ask questions before, during, and after solving a math problem. Have students think aloud or write in groups to generate questions to complete performance tasks related to mathematics.

**Social Studies**

Use before, during, and after questions when beginning a new chapter or unit of study in any social studies topic. Select a piece of text, and have students generate questions related to the topic. At the end of the unit of study, refer back to the questions and discuss how the questions helped students to understand the content.

**Science**

Use before, during, and after questions to review an article or science text. You can discuss articles related to a recent scientific discovery with students and then generate questions that would help them to focus their attention on important information.

**Lesson Plans**

*Lesson Plan: Questioning: The Mitten*
Introducing Questioning: *The Mitten*

This lesson is designed to introduce primary students to the importance of asking questions before, during, and after listening to a story. In this lesson, using the story *The Mitten* by Jan Brett, students learn how to become good readers by asking questions. This is the first lesson in a set of questioning lessons designed for primary grades.

Grade Levels: K - 3

**Objective**

This lesson is designed to introduce primary students to the importance of asking questions before, during, and after listening to a story. In this lesson, using the story *The Mitten* by Jan Brett, students learn how to become good readers by asking questions. This is the first lesson in a set of questioning lessons designed for primary grades.

**Materials**

- *The Mitten* by Jan Brett
- Chart paper

**Procedure**

1. **Planning and Diagnostics**

   Asking questions before, during, and after reading is a strategy that primary students can use to become better readers. Students should be able to ask and answer basic, literal questions about a story.

2. **Hook/Engagement**

   Tell students that you will read a story titled *The Mitten*. It's best if you have some mittens to show you especially if students live in a warmer climate and may not have worn mittens. Ask students questions such as:

   - What are mittens?
   - How many of you have ever worn mittens?
   - How many of you have ever lost a mitten? How did you feel?
   - Why are mittens so easy to lose?
   - Why do you think this story is called *The Mitten*?
   - Why is it called *The Mitten* and not *The Mittens*?

   Now that you've gotten the students thinking about mittens, you can transition to the topic of the lesson: asking questions before, during, and after reading. You might want to say something such as:

   "You know, it's often a good idea to ask questions like this before you read a book. Then, when you start reading the book, you can look for the answers. You can also ask questions while you're reading the book and after you read the book."

   Show the following chart and ask students to help you think of other questions.
### Questions Before Reading

<table>
<thead>
<tr>
<th>Questions Before Reading</th>
<th>Questions During Reading</th>
<th>Questions After Reading</th>
</tr>
</thead>
<tbody>
<tr>
<td>What is this book about?</td>
<td>What will happen next?</td>
<td></td>
</tr>
<tr>
<td>What does the title mean?</td>
<td>Will the story have a</td>
<td></td>
</tr>
<tr>
<td></td>
<td>happy ending?</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

You may want to use these framework questions when teaching or print them for students to reference while using this strategy.

3. **Vocabulary**

Students should be familiar with most of the animals in this story, but they might not know what a hedgehog and a badger are.

- **Hedgehog**: is a mammal that has hair and a spine that it shows outwardly when it is threatened; it is like a porcupine
- **Badger**: a mammal that burrows and is related to the weasel

4. **Measurable Objectives**

Explain to students that you are going to read *The Mitten* aloud to them and you will ask them to help you make a list of questions before, during, and after you read. Then you'll ask them to help you answer the questions to see how thinking about the questions and knowing the answers can help them understand *The Mitten* better.

5. **Focused Instruction**

Create a chart with three columns labeled, "Questions Before Reading," "Questions During Reading," and "Questions After Reading." Explain to students that you ask questions before you begin reading a book to help you think about and focus on what you're going to read. Explain that looking at the cover of a book can help you think of questions to ask before you start reading. Look at the cover of *The Mitten* and think aloud:

"Well, I know that this book must have animals in it. Are all of these characters going to be in the story? What does a mitten have to do with these animals? Why are these animals looking at the mitten? The animals can't wear the mitten, so whose mitten is on the ground? Is this a true story?"

Write these questions in the table in the "Questions Before Reading Column" and explain that they will help you focus before you begin reading *The Mitten*. Explain that everybody can look at the cover of the book and come up with different questions. There are no right and wrong questions to ask, but there are right answers to find once you start reading.

6. **Guided Practice**

Explain to students that as you read a story you always ask yourself questions. You wonder about what the main character will do next; you ask a question about something that seems unclear; or you wonder what will happen next in the story. You usually can answer most, if not all, your questions by the time you finish reading the story. Read the first five pages of text aloud and then stop. Think aloud these three questions:

- "Will Nicki notice that he dropped his mitten?"
- "Will Baba be upset with Nicki for losing his mitten?"
"I notice that there is an open mitten on each page that shows what else is happening in the story. Will the mittens on the next few pages give me a clue about what Nicki is doing?"

Record these questions in the "Questions During Reading" column, or at least point to these columns as you ask the questions. Read the next three pages of text aloud to students and then stop. Think aloud the answers to the above questions:

"I can tell from the mitten on the side of the page that Nicki does not know yet that he has lost his mitten. So far, his grandmother does not know he lost his mitten, either. I think that some of my questions will have to wait to be answered, then. But, after reading these three pages, I have some more questions."

Now, record several questions that you asked yourself while you were reading these three pages:

- "There are already a mole, a rabbit, and a hedgehog in this mitten. Can anymore animals possibly fit into the mitten?"
- "Could three animals really fit into Nicki’s mitten?"

Read the next six pages of text aloud to students and then stop. Think aloud the answers to the above questions that you asked yourself:

"It seems that more animals can fit into Nicki’s mitten. Now an owl, a badger, a fox, a bear, and a mouse joined the other animals. But, in real life, these animals would be too big to fit into a boy’s mitten."

Next, think aloud and record several questions that you asked yourself while you were reading these six pages:

- "How many animals are going to fit into Nicki’s mitten?"
- "These animals are so squished together. How will they possibly get out of Nicki’s mitten?"

Read the final three pages of text aloud to students. Think aloud and record this question that you asked yourself while you were reading these pages:

- "What will happen to Nicki’s mitten now that the animals are gone?"

Explain to students that you shared with them the questions you asked yourself as you read the story. Ask several students to answer the remaining three “during reading” questions. Emphasize that they may have asked themselves different questions, which is fine. Give students the opportunity to give you some examples of questions they asked themselves as you read the story aloud to them and record their questions. Then, have students think-aloud and tell you the answers to the questions. Point out how the questions that you asked could either be answered during your next stopping point or when you finished the book. Explain that asking questions during reading helps you to become good readers.

7. **Independent Practice**

Explain to students that asking questions after reading a book helps them to think more about the story or connect to the story in some way. For example, tell students that you wonder whether Nicki ever told his grandmother that he lost his mitten or if his grandmother will ever figure out why one of Nicki’s mittens is so much larger than the other. Explain that questions you ask after reading are more open-ended and do not have definite answers that can be found in the book. Ask students to help you add questions to the "Questions After Reading" column. Some sample questions include:

- Did any of the predictions that I made about *The Mitten* come true?
Once students generate a list of questions, have students answer them. Explain how these questions have helped students to think about The Mitten by connecting to the story. Point out how remembering the answers to these questions will help them always remember what The Mitten is about.

**8. Assessment**

To assess whether students have mastered the importance of asking questions before, during, and after reading, generate six new questions about The Mitten and ask students to tell you under which heading the questions should go. Then, have students answer the questions to assess their reading comprehension (i.e., how much of the story they understand.) Then, select another book from the unit you are studying. Before you begin the book, ask students to come up with several questions by looking at the cover. Then, read the book aloud to students. Have students ask questions about the story at your designated stopping points. Then, have students ask questions after you’ve finished reading the story to them.

**9. Reflection and Planning**

Determine which students understand how to ask good questions before, during, and after reading by listening to the questions they ask for the Assessment activity and how they answer those questions. If a small number of students are struggling, form a small group to work with these students more intensively. As you go on to other lessons, encourage all students to ask questions before, during, and after reading any type of fiction or nonfiction in class.

**Lesson Plan: Questioning, Grandfather's Journey**

This lesson is for intermediate students using the strategy with the book, Grandfather's Journey, by Allen Say.
Further Expanding Questioning: Grandfather's Journey

Grade Levels: K - 3

Objective

This lesson is designed to help primary students continue to learn about the importance of asking questions before, during, and after reading by having the students generate all of the during-reading questions and some of the after-reading questions. Students should progress to this lesson once they have completed The Mitten lesson plan, Koko's Kitten lesson plan, and Frog and Toad Together lesson plan.

In this lesson, students will generate their own questions about the Caldecott Medal winner-Grandfather's Journey, by Allen Say. This is the fourth lesson of a set of questioning lessons designed for primary grades.

Materials

- Grandfather's Journey by Allen Say
- Double-entry journal template
- Writing or drawing paper

Procedure

1. Planning and Diagnostics

Students will need some writing skills to complete this lesson, as they will be writing in a double-entry journal. You may want to pair struggling writers with a partner who can write. Students should have a good understanding of how to ask and answer questions before, during, and after reading.

2. Hook/Engagement

Explain to students you want them to come up with "during-reading" questions as you read aloud to them, but you are going to ask them several before-reading questions to get them thinking about Grandfather's Journey. Show students the cover of the book and read the title aloud to them. Then, ask students the following questions:

- What do you know about any of your grandparents' lives? Do you know where they grew up? Have you visited there?
- Have you ever been on a boat on the ocean or taken a long journey?
- How do you think that you would feel if you left America and moved to another country? Would you be afraid, excited, and so forth.
- After hearing the title of this story, what would you predict this story to be about?

Give students time to answer your questions; their answers will engage one another and get them ready to read the story. These questions will help them focus their "during-reading" questions more sharply by encouraging them to put themselves in the author's shoes and think about the idea of this story. Tell students that it is a true story; they are going to learn about the author's grandfather's journey to America, and how the author eventually had the same feelings about his "home" as his grandfather and therefore felt he really understood his
grandfather.

3. **Vocabulary**
   - **Riverboat**: a boat that is used on a river
   - **Sculptures**: three three-dimensional works of art such as a statue
   - **Bewildered**: to be confused
   - **Warbler**: a small singing bird
   - **Silvereye**: a very small bird

4. **Measurable Objectives**

   Explain to students that you are going to read *Grandfather's Journey* aloud to them. Then you will ask them to think of some questions that they have about the story as you are reading to them. You will record their questions in a double-entry journal.

   At designated stopping points, they can tell you the answers they found, and you will record their answers. Then, after you've finished reading aloud to them, you'll ask them to write or draw an answer to a question they had about the book.

5. **Focused Instruction**

   A. Draw a double-entry journal on the blackboard, a piece of chart paper, or use an overhead projector. Read pages 4-13 aloud to students and then stop. Ask students to tell you some questions that they thought about as you read to them. Have them show you the page of text or picture that made them think about the question they asked. Record their questions in the left-hand column of the double entry journal. (Some sample questions include: When did the author's grandfather leave for North America? What do I already know about the author's grandfather? What new places will he go to next in America? Will he get homesick and want to go back to Japan?)

   B. Explain to students that there are no right or wrong questions to ask during reading. The important detail is that they are asking themselves questions as you read to them to help them think about the story and the main character (the grandfather) and to help them predict what might happen next in the story. Overall, asking questions makes them curious and want to know more about the story, which keeps their interest and helps them understand the story.

   C. Read pages 14-17 aloud to students. Again, stop and review the questions you recorded for them in the first section of your read-aloud. Can they answer any of the questions yet? If they can, then record their answers. Then, ask students to ask any new questions they have about the pages you just read to them. Write their new questions in the double-entry journal. (Sample questions include: What do I know about California? Will the grandfather’s wife and daughter like America? Will the grandfather take his family to live in Japan?) You may choose to show students on a map where Japan is in relation to California and show them the Pacific Ocean – the ocean the grandfather sailed on in the steamship.

   D. Read pages 18-23 aloud to students. Review the questions they have asked already to see if the can answer any and then write their new questions in the double-entry journal. (Some sample questions include: How do I think that Japan and America were different at this time? Will the grandfather's daughter stay in Japan with her baby?)

   E. Read pages 24-32 aloud to students and follow the same process of reviewing previous questions and recording students' new ones. Point out that after reading this section you will record the questions they had while you were reading these pages. For example, after you read page 26, they might have wondered what war the author was talking about. (You may choose to give students a very brief explanation of WWII or just talk about the war generally to help them understand the setting of this part of the story.)

   F. Review the process of asking questions during reading. Point to several questions that students asked and answered and show how asking those questions, and finding the answers to them later on in the book, helped students understand the book and the characters even more.
Guided practice

Review the idea of asking questions after reading. Explain that many of the questions that readers ask themselves after they have read a book are not questions that can be answered from the book. The stories or facts in books can make readers wonder about topics beyond what they just read. Model several questions that you had after reading *Grandfather’s Journey*:

- Why does the author end the story by saying that he thinks he knows his grandfather now?
- Have I ever really felt homesick before?

Pair students and have them think about a question that they had after you finished reading *Grandfather’s Journey* to them. Give students some time to formulate a question and accept any reflective question that can somehow be connected to the story. Ask pairs to relate their question and explain why they had that question.

Independent Practice

Explain to students that you want them to think more about *Grandfather’s Journey* now that you have finished reading the story to them. Ask each student to write or draw an answer to the "after-reading" question they asked with their partner in the Guided Practice activity. Once students are finished, ask them to share their writing or drawing and explain to the class why they came up with the answer they did.

Assessment

To assess whether students have learned the types of questions that you ask before, during, and after reading, write several questions about *Grandfather’s Journey* on the blackboard or on a piece of chart paper. Ask them to explain whether each question is a before-, a during-, or an after-reading question. Then, assess whether the questions have aided their reading comprehension level by having students answer the questions. To further assess students’ understanding of asking questions before, during, and after reading, select a new book that you have not read aloud to them and have them model the types of questions they should ask before you read, while you are reading to them, and after you have finished reading to them.

Reflection and Planning

Determine which students understand how and when to ask good questions before, during, and after reading by seeing if they correctly label the questions you gave them about *Grandfather’s Journey* in the Assessment activity. Encourage students to use this questioning process with any new book that you read with them in class or those they read at home. If students are struggling with this strategy, review previous lesson plans that use different books and review the strategy of asking and answering questions.

Lesson Plan: Questioning: *Koko’s Kitten*

This lesson is designed to establish primary students’ skills in asking questions before, during, and after they listen to a story. You can help students learn to become better readers by modeling how and when you ask questions while reading aloud the true story, *Koko’s Kitten*, by Dr. Francine Patterson. This is the second lesson in a set of questioning lessons designed for primary grades.
Grade Levels: K - 3

Objective

This lesson is designed to establish primary students' skills in asking questions before, during, and after they listen to a story. You can help students learn to become better readers by modeling how and when you ask questions while reading aloud the true story, *Koko's Kitten*, by Dr. Francine Patterson. This is the second lesson in a set of questioning lessons designed for primary grades. (See Questioning, *The Mitten* for the first lesson in this set.)

Materials

- *Koko's Kitten*, by Dr. Francine Patterson
- Chart paper

Procedure

1. **Planning and Dianostics**

   Asking questions before, during and after reading is a strategy that primary students can use to become better readers. Students need to be able to answer questions about a story to participate in this lesson.

2. **Hook/Engagement**

   Ask students for examples of questions they ask their parents during a typical day, such as "What is for dinner?" "What story will you read to me?" or "Why can't I stay up later tonight?" Ask students why they ask their parents these questions. Lead them to explain that it is because they want answers. Many times, these answers will tell them something new, explain something to them, or make them think about something they didn't think about before. Explain that good readers ask questions about what they're reading because they are curious and want answers to help them understand the story better.

   Ask students to name a favorite story that you read to them in class or that a family member reads to them at home. Then, ask them several questions about that story, such as, "What is the story about?" "Who is the main character?" "Is it a real or imaginary story?" Explain that after they have read the story, they can answer many questions about it, which helps them to understand the story better. They can also ask questions before and during reading to help them think about and understand what they are reading.

3. **Vocabulary**

   - **Preface**: where the author explains or introduces something that he or she is going to write about.
   - **Epilogue**: the ending part of a story that explains more about the story after the story is finished.

4. **Measurable Objectives**

   Explain to students that you are going to read *Koko's Kitten* aloud to them and you want them to help you make a list of questions to ask before, during, and after reading. Then, you'll ask them to answer those questions with you. Explain that asking questions before, during, and after they read a story will help them to really understand the story.

5. **Focused Instruction**

   A. Write on the blackboard or on three pieces of chart paper the headings: "Before Reading Questions," "During Reading Questions," and "After Reading Questions." You may want to use these framework questions while teaching or print them for students to reference when using this strategy. Show the
cover of *Koko's Kitten* to students. Explain that you are going to read the story aloud to them. Tell them that you often ask questions before you read by looking at the cover of the book you are about to read. Model by thinking aloud several questions that you would ask before you read *Koko's Kitten*, such as:

- "Who is Koko?"
- "What do I know about gorillas?"
- "Why is a gorilla holding a kitten?"
- "Do gorillas like kittens?"
- "Are kittens afraid of gorillas?"

B. Write your questions on the blackboard or chart paper under the heading "Before Reading Questions." Explain that these are questions that you are asking yourself before you have begun to read *Koko's Kitten*. Next, open the book and read the "Preface" to students. Explain that many books don't have a preface, but this one does. Explain that the preface is not part of the story. Point out how you can already answer some of the questions that you asked yourself now that you've read the preface. Think aloud several of the answers. "Koko is a gorilla. She is holding All Ball, her kitten. It seems like she likes kittens. Answering these questions has already helped me understand a little bit about what the story is about." Then think aloud some questions you would ask after reading the preface:

- "How does the author teach Koko sign language?"
- "How does Koko treat All Ball?"
- "Do gorillas really have feelings?"

C. Explain that you are asking these questions before reading because you haven't started the story. Write these questions on the blackboard or chart paper under the heading "Before Reading Questions." Explain to students that they will be able to answer these questions as you're reading.

**Guided Practice**

A. Begin reading the story. You may choose to write all of these questions or only some of the questions on the blackboard or chart paper under the heading "During Reading Questions." As you are reading the first three pages of text, think aloud one question that you would ask yourself while you're reading these pages: "Will Koko will like her Christmas presents?"

B. Read the next three pages of text aloud to students. Think aloud several questions that you ask yourself while you're reading these pages:

"Why does Koko want a pet?"
"Why does Koko choose the tailless tabby kitten?"

C. Read the next three pages of text aloud to students. Think aloud several questions that you ask yourself while you're reading these pages:

"Will All Ball like Koko?"
"Will All Ball and Koko live together and get along?"
"Koko is good to All Ball, even though All Ball bites her. Do most people think of gorillas as mean and violent?"

D. Stop at this point and explain to students that you are asking yourself these questions to make predictions about what will happen next in the story and to help you connect to and understand the story. Explain that these are the questions that you are asking, but students might come up with other questions. And, students may answer some of the nonfactual questions differently, which is fine. Show how you can answer your questions as you continue to read, and develop new questions, too.

**Independent Practice**

Read the final four pages aloud to students and ask them to think about some questions they have as you are reading. Once you have finished reading, call on volunteers to think aloud some of the questions they asked.
themselves as you were reading. Some sample questions could be:

- "How will Koko act when he hears that All Ball is dead?"
- "What does Koko mean when she signs 'Blind'?"
- "Will Koko get another kitten?"

Next, read the Epilogue and then think aloud several questions that you have after you have read the book:

- "Why did Dr. Patterson want to tell this true story?"
- "What have I learned about gorillas that I didn't know? Has it changed the way I feel about kittens and gorillas?"
- "How would this book make other people feel about gorillas?"

Then, ask students to think aloud several questions they have after reading Koko's Kitten and write some of the questions on the blackboard or on chart paper under the heading "After Reading Questions."

**Assessment**

To assess whether students have mastered the importance of asking questions before, during, and after reading, go through the questions for Koko's Kitten together and see if they can answer the questions. Then, select another book from a unit you are studying. Ask students to come up with several questions before you begin the book. Then, read the book aloud to students. Call on volunteers to ask questions as you are reading the book. Then, have students come up with some questions after you have read the story to them. Ask them how their questions helped them think about the story. Ask them how the questions that they ask before, during, and after reading are different. Try to identify students who appear to be having difficulty asking questions before, during, or after reading.

**Reflection and Planning**

Determine which students understand how to ask good questions before, during, and after reading by listening to the questions they ask for the Assessment activity and how they answer those questions. If a small number of students are struggling, form a small group to work with these students more intensively. In the future, encourage all students to ask questions before, during, and after reading any type of fiction or nonfiction in class.

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**Lesson Plan: Asking Pre-Reading Questions**

This is a language arts lesson for students in grades 3-5. Students will learn about asking questions before reading and will make predictions based on the discussion of the questions.

**Grade Levels:** 3 - 5

**Lesson Summary**

This is a language arts lesson for students in grades 3-5. Students will learn about asking questions before reading and
will make predictions based on the discussion of the questions.

Students should be able to differentiate between a question and a statement, generate questions, and work in cooperative, heterogeneous groups.

Objectives

- Students will brainstorm prior knowledge about the topic of a text
- Students will make predictions about the text by asking effective "before" reading questions in order to improve our reading comprehension.

Key Understandings

- Asking and discussing questions will improve our comprehension of the text.
- Good readers ask questions before they read.

Materials

- Two narrative texts
- Pre-reading Show Rubric
- Pledge

Procedure

Select two narrative texts, one will be used to demonstrate the "before reading" questioning strategy, the other will be used for guided practice. It may be easier to choose two texts by the same author or two texts of the same genre. Discuss the ways in which a pre-game show and asking questions before, during, and after reading are similar. Good readers are like sports casters. Just as sports casters discuss the sports event before, during, and after the game, good readers ask and discuss questions before, during, and after reading. This improves comprehension, or understanding, of the text. You may say something such as,

"Who has watched a football, basketball, or baseball game on television? Sports casters help us understand the game by discussing it. They discuss the game with us before the game, during the game and after the game. Before the game, there is a pre-game analysis. That means that the announcer gives us background information about the game, teams, players, and coaches. This information can be used to make predictions about the outcome of the game. During the game, the announcers provide play-by-play coverage. They discuss important or controversial plays to help us understand what's going on in the game and to explain how certain plays may affect the outcome of the game. They even provide replays of the most important events of the game to make sure we remember them. Finally, after the game, announcers interview the coaches and players to get different perspectives about how the game was played. They review the highlights of the game, confirm or disprove their predictions, and discuss the implications of the outcome of the game."

Tell students they are going to focus on asking questions before they begin reading a text. If possible, show a video clip of a pre-game sports cast. Use the analogy of a pre-game show and before reading questions to help students ask effective "before" reading questions. As you generate questions for each topic. Spend some time wondering about the answers and making predictions about the book. Write your predictions about the book in a separate column.

- Identify a purpose for reading the text. Narrative = for literary experience/enjoyment Expository = for information Functional = to perform a task/follow directions.
- Examine the cover illustration and read the title, modeling how to ask questions. Write the questions on chart
- Paper or on an overhead projector. Look at the author and model how to generate questions.
- Activate background knowledge by taking a picture walk with students. Cover the print with sticky notes, and think aloud as you model how to generate questions, make predictions, and build vocabulary by carefully examining and discussing the illustrations in the text.
- Ask questions about the setting, characters, events, and genre of the book.

<table>
<thead>
<tr>
<th>Pre-Game Show</th>
<th>Questions Before Reading</th>
<th>Predictions</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Team A vs. Team B</strong> What teams are playing?</td>
<td><strong>Title of Story/Cover</strong> What topic might this story be about?</td>
<td></td>
</tr>
<tr>
<td>What do we know about these teams? Where are they from? Have we ever seen either team play? In your opinion, are they skilled? Is one team better than the other?</td>
<td>What do we already know about this topic? Have we read any other books about this topic? Do we have any experience related to this topic? Where and when did we have the experience?</td>
<td></td>
</tr>
<tr>
<td><strong>Coach</strong> Who is the coach? What do we know about the coach? What teams has he/she coached in the past? What is his/her coaching style?</td>
<td><strong>Author</strong> Who is the author? Who is the illustrator? What books have he/she written or illustrated in the past? Can we describe the style of the author/illustrator? Have I ever read other texts by this author? If so, what do I remember about those texts?</td>
<td></td>
</tr>
<tr>
<td><strong>Stadium</strong> Where is the game being played? Who has the home field advantage? What are the current weather conditions? How will the weather conditions affect the game?</td>
<td><strong>Setting</strong> Where and when does the story take place? Is the place/time familiar or unfamiliar to us? Have we read any other stories with a similar setting?</td>
<td></td>
</tr>
<tr>
<td><strong>Players</strong> Who are the key players? What positions do they play? What are their skills?</td>
<td><strong>Characters</strong> Who are the main characters? What role might they play in the story? Can we predict some of their character traits by examining the illustrations?</td>
<td></td>
</tr>
<tr>
<td><strong>Plays</strong> What plays are the coaches likely to run?</td>
<td><strong>Events</strong> What events may take place in this story?</td>
<td></td>
</tr>
<tr>
<td><strong>Rules/Principles of Game</strong> What are the rules of the game? What are winning strategies?</td>
<td><strong>Genre of Text</strong> What genre of story is this? (fairytale, folktale) Have we read other stories of the same genre? What are the characteristics of this genre?</td>
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</tr>
</tbody>
</table>

Tell students that the class will read the story together tomorrow, and learn to ask new questions while they are reading to help understand the story.

**Guided practice**

Give students the opportunity to practice writing and discussing some "before" reading questions for a new story. Place students in 6 groups and have each group record or role play a "pre-reading show" for the new book, just as sports casters broadcast a pre-game show.
1. title/cover
2. author/illustrator
3. setting
Select student leaders to guide each group through the process of examining the cover of the new story and taking a picture walk. Allow groups to discuss their topic. Students should generate two of their own "before reading" questions on their topic, and then share their questions and provide feedback to each other. Have groups include information from their prior knowledge and personal experience as they discuss the "before reading" questions, and have them discuss the possible answers and make predictions about the book.

After each student has had the opportunity to formulate and write two questions, jigsaw the groups to form TV crews for a "pre-reading" show. Each TV crew should have six students, one student from each group, 1-6. Review the parts of the rubric. Provide a time limit for each TV show, and tell students that each show should include:

- an introduction of the members of the TV crew
- slogan, jingle, or music
- a discussion of their prior knowledge about the topic
- a discussion of each member's questions
- predictions about the book from each member

Give groups the opportunity to practice asking and discussing their questions before role playing or videotaping their show. If time permits, allow students to make larger visual aids to display during the discussion. "Microphones" can be made quickly from rolling paper into tubes.

**Sharing Ideas**

Distribute rubrics to the class. Allow students to score each TV crew as they present.

**Independent Practice**

Have students think of a younger child that they will spend time with this week. Have them think of a book that they can read to the child. Have students use some of the "before reading" questioning strategies they learned to help the younger child understand the story. Students can use this questions framework worksheet to help them with questions to ask before reading, and help the child make predictions. The worksheet reminds students to ask questions about the title and cover, author and illustrator, setting, characters, events and genre.

**Assessment**

Each group will be assessed using the scores from the presentation rubric, scored by their peers and teacher.
Lesson Plan: Asking Questions When Reading

In this lesson, the teacher will read *The Wall* by Eve Bunting with the purpose of focusing on asking important questions. The students and the teacher will then categorize the questions according to the criteria for each.

Grade Levels: 4 - 8

Lesson Summary

Generating questions plays a key role in the process of learning how to read, and then again in learning how to read better. There are so many questions that students may have about the text that they encounter – questions about the author’s style or purpose, questions about new vocabulary, questions about what might happen, etc. Students need to first begin to feel comfortable asking questions, then learn to ask the vital questions that will direct their focus and clear up confusion.

Materials

When you read the story ahead of time, write any questions that pop into your head on post-it notes and have them available. Provide large pieces of paper and post-its for students, and locate enough copies of the book *The Wall* for partners. Provide a piece of paper for each group of four students.

Prepare a piece of chart paper titled QUESTIONS with different columns of categories:

- Questions that are answered in the text
- Questions that I have to make an inference to answer
- Questions that are not important to understanding the story
- Questions that require research to answer
- Questions about the author's style
- Questions that clear up confusion

Objectives:

Students will ask questions before, during, and after reading. Students will categorize important vs. interesting questions with a focus on important questions.

Procedure

1. Explain that good readers ask questions before, during, and after reading to help them understand a story better. "Today, we're going to focus on asking questions."
2. Present the book *The Wall* to the students and say, "I will read the title, and the back cover and look at the illustrations and think of as many questions as I can. These are the questions that I have before reading." Read your prepared post-it notes to the students.
3. Read the story to the children and think aloud, asking questions while reading. Stress that these are the questions you have during reading. Read your prepared post-it notes to the students.
4. When you have finished reading the story, ask questions that pop into your head and stress that these are the questions that you have after reading. Read your prepared post-it notes to the students.
5. Take your questions on post-its, think aloud, and categorize them in the appropriate column according to the type of question that you asked.

6. The students partner-read and use post-its on pages where they have a question. Have partners narrow their questions down to two questions.

7. Then have the partners share their questions with another paired group.

8. The groups of four students choose one of their questions and write it on a larger piece of paper.

9. Gather all students and have them share their questions.

10. With help from the class, have students categorize their questions.

11. Discuss the questions that are important vs. interesting, and have students focus on the important questions.
Directed Reading-Thinking Activity

What Is It?

Directed Reading-Thinking Activity (DR-TA) is a teaching strategy that guides students in making predictions about a text and then reading to confirm or refute their predictions. This strategy encourages students to be active and thoughtful readers, enhancing their comprehension.

The following steps outline the DR-TA process.

1. **Introduction**
   - What do you already know about this subject?

2. **Predict**
   - Looking at the title, what do you think the story is about? Why?
   - Looking at the pictures, what do you think the story will be about? Why?

3. **Prove or Modify Predictions**

   After reading each section, answer the following:
   - What do you think now?
   - Can you prove your predictions, or do you need to modify them?
   - What do you think will happen next? Why?

4. **Reflect**

   After reading the entire selection, answer the following:
   - What did you find in the text to prove your predictions?
   - What did you find in the text that caused you to modify your predictions?

Why Is It Important?

Most students require explicit instruction in reading comprehension strategies (Tierney 1982).

Good readers make predictions and verify or refute them as they read. They also make adjustments to what they think will come next based on the text. DR-TA is a strategy that explicitly teaches students to good reading habits.

How Can You Make It Happen?

Before using this strategy with students, create a classroom climate in which students are free to state their ideas and share their thinking. This is especially necessary for students who are not risk-takers. Because these students want to be correct the first time they answer a question, DR-TA can be challenging for them. DR-TA asks students to predict the unknown in a text, and at times students will be incorrect. For some students, you may want to consider having them write their predictions in a journal rather than posting them on an overhead transparency or the chalkboard. Encourage students not to be intimidated by taking a risk and not to feel pressure to state correct predictions.

As an introductory lesson to DR-TA, select a reading passage, and determine several appropriate stopping points within it for students to make, verify, or modify predictions. Use sticky notes to mark students' copies of the text in advance to prevent students from reading too far ahead. Be cautious not to interrupt the flow of the text too many times, as this will adversely affect comprehension.
When you use this strategy, guide and stimulate students' thinking through the use of questions. Pose open-ended questions, and encourage students to state their predictions, valuing and supporting all ideas. Wait a few seconds after asking a question, to allow students to process the information and form a prediction.

At the beginning of the lesson, write the title of the book or passage on an overhead transparency or the chalkboard. Ask students, "Given this title, what do you think the passage will be about?" Accept and record all predictions on the transparency or chalkboard. Ask students, "Why do you think that?" to encourage them to justify their responses and activate prior knowledge.

Preview the illustrations and/or headings of the passage. Ask students to revise their predictions based on this new information. Make changes to the predictions on the transparency or chalkboard.

Have students read silently. Stop them after the first section of the passage, and lead a class discussion to verify or modify predictions. Ask students to cite the text which caused them to confirm or change a prediction. Ask students, "What in the passage makes you think that? Can you prove it?" Make changes to the predictions on the transparency or chalkboard.

Repeat this process until students have read each section of the passage. Verify or modify the predictions made at the beginning of the lesson.

As students become more comfortable with this process, have each student write predictions in a learning log or on a piece of paper. Then, in small groups, students can discuss their predictions and share their thinking processes. Next ask students to write summary statements about how their predictions compared to the passage.

Using DR-TA in a heterogeneous group can be a challenge due to the range of reading levels that may be present. In this case, you may want to select two passages on the same topic – one higher-level and one lower-level. Divide the class into groups to read the text that is appropriate for them. These groups should share information as described in the previous paragraph.

If your students are not yet readers, the strategy is referred to as Directed Listening-Thinking Activity (DL-TA) and proceeds the same way, except you read the text to the class. To use DL-TA for challenged readers, have a taped version of the passage available. Listening to text read aloud provides challenged readers with opportunities to attend to and comprehend material that they would be unable to read for themselves.

**How Can You Stretch Students' Thinking?**

The more complex the reading passage, the more interpretation and analysis students will need to do to verify or modify predictions. Be aware of the reading levels of each student, and be prepared to provide appropriate questions, prompts, and support as needed.

Older students may be able to use a printed guide for DR-TA to run their own literature discussion groups. Monitor these groups to ensure all students are participating and the discussion leads students to a greater understanding of the text.

**When Can You Use It?**

**Reading/English**

Use the DR-TA strategy when introducing new picture books to young students or new chapter books to older students. With young students, you may want to read the book aloud, making predictions as a class or a group, and reading to confirm the predictions. With chapter books, have students make predictions at the start of each chapter so that their
predictions draw from the chapters they have already read. For the first chapter, you can have students make predictions based on other books they have read by the same author or other books they have read in the same genre.

**Writing**

After students read a passage using the DR-TA strategy, have them write a summary of their initial prediction and why it was correct or needed to be modified. Students can justify their ideas based on evidence from the text.

**Math**

Use the DR-TA strategy when solving word problems. Have students predict the math processes (addition, subtraction, multiplication, or division) or information (a dozen = 12) that might be needed to solve the problem based on the title, illustrations, and key words. Have students discuss the validity of their predictions prior to solving the word problem.

**Social Studies**

DR-TA can be useful to students who are reading to gain information from expository text. Ask students to preview a chapter of the social studies textbook, and to use the headings, bold vocabulary, maps, and charts to make predictions. As students read the chapter, have them verify or modify their predictions. At the end of the chapter, discuss predictions with them. Have students summarize the information they learned in a study guide.

**Science**

DR-TA can be useful to students who are reading to gain information from a research article. Ask students to preview a research article on a popular topic that might appeal to them. Have students use the title, headings, vocabulary, and charts, as well as their own prior knowledge to make predictions. As students read the article, have them verify or modify their predictions, and draw conclusions. Then, ask students to write journal entries based on their predictions and the text.
**Inferences**

**What Is It?**

Making an inference involves using what you know to make a guess about what you don't know, or reading between the lines. Readers who make inferences use the clues in the text along with their own experiences to help them figure out what is not directly said, making the text personal and memorable. Helping students make texts memorable will help them gain more personal pleasure from reading, read the text more critically, and remember and apply what they have read.

**Why Is It Important?**

Researchers have confirmed that thoughtful, active, proficient readers are metacognitive; they think about their own thinking during reading. They can identify when and why the meaning of the text is unclear to them, and can use a variety of strategies to solve comprehension problems or deepen their understanding of a text.

Proficient readers use their prior knowledge and textual information to draw conclusions, make critical judgments, and form unique interpretations from text. Inferences may occur in the form of conclusions, predictions, or new ideas.

**How Can You Make It Happen?**

Introduce this strategy by modeling it for students, starting with every day examples, moving to listening activities, and then to text examples. Tell students that good readers make inferences to understand what they are reading. Emphasize that they will bring their own knowledge of events to the text, so each inference may be unique. For example, you may want to introduce making inferences with an example such as the following.

You got to school this morning and you couldn't find a lesson plan. You were reading it over while having breakfast, so you probably left it on your kitchen table.

Point out that you are making an inference based upon the fact that you know you were working on your lesson plan at home. Discuss situations in which students don't have all of the information and have to make logical guesses, such as figuring out what someone is trying to say, figuring out what is happening in a movie, or figuring who the singer is on the radio. They may need practice identifying the inferences they make in everyday life.

Another way to introduce this strategy is to use pictures from a magazine or book cover, and cover a part of the picture. Ask about what is happening in the picture, what the picture is advertising, or what the story will be about. Think aloud as you make connections between the facts and your prior knowledge, using phrases such as, "The picture looks like...I know that..." Next, have students respond to questions about new pictures, citing their reasons for their inferences. Have them cite reasons that are facts along with reasons that come from their prior knowledge.

Then, model how good readers make inferences while reading. They use ideas from the book and add their own ideas to them. Read this short passage to students:

The young woman walked a bit hesitantly towards the famous cozy Italian restaurant. She did not believe the excuse her parents gave her for having to meet her at the restaurant instead of at their house. To make matters worse, she was a bit grumpy because she was still catching up on the sleep that she lost during exam time. She noticed some cars that looked familiar in the parking lot. As soon as she walked through the door, she heard, "Surprise!"
Now read it again and when you make an inference, tell students about it and describe how you make the inferences. You may say something such as:

**The text says:** She did not believe the excuse her parents gave her.
**I know:** Sometimes if people play practical jokes, others don't believe everything they say. Maybe her parents played practical jokes.

**The text says:** She was a bit grumpy because she was still catching up on the sleep that she lost during exam time.
**I know:** I know exams are usually given in school, so she is probably in high school or college.

**The text says:** She noticed some cars that looked familiar in the parking lot. As soon as she walked through the door, she heard, "Surprise!"
**I know:** If the cars are familiar, that means people she knows are in the restaurant. This makes me change my inference. If her parents wanted to meet her at the restaurant, and other people she knows are there, maybe it's a surprise party.

By modeling your thought process, students can see how you took the information from the text, along with what you knew already and your own ideas, to make inferences. Point out which facts came from the text and which came from your background knowledge. Then put them all together to make the inference that it might be a surprise party.

To make the process more explicit, use a graphic organizer to record students' answers. Ask students to record the facts that are stated in the text, along with their background knowledge. Have students keep in mind that they can change or modify their inferences as they read. Point out that they were able to make an inference based on their knowledge of surprise parties. Have students practice this strategy and use a graphic organizer while reading text.

**How Can You Stretch Students' Thinking?**

Allow students to share a wide range of interpretations when reading fiction. Make sure the classroom is a safe and non-critical place for students to share their background knowledge, keeping in mind that there may be as many different interpretations as there are students.

Use a variety of genres to practice making inferences. When students read non-fiction, there are fewer inferences or interpretations that are usually made from the text. Discuss how the inferences and conclusions are different when reading science articles, poetry, novels, or historical documents. Have students practice justifying their interpretations, being explicit about which parts of the text they used to gain facts, and the background knowledge they used to make the inference.

Challenge students by having them write a paragraph including facts and inferred facts. Have them exchange their paragraphs and make inferences based on the information in the paragraphs. Ask each student to complete a graphic organizer for their peer's story, and have them discuss their inferences and how they arrived at them.

For younger students, you may generate some questions about a text as a group, place students in pairs, and have pairs work together to fill out the graphic organizer.
When Can You Use It?

Reading:

Have students read a newspaper editorial. Have them infer at least two things that were not explicitly stated by the author. Then have students draw a conclusion about the topic. Ask students to make inferences and draw conclusions from a particular novel you are reading in class.

Have students make inferences about where or when a photograph was taken. Provide photographs of unfamiliar geographic areas, buildings, or landscapes.

Writing:

Have students write a paragraph that describes something they are familiar with — an object, a situation, a place — without explicitly stating what it is. Pair students and have them exchange their papers and infer what their partner’s paragraph is describing. Have them list the inferences that led them to their conclusion.

Lesson Plans

Animals Should Definitely Not Wear Clothing

This lesson is designed to teach primary students to make inferences as a reading comprehension strategy. In this lesson, students will draw on their prior knowledge and use the information from the pictures in the book to articulate (verbalize) the inference the author is making in the text. This is the first of a set of lessons designed to teach students how to make inferences.

Making Inferences, Animals Should Definitely Not Wear Clothing

Grade Levels: K - 3

Objective

This lesson is designed to teach primary students to make inferences as a reading comprehension strategy. The lesson uses the book, Animals Should Definitely Not Wear Clothing by Judi Barrett. In this lesson, students will draw on their prior knowledge and use the information from the pictures in the book to articulate (verbalize) the inference the author is making in the text. This is the first of a set of lessons designed to teach students how to make inferences.

Planning and Diagnostics

For students to successfully complete this lesson, they should know how to connect what they already know to the text. They should be able to make guesses and predictions related to a story and visualize what is happening in the story. For further information, you may want to review Activating Prior Knowledge.

Materials

- Animals Should Definitely Not Wear Clothing by Judi Barrett
- Construction paper
- Crayons
Procedure

1. **Hook/Engagement**

   This book introduces the skill of making inferences by using the clever relationship between text and illustrations. On every page, an illustration completes an idea that is only partly explained by the text. For example, on the first page, the text says that wearing clothing "would be disastrous for a porcupine." The picture on the facing page shows a porcupine wearing something that looks like tight-fitting pajamas or a dress. The poor porcupine's quills are poking through the garment, disastrously shredding it. Although the text doesn't say so, the inference is that the porcupine's quills would poke through the clothing and ruin the clothes – as illustrated in the text. In other words, the illustrator helps makes the inference for us.

   To introduce the lesson, begin by writing this sentence on the board:

   **Old Mr. Chicken was standing by the side of the road. He heard what sounded like a BIG TRUCK coming. He decided to cross the road anyway. Unfortunately, he never made it to the other side. Poor Old Mr. Chicken.**

   Ask students what happened to Mr. Chicken. Probably at least one student will suggest that Mr. Chicken was run over by the truck. That's a reasonable conclusion (inference). Ask, "But how do we know that? Did the author say the chicken was run over by the truck? Where does it say that?"

   Ask students what they think the author wants us to think. The author probably wants us to think that Mr. Chicken was run over by the truck. How do we know? The author gives us clues.

   **Clues:**
   - Mr. Chicken was standing by the side of the road.
   - Something that "sounded" like a big truck was coming.
   - Mr. Chicken decided to cross the road anyway.
   - Mr. Chicken never made it to the other side.
   - The author suggests that we should feel sorry for "poor old Mr. Chicken."

   The author never says that Mr. Chicken was run over by the truck. But we are given just enough information to think that this is what happened. The author seems to want us to think that Mr. Chicken was run over by a truck, and we do. That's called "making an inference." It's also called "reading between the lines." Making an inference means understanding something from the text that the author doesn't tell us directly.

   Here's another example:

   **Last night I baked a dozen cookies. I left them out on the kitchen table to cool. Just before I went to bed, I saw a little mouse under the table looking at me. She looked hungry! I turned off the light and went to bed. When I came down in the morning, one of the cookies was gone. Another was half-eaten. "Oh well," I thought, "I guess she wasn't that hungry."**

   Ask students to make inferences from this text (e.g., the mouse ate the cookies, the person didn't mind that the mouse ate the cookies, the person was very stupid, etc.)

   If you have time, and if you think students can manage it, ask them to write something themselves that requires the reader to make an inference.

   Since *Animals Should Definitely Not Wear Clothing* uses illustrations, have students practice making inferences...
by looking at picture that are partially covered, and then using their own knowledge to figure out what is covered in the picture. For example, you could use the cover of the book, *The Paper Bag Princess* or *David’s Father*, by Robert Munsch, partially cover a character on the cover, and ask students what they think the story is about. As they make guesses, reveal more of the character, strategically uncovering clues until students have all the information to make an inference about the content of the book.

Students should narrow their choices of possible answers as more information is given. Discuss how they used the facts along with what they already know to make a good guess, or an inference.

2. **Vocabulary**
   - Make an inference-"read between the lines," guess what the author intends to say
   - Definitely—for sure, certainly, without doubt
   - Disastrous—very, very bad
   - Terribly hot—very, very hot
   - Manage—get along, to perform in spite of something (I can’t manage without you. We can often manage to understand the author’s meaning even if the meaning is not told to us directly.)

3. **Measurable Objectives**

   Explain to students, "Readers often have to guess about an author’s meaning. Good writers don't tell us everything directly in words. During this lesson, we’re going to practice making inferences. We’ll do it together at first, and then I'll ask you to make some inferences on your own. That way, I'll be able to see if you have learned what I want to teach you."

4. **Focused Instruction**

   Show students the cover of the book, *Animals Should Definitely Not Wear Clothing*, by Judi Barrett and brainstorm all of the types of clothing that students wear. Ask students why animals should not wear clothing and make a list of reasons as a class.

   Explain that sometimes an illustrator gives clues about the author’s meaning. In other words, the picture helps us make an inference.

   Tell students that they will make inferences about why the author thinks that certain animals should not wear clothing. Then use the illustrations to check the inferences. Say,

   "The title of the book is *Animals Should Definitely Not Wear Clothing*. This author expects us to do some of the work. That's part of the fun of reading-finding the secret message between the writer and the reader. We guess what the author and illustrator want us to know. It's not because they can't tell us something, but they know we're smart enough to understand, even if we're not told everything directly.

   "I am not going to show you the illustrations yet. Listen to the story and make pictures in your mind of each animal wearing clothing. I think that you will agree that most animals look very silly in clothes. However, there are some animals that wear clothing occasionally. Think about which animals might wear clothing and we will talk about it at the end of the story."

   Start reading the story: "Animals should definitely not wear clothing...because it would be disastrous for a porcupine..."[show the text, but not the picture.]

   "Now, why would it be disastrous for a porcupine? (Remember, disastrous means very, very bad.). Why do you think the author writes that it would be "disastrous" for a porcupine to wear clothes? Hmmm....Let me try to
"First, I am going to ask myself what I know about porcupines. Then I am going to think of the text and make an inference.

- What do I know about porcupines?
  
  Well, I know that porcupines are small, close to the ground, have four legs, and sharp quills.

- What do I think about the text, *Animals Should Definitely Not Wear Clothing*?
  
  I am going to make a picture in my mind of a porcupine wearing clothes. The porcupine is wearing pants. The porcupine is so close to the ground that the pants don't fit and its quills are making holes in the pants.

  "So, the inference I make is that the author thinks that porcupines should not wear clothes because the clothes won't fit and their quills would make holes in them.

  "Now let's look at the illustration. It shows a porcupine wearing a dress, with its quills making holes in the dress. My inference was a little bit different because I had a little bit different idea than the author and illustrator, which is OK. The main thing is that I did the work of guessing the author's meaning by myself."

Emphasize throughout the lesson that students' inferences will be different because they are based on our background knowledge. Tell them that this knowledge is unique to all of us.

5. **Guided Practice**

As you read each page, cover the illustrations, and ask the students to make inferences about why the author might think that each animal should not wear clothing. Encourage students to visualize each animal, making pictures in their head from the text. Ask them to think of what is unique about each animal. Read, "because a camel might wear it in the wrong places." Say, "Picture a camel in your mind. What does a camel look like? What is unique about a camel? Why would clothes be silly on a camel?"

Student respond with something such as:
"I know that a camel is tall, has four long legs, a shaggy coat and at least one hump on its back. My inference is that a camel shouldn't wear clothes because it might wear them on its humps."

As you go through the book, cover each illustration and ask why each animal should not wear clothing. Read the text, and give students two minutes to describe the picture in their mind to a partner. Continue through the book, encouraging students to make inferences between the text and what they know. Stop before the page that says, "...because moose could never manage."

6. **Independent Practice**

When you get to this page, cover the illustration. Ask each student to infer why a moose could never manage clothes. Have them draw and explain or write about their inferences.

Have students continue the process with the next page, "because opossums might wear it upside down by mistake." Ask students to share their inferences and illustrations and explain why they think that opossums might mistakenly wear clothes upside down.
7. **Assessment**

Examine students' drawings and listen to their conversation to determine if they are comfortable using what they know to make inferences. Students should be able to use their prior knowledge along with the text to make an inference. If some students are able to write, you can ask them to write a sentence or two that requires the reader to make an inference. This is perhaps the best way of assessing if students really understand how to make an inference.

8. **Reflection and Planning**

If students are struggling with this skill, review the skills of activating prior knowledge and making predictions. The more background knowledge students have, the easier it is for them to make inferences. Be sure students have a good understanding of these concepts before trying to teach them about making inferences.

If students are proficient at making inferences using their background knowledge, use a different book and have students make inferences about what the author has intentionally left unstated. Other lessons on making inferences to try: Too Many Tamales and Why Mosquitos Buzz in People's Ears.

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**Too Many Tamales**

This lesson is designed to help primary students establish the skill of making inferences. In this lesson, students draw on their prior knowledge and use the information from the text to make inferences. This is the second of a set of lessons designed to teach students how to make inferences.

**Making Inferences, Too Many Tamales**

**Grade Levels:** K - 3

**Objective**

This lesson is designed to help primary students establish the skill of making inferences as a reading comprehension strategy. The lesson uses the book, *Too Many Tamales* by Gary Soto. In this lesson, students draw on their prior knowledge and use the information from the text to make inferences. This is the second in a set of lessons designed to teach students how to make inferences.

**Planning and Diagnostics**

For students to successfully complete this lesson, they should be in the habit of connecting what they already know to the text. They should be able to make guesses and predictions related to a story and visualize what is happening in the story. The introductory lesson using the book *Animals Should Definitely Not Wear Clothing*, by Judi Barrett, should be completed before using this lesson.

**Materials**

- *Too Many Tamales* by Gary Soto for student partners
Hook/Engagement

Have students practice making inferences by listening to a few facts and then using their own knowledge to supply the missing information. Tell them that today they will use facts and information along with what they already know to make inferences.

You can begin by writing some simple sentences on the board that require the reader to make inferences. Here are some examples:

1. Ralph said he had gone to Florida to see Mickey Mouse.
2. Ralph misses his brother, Tom. He said he had gone to Florida to see Mickey Mouse.

Say, "In the first example, who had gone to Florida? How do we know that it's Ralph and not some other person? (We can't be sure, but it's reasonable to make the inference that it's Ralph who had gone to Florida.) In the second example, who had gone to Florida? Who said this person had gone to Florida? Who said this person had gone to Florida? And, by the way, what is Mickey Mouse doing in Florida? Where is Tom? Why doesn't the writer tell us that?"

The point you want to make is that, as readers, we have to do some of the work in understanding what others have written. Sometimes the text raises questions. Because we can't ask the author questions directly, we have to work out the answers ourselves.

Vocabulary

- Tamale: A kind of Mexican sandwich made of ground meat rolled in dough, wrapped in a corn husk, and steamed
- Masa: Cornmeal dough
- Knead: Work a soft solid (like dough or clay) with the hands (demonstrate for students)
- Corn husk: The outer wrapping of an ear of corn when its torn off
- Delicious: Tastes very good!

Measurable Objectives

Explain to students that they will make inferences using clues in the text and what they already know to make logical guesses, or inferences, about information in the story.

Focused Instruction

Look at the cover of the book Too Many Tamales, by Gary Soto and tell students that you will show them how to make logical guesses, or inferences, based on what they already know, and what the author tells them.

Ask the question, "What is the setting of the story?"

Tell students that you know that tamales are a mixture of dough and meat wrapped in cornhusks, then cooked. Tamales are native to Hispanic cultures and are often made for special occasions. So, from what you already know, you can guess the setting is a special occasion for a group of Hispanic people. Now read the first page of the book aloud. Think aloud as you gather facts from the text. For example, say,

In the text, the author writes about snow and Christmas trees. I know the setting is a special occasion because they are making tamales, so I think they are having a Christmas party."
Next, read the text until the page where Maria is wiping her hands, and ask the question, "What will Maria do next?" Think aloud as you think about what you already know as you gather facts from the text. For example, say,

"The author says Maria loved how the ring sparkled. I know that if I love how something sparkles, I want to pick it up and look at it closely, so Maria probably wants to pick up the ring to look at it more closely.

"The author says Maria wiped her hands and then looked back at the door. I know that if my hands are dirty, I want to wipe them off before picking something up, and if I'm doing something I shouldn't do, I check the door to make sure no one will see me. I think she was going to try the ring on."

Next, read until Maria says, "The ring!" and ask the question, "What is Maria thinking or feeling?" Think aloud as you think about what you already know as you gather facts from the text. For example, say...

"The picture on the page shows that Maria is shocked. The author says that she screamed. I think she remembered something, and that made her afraid."

**Guided Practice**

Ask students, "Where do you think the ring is?" Have them use information from the text; for example, Maria was in the kitchen kneading the masa when she tried on the ring. She did not take the ring off and continued making the masa. When she remembered the ring, she ran to the kitchen.

Then have students use information from what they already know. For example, if they lose something, they should look in the last place they know they saw it. If they are doing something they shouldn't do, they usually try to hide it, and maybe Maria hid the ring in the masa. The author never said that Maria forgot about the ring, but we can use the information to make a guess and infer that Maria forgot about the ring on her finger, and it fell off into the masa.

If students are having trouble responding to the question, try to give them a choice of answers, written on the board and read before hearing the text. Have them practice finding important information from the text to answer the questions.

As students become more competent making inferences, pair them, and have them answer this question after you read the rest of the book.

"Why does each child take just one bite of the final tamale?"

- **Information from the text**: There were 24 tamales at the beginning. Then the cornhusks were all over the floor. The children's stomachs were stretched.
- **Possible information from prior knowledge**: The children ate a lot of tamales. If their stomachs were stretched, they probably didn't want to eat any more, or couldn't eat a whole tamale because they were too full.

Encourage partners to share the clues they found in the story to help them make the inference, and then the information they knew already.

**Independent Practice**

As independent practice, ask students to draw a picture or write the answer to this question.
"Do you think that the cousins enjoyed helping Maria find the ring?"

Students should make an inference based on the text and their prior knowledge. As students draw, move around the room asking students to explain their drawings and inferences. Student responses should include the information from the pictures in the text that show the cousins looking unhappily full after eating all of the tamales or background knowledge of how they felt at a time when they had eaten too much.

Assessment

Have students make an inference about what cheers Maria up at the end of the story, and have them draw and/or write their answer, citing clues from the story that help support their inference.

Reflection and Planning

Students who can justify their answer by using events in a story and their prior knowledge have mastered this strategy at this level. Having them find and explain the information that helped them make their inferences encourages them to be aware of and articulate their thought process.

Students who are struggling with this strategy may need more support activating prior knowledge before mastering this strategy. Other lessons on making inferences to try: Animals Should Definitely Not Wear Clothing and Why Mosquitos Buzz in People's Ears.

Why Mosquitoes Buzz in People's Ears

This lesson is designed to expand primary students' skill of making inferences. In this lesson, students will draw on their prior knowledge and use the information from the text to make inferences. This is the third of a set of lessons designed to teach students how to make inferences.

Making Inferences, Why Mosquitoes Buzz in People's Ears

Grade Levels: K - 3

Objective

This lesson is designed to expand primary students' skill of making inferences. The lesson uses the book, Why Mosquitoes Buzz in People's Ears by Verna Aardema. In this lesson, students will draw on their prior knowledge and use the information from the text to make inferences. This is the third in a set of lessons designed to teach students how to make inferences.

Planning and Diagnostics

For students to successfully complete this lesson, they should be in the habit of connecting what they already know to a text. They should be able to make guesses and predictions related to a story. Students should have some introduction to making inferences from completing the previous lessons. Making Inferences, Animals Should Definitely Not Wear Clothing and Making Inferences, Too Many Tamales.

Materials
Procedure

1. Hook/Engagement

   Inferences are logical guesses, based on clues, about what is not said. In social situations these clues can be behavior. For example, if someone smiles and laughs we infer that they are happy, maybe happy with us.

   Here's a game you can play with students to make this point. Find some pictures from magazines that show expressive faces. Use construction paper to make covers for the pictures so you only see the eyes through a window in the paper. Close the covers with scotch tape. Pass around the cards and have students write down inferences about what the person in the picture is feeling based on the clue in the eyes. After everyone has had a chance to make an inference, let the children open the cards to see the full face. Talk about how when students were playing the game, they were making inferences about the pictures based on incomplete information. They used their own prior knowledge about what people's faces look like when they're feeling happy, sad, angry, tired, and so on.

   Remind them that reading is a lot like this. As readers, we are often asked to make inferences about what the author wants us to understand, even though we do not have all the necessary information. We have to use clues in the text to get the full meaning. That's part of the fun of reading. Explain that because everyone uses their own experiences, we may all make different inferences. Not everyone understands the story in the same way. However, it's important that we be able to explain the inferences we make by pointing to the clues in the text that we used to make the inferences.

2. Measurable Objectives

   Explain to students that inferences are logical guesses that we make, based on what we know of peoples' behavior and our own experiences. Explain that they will make inferences about this book, based on what they already know along with clues from behavior.

3. Focused Instruction

   Introduce the book by saying something such as,

   "How many of you have been outside at dusk and had a mosquito come buzzing around your ear? What did you do? How did you feel? Today we will be reading a story – an African legend that gives a possible explanation why mosquitoes buzz in our ears. Before we begin, tell me why you think mosquitoes buzz in people's ears.

   "In *Why Mosquitoes Buzz in People's Ears* the characters make inferences based on another character's actions. Remember that inferences are logical guesses, not facts. The problem in the story is that the inferences the characters make about each other’s behavior is wrong. These misunderstandings cause a great problem. Today we are going to identify the inferences that the animals make and the problems that these misunderstandings cause. As we read, you will notice that a red bird is a part of every illustration. He witnessed all of the misunderstandings, but never said anything. We are going to pretend to be the red bird and talk back to the characters. We will explain to each character how the inference that they made was incorrect."

   Model this process for the students by thinking aloud. Read until python goes into rabbit's hole.
Say, "First, we see that python made an inference about the way iguana treated him. Iguana did not talk to him, so, python thinks that iguana is mad at him and planning mischief."

Present the red bird puppet. Say,

"As the red bird, I would say, "Python, there is no danger, just a misunderstanding. Look at iguana. He is not mad at you, nor is he planning mischief. He has sticks in his ears and cannot hear you. Do not hide in rabbit's hole."

4. **Guided Practice**

Continue to read until rabbit runs across the clearing. Write the following questions for students to answer: "What inference did the character make? What did he do? What could red bird have said to solve the problem?" Have students volunteer responses. Have them practice being the red bird, explaining the inferences and why they were wrong. For example, students might say, "Rabbit, no danger, just a misunderstanding. Python is not going to eat you, he was afraid of iguana. You do not need to run through the field in daylight."

5. **Independent Practice**

Have groups of three students act out the crow and the monkey scenes, adding red bird. The three students must agree on what red bird will say ahead of time. Have each group use the same questions: "What inference did the character make? What did he do? What could red bird have said?" Then, read the rest of the story and discuss inferences that were made and how the story ended.

6. **Assessment**

Have students choose an animal, draw a picture, and write about the inference that animal made. They should answer the questions: "What inference did the character make? What did he do? What could red bird have said?" Review students' drawings and writing to determine whether they understand how to make inferences.

For extra credit, ask students to explain the sentence, "When she does that, she gets an honest answer." Ask, who is "she"? There are two "she's." Are they both the same person? What is the "honest answer?" What question does it answer? What does the "honest answer" mean? If students can answer these questions, they definitely have mastered inferencing skills.

7. **Reflection and Planning**

Students' abilities to make and recognize inferences will vary greatly depending on their ability to think abstractly as well as their own background knowledge. Don’t be too surprised or discouraged if students continue to struggle. Rather, keep encouraging them to recognize the inferences that they make, and give them the vocabulary to talk about their thinking. Continue to think aloud and model your thought process when you make inferences, continuing to provide students with practice answering inferential questions. Most importantly, keep reminding students that inferencing is fun because it really forces you to use your brain. Students who continue to struggle with this strategy may need more support activating prior knowledge, or more practice with the previous lessons (Animals Should Definitely Not Wear Clothing and Too Many Tamales) about making inferences.
Question-Answer Relationships

What Is It?

Question-Answer Relationships, or QAR, is a reading comprehension strategy developed to "clarify how students approach the tasks of reading texts and answering questions" (Raphael 1986). It encourages students to be active, strategic readers of texts. QAR outlines where information can be found "In the Text" or "In my Head." It then breaks down the actual question-answer relationships into four types: Right There, Think and Search, Author and Me, and On My Own.

For example, these are questions at each level:

In the Text

1. **Right There**: Who is the main character?
2. **Think and Search**: How did the character return home?

In My Head

1. **Author and Me**: Would you have made the same choice the character made?
2. **On My Own**: Do you know what it's like to feel jealousy?

Why Is It Important?

- Students often follow an extremely literal or "in their head“ approach when answering questions about what they have read. Understanding question-answer relationships helps students learn the kind of thinking that different types of questions require, as well as where to go for answers in the text. It encourages students to be more efficient and strategic readers.
- Teaching students about question-answer relationships can help them to ask effective questions as they read and respond to the text.
- Teachers use questioning strategies to guide and monitor student learning and to promote higher-level thinking in their students. Teaching students the QAR strategy encourages teachers to be aware of, and, it is hoped, improve the types of thinking they are requiring of their students.
- Understanding how the question-answer relationship works is an important component of comprehending text. According to research cited by the National Institute for Literacy, teaching about question-answer relationships is an effective strategy for improving comprehension when used as part of a multiple-strategy model (2001).

How Can You Make It Happen?

The levels and types of comprehension questions are described below.

1. **In the Text**

   The answers are right there in the text. These types of questions are literal.

   - **Right There**
The answer is in one sentence of the text; the question and answer usually have the same wording. Answers usually are one-word or short-phrase responses. There is usually only one right answer to Right There questions.

Some examples of phrases used for Right There questions:

- Who is...?
- Where is...?
- What is...?
- When is...?
- How many...?
- When did...?

Think and Search

The answer is found in several parts of the text. The question and answer have different wordings. Answers are usually short answers.

Some examples of phrases used for Think and Search questions:

- For what reason...?
- How did...?
- Why was...?
- What caused...?

2. In My Head

Students must use their prior knowledge to answer these types of questions.

Author and Me

The answer to the question comes from both clues in the text and students' prior knowledge. Students must synthesize the text to fully understand the question.

Some examples of phrases used for Author and Me questions:

- Would you...?
- Which character...?
- Did you agree with...?
- What did you think of...?

On My Own

The answer comes entirely from students' prior knowledge. These questions require inferential and evaluative thinking. Answers do not require information from the text but do require that students make some type of judgment about or relate to the topic of the text.

Some examples of phrases used for On My Own questions:
Do you know...?  
Have you ever...?  
Would you ever...?

Taffy Raphael, who developed QAR, suggested the following lesson progression for teaching the strategy (1982).

- When introducing QAR, start with short, narrative reading texts. Ensure that students are able to identify and write questions. Introduce the two levels of questions, In the Text and In My Head, and explain that they tell where students can find the answers to questions. Next, introduce the two types of questions at each level. Model an example of each type of question, thinking out loud so students can "see" your thought process as you determine the relationships.
- Then, generate one of each of the four types of questions and provide the answer to the questions. Have students categorize the question-answer relationships and explain their thought processes. This part of the process can be easier for students if they begin by working in cooperative groups and then transition to working independently after they show a thorough understanding of this strategy. In cooperative groups, have students read a short passage (50-75 words) and give them one of each type of question. Have each group answer the questions and categorize the question-answer relationships, explaining their thought processes. Provide each group with immediate feedback.
- After students have been introduced to the QAR concepts, provide them with several 75-100 word reading passages and a question and answer for each passage. Have students, individually or in cooperative groups, read each passage, identify the question-answer relationships, and explain their thinking. Ask, "Why do the questions represent one question-answer relationship and not another?" Continue to give students immediate feedback.
- As students become proficient with this strategy, use more expository and functional texts. Provide them with a 150-600 word reading passage divided into four sections. Give students one of each type of question for each section. Have students answer each question, identify the question-answer relationship, and justify their thinking.
- After they have mastered this, present a longer reading passage and in small cooperative groups have students write one of each of the four types of questions. Have each group share its questions. Ask the other groups to answer the questions, categorize each question-answer relationship, and explain their thinking.
- Finally, assign a reading passage and have students independently write four questions, one of each type. Direct students to exchange questions with a partner, answer each question, and categorize the question-answer relationships.

**How Can You Stretch Students' Thinking?**

- Apply the QAR strategy to content area material. Have students gather specific questions from various content areas, find the answers, determine the categories of questions, and create a QAR visual. Ask students to analyze and look for trends in the examples they found. Ask, "Are there any subjects that use only one or two types of question-answer relationships?"
- Have students develop a method to teach the QAR strategy to another class.
- Give different reading passages to several small cooperative groups. Have each group write four types of questions, based on the QAR strategy, on index cards. On the backs of the cards, have students answer the questions, categorize the question-answer relationships, and briefly explain their processes. Make this a part of your "what you can do when you are done" work. Groups can then exchange cards, find the answers to the questions, and check the backs of the cards to see if they agree with the group that wrote them.
- Based on a given reading passage, provide students with answers and ask them to write questions and categorize the question-answer relationships.

**When Can You Use It?**
**Reading/English**

The QAR strategy can be used to discuss questioning. Discuss how active readers use questioning during their independent reading to ensure accurate comprehension. Tell students that active readers use questioning before reading to activate prior knowledge, during reading to ensure comprehension, and after reading to reflect on and summarize what was read. Emphasize the types of questions you ask yourself.

**Writing**

Have students use QAR to discuss questions about pieces of writing. Students can write their own question-answer relationships about a classmate’s essay, an editorial in the school newspaper, and so on.

**Math**

Have students develop word problems based on the four types of questions in the QAR strategy. Discuss the process that students went through. Ask, "Were there some types of questions that were easier to write than others? Were there some types of questions that did not work with a certain situation? Why?" Have students keep a math journal in which they identify examples of each question type.

**Social Studies**

Have students use the QAR strategy to develop review questions for a chapter test. In small cooperative groups, students can use their textbook and their notes to develop "test questions" and justify why they would be good questions.

**Science**

Look at the focus questions at the beginning or end of the chapter in a textbook. Have students categorize and then answer the questions. Have students examine how they categorized the questions, and make changes if needed, based on their answers.

**Lesson Plans**

**Lesson Plan: Questioning, Frog and Toad Together**

This lesson is designed to expand primary students' skills in questioning, using the Question-Answer Relationships (QAR) strategy. In this lesson, you will teach students how to use QAR by reading from *Frog and Toad Together*, by Arnold Lobel and modeling QAR questions as you read. Students will then learn how to generate QAR questions on their own. This is the third lesson in a set of questioning lessons designed for primary grades. Try lessons one and two: Questioning, The Mitten and Questioning, Koko’s Kitten.
This is the third lesson in a set of questioning lessons designed for primary grades.

**Materials**

- *Frog and Toad Together* by Arnold Lobel
- Chart paper

**Procedure**

1. **Planning and Diagnostics**

   The QAR strategy is one of several strategies that you can use with students to help them build reading-comprehension skills. The QAR strategy involves students making some fairly subtle distinctions among different types of questions. Students should already have learned to ask questions about texts they are reading (e.g., questions before, during, and after reading). Other than this, it is hard to know whether students are ready for the QAR strategy without trying it out. If you think they may be ready, try it. If most students struggle, wait a few weeks then try again!

2. **Hook/Engagement**

   Begin by reviewing what students have already learned about how to ask questions as a way to understand the meaning of texts. For example using this reading questions framework ask them to talk about the kinds of questions they can ask before, during, and after reading.

   Next, introduce the idea that there are two kinds of questions you can ask about texts. Explain to students that an "In the Text" question is a question that students can find the answer to by looking in the book that they are reading. An "In My Head" question is a question that requires students to think about what their own knowledge is to answer the question. Review a book that you have recently read aloud with students. Write the example below on a piece of chart paper or on the blackboard. Choose a few "In the Text" and "In My Head" questions about the book that obviously belong to one category or the other, and have students tell you in which column to write the question. When you give students a literal question, have them show you where they found the answer in the book. When you ask them an "In My Head" question, go through the book with them and show them that they couldn't find the answer in the book. Have them give answers to the "In My Head" questions and explain how they answered them (i.e., thinking about what they have learned that is not in the book). Here are some examples of the two types:

<table>
<thead>
<tr>
<th>&quot;In the Text&quot; questions</th>
<th>&quot;In my Head&quot; questions</th>
</tr>
</thead>
<tbody>
<tr>
<td>What is the title of the book? What is the author's name? How long is the book?</td>
<td>Do I like the title? Have I read any other books by this author? How long will it take me to read this book?</td>
</tr>
</tbody>
</table>

   Explain that they are going to learn more and ask these types of questions about a new book you are going to read together.

3. **Measurable Objectives**

   Explain that you are going to read the first three chapters of *Frog and Toad Together* aloud to them, and they are going to help you make a list of "In the Text" and "In My Head" questions. Then, they are going to help you
answer the questions and see how these types of questions will help them to understand the story.

4. **Focused Instruction**

Review with students the four types of questions explained in the QAR Strategy. Explain that there are two types of "In the Text" questions and two types of "In My Head" questions. Draw a copy of the QAR table on chart paper or on the blackboard or use an overhead projector. The table should look something like this:

<table>
<thead>
<tr>
<th>&quot;In the Text&quot; questions</th>
<th>&quot;In My Head&quot; questions</th>
</tr>
</thead>
<tbody>
<tr>
<td>Right There</td>
<td>Think and Search</td>
</tr>
<tr>
<td></td>
<td>Author and Me</td>
</tr>
<tr>
<td></td>
<td>On my Own</td>
</tr>
</tbody>
</table>

Read the first chapter, "A List," from *Frog and Toad Together* aloud to students. Next, write the questions listed below under the "Right There" heading. Read the questions aloud, look through the chapter, show the students where you found the answer, and then think aloud the answer.

**A. Right There**
- What is the first thing Toad writes on his list? "*When I turn to page 4, I see that the first thing Toad writes on his list is 'Wake up.'"*
- Who is the friend Toad goes to see? "*When I turn to page 9, I see that Toad goes to see Frog."

Next, write these questions under the "Think and Search" heading. Read the questions aloud and then think aloud the answers.

**B. Think and Search**
- What caused Toad to forget what was on his list? "*I read that Toad's list blew away and Frog did not catch it, so that is why Toad couldn't remember what was on his list.*"
- How did Toad finally remember what was the last thing on his list was? "*Frog reminded Toad that it was getting dark and they should be going to sleep – the last thing on Toad's list.*"

Next, write these questions under the "Author and Me" heading. Read the questions aloud and then think aloud the answers.

**C. Author and Me**
- What do you think of Toad's list? "*I think that writing a list of things to do is a good idea. But, Toad could have left off some things, like waking up or getting dressed, because he doesn't need to be reminded to do that.*"
- Did you agree with the reason Toad gives for not chasing after his list? "*No. I think that he should have chased after his list, even if it wasn't one of the things on his list. He couldn't have written that on his list anyway because he didn't know the list would blow away.*"

Next, write these questions under the "On My Own" heading. Read the questions aloud and then think aloud the answers.

**D. On My Own**
- Have you or somebody in your family even written a list of things to do? "*Yes. I have written a list of things that I have to do on a weekend day because that is not like a school day. On weekends, I do lots of different things, so I have to write a list to remind myself of all the things I ..."
What would you do if you lost your to-do list and couldn't find it? "I would look for it for a while and if I couldn't find it, I'd write a new list of things to do."

5. **Guided Practice**

Read aloud to students the second chapter, "The Garden," from *Frog and Toad Together*. Create a new QAR graphic for this chapter on chart paper or the blackboard or use an overhead projector. Then, give students the questions listed below and ask them to help you place the questions under the correct heading and then to help you answer the questions. Ask students to explain why they placed the questions under the headings they did. For example, for the "Right There" questions, they can point to where the answer is and for the "On My Own" questions, they answer the questions based on information they already know, and so on.

- Which character, Frog or Toad, knows more about growing seeds? (Author and Me)
- What did Toad say to his seeds to get them to grow? (Right There)
- Have you ever planted seeds before? (On My Own)
- How does Toad try to help his seeds grow? (Think and Search)
- Would you have done what Toad did to try and get his seeds to grow? (Author and Me)
- What advice does Frog give Toad about growing seeds? (Think and Search)
- Do you know what makes seeds grow best? (On My Own)
- What kind of seeds does Frog give Toad? (Right There)

6. **Independent Practice**

Read aloud to students the third chapter, "Cookies," from *Frog and Toad Together*. Divide students into pairs or small groups and have each group come up with one of each type of QAR question for Chapter 3. Tell students to draw a picture or write what they can for the question. Tell students they need to be able to tell what type of question each one is and then they have to answer the questions. Once students finish the activity, bring the class together and write each group's questions on the board and have members from other groups answer the questions. Ask students to explain how answering questions about *Frog and Toad Together* helps them understand the chapters and think more about the subjects and how they might relative to their own lives.

7. **Assessment**

To assess whether students have mastered QAR, read aloud the next chapter, "Dragons and Giants," to them and give them a QAR graphic organizer. Ask them to write or draw one question that belongs under each heading. Then, have them explain, write, or draw what they can to answer each question.

8. **Reflection and Planning**

Determine which students understand QAR by seeing how they did in their group activity and on their assessment. Read aloud the last chapter, "The Dream," to students and have them do the same activity they did in the "Assessment" section. If students are struggling, you might want to only use "In the Text" and "In my Head" questions until they are competent in classifying questions into those two categories before moving on to using all four categories. If you find that only a few students are having trouble with this strategy, try to work with these students more intensively in a small group. Encourage all students to use QAR as a reading-comprehension tool when reading other fiction and nonfiction books with them in class.

**Strategies**

- Question-Answer Relationship (QAR)
Questions Before, During, and After Reading

**Introducing Questioning, The Mitten**

Grade Levels: K - 3

**Objective**

This lesson is designed to introduce primary students to the importance of asking questions before, during, and after listening to a story. In this lesson, using the story *The Mitten* by Jan Brett, students learn how to become good readers by asking questions. This is the first lesson in a set of questioning lessons designed for primary grades.

**Materials**

- *The Mitten* by Jan Brett
- Chart paper

**Procedure**

1. **Planning and Diagnostics**

   Asking questions before, during, and after reading is a strategy that primary students can use to become better readers. Students should be able to ask and answer basic, literal questions about a story.

2. **Hook/Engagement**

   Tell students that you will read a story titled *The Mitten*. It's best if you have some mittens to show you especially if students live in a warmer climate and may not have worn mittens. Ask students questions such as:

   - What are mittens?
   - How many of you have ever worn mittens?
   - How many of you have ever lost a mitten? How did you feel?
   - Why are mittens so easy to lose?
   - Why do you think this story is called *The Mitten*?
   - Why is it called *The Mitten* and not *The Mittens*?

   Now that you've gotten the students thinking about mittens, you can transition to the topic of the lesson: asking questions before, during, and after reading. You might want to say something such as:

   "You know, it's often a good idea to ask questions like this before you read a book. Then, when you start reading the book, you can look for the answers. You can also ask questions while you're reading the book and after you read the book."

   Show the following chart and ask students to help you think of other questions.
<table>
<thead>
<tr>
<th>Questions Before Reading</th>
<th>Questions During Reading</th>
<th>Questions After Reading</th>
</tr>
</thead>
<tbody>
<tr>
<td>What is this book about?</td>
<td>What will happen next? Will the story have a happy ending?</td>
<td>Why did the author write this book? What does the author want us to think? What is the main idea?</td>
</tr>
<tr>
<td>What does the title mean?</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

You may want to use these framework questions when teaching or print them for students to reference while using this strategy.

3. **Vocabulary**

Students should be familiar with most of the animals in this story, but they might not know what a hedgehog and a badger are.

- **Hedgehog**: is a mammal that has hair and a spine that it shows outwardly when it is threatened; it is like a porcupine
- **Badger**: a mammal that burrows and is related to the weasel

4. **Measurable Objectives**

Explain to students that you are going to read *The Mitten* aloud to them and you will ask them to help you make a list of questions before, during, and after you read. Then you'll ask them to help you answer the questions to see how thinking about the questions and knowing the answers can help them understand *The Mitten* better.

5. **Focused Instruction**

Create a chart with three columns labeled, "Questions Before Reading," "Questions During Reading," and "Questions After Reading." Explain to students that you ask questions before you begin reading a book to help you think about and focus on what you're going to read. Explain that looking at the cover of a book can help you think of questions to ask before you start reading. Look at the cover of *The Mitten* and think aloud:

"Well, I know that this book must have animals in it. Are all of these characters going to be in the story? What does a mitten have to do with these animals? Why are these animals looking at the mitten? The animals can't wear the mitten, so whose mitten is on the ground? Is this a true story?"

Write these questions in the table in the "Questions Before Reading Column" and explain that they will help you focus before you begin reading *The Mitten*. Explain that everybody can look at the cover of the book and come up with different questions. There are no right and wrong questions to ask, but there are right answers to find once you start reading.

6. **Guided Practice**

Explain to students that as you read a story you always ask yourself questions. You wonder about what the main character will do next; you ask a question about something that seems unclear; or you wonder what will happen next in the story. You usually can answer most, if not all, your questions by the time you finish reading the story. Read the first five pages of text aloud and then stop. Think aloud these three questions:

- "Will Nicki notice that he dropped his mitten?"
- "Will Baba be upset with Nicki for losing his mitten?"
"I notice that there is an open mitten on each page that shows what else is happening in the story. Will the mittens on the next few pages give me a clue about what Nicki is doing?"

Record these questions in the "Questions During Reading" column, or at least point to these columns as you ask the questions. Read the next three pages of text aloud to students and then stop. Think aloud the answers to the above questions:

"I can tell from the mitten on the side of the page that Nicki does not know yet that he has lost his mitten. So far, his grandmother does not know he lost his mitten, either. I think that some of my questions will have to wait to be answered, then. But, after reading these three pages, I have some more questions."

Now, record several questions that you asked yourself while you were reading these three pages:

- "There are already a mole, a rabbit, and a hedgehog in this mitten. Can anymore animals possibly fit into the mitten?"
- "Could three animals really fit into Nicki's mitten?"

Read the next six pages of text aloud to students and then stop. Think aloud the answers to the above questions that you asked yourself:

"It seems that more animals can fit into Nicki's mitten. Now an owl, a badger, a fox, a bear, and a mouse joined the other animals. But, in real life, these animals would be too big to fit into a boy's mitten."

Next, think aloud and record several questions that you asked yourself while you were reading these six pages:

- "How many animals are going to fit into Nicki’s mitten?"
- "These animals are so squished together. How will they possibly get out of Nicki's mitten?"

Read the final three pages of text aloud to students. Think aloud and record this question that you asked yourself while you were reading these pages:

- "What will happen to Nicki's mitten now that the animals are gone?"

Explain to students that you shared with them the questions you asked yourself as you read the story. Ask several students to answer the remaining three "during reading" questions. Emphasize that they may have asked themselves different questions, which is fine. Give students the opportunity to give you some examples of questions they asked themselves as you read the story aloud to them and record their questions. Then, have students think-aloud and tell you the answers to the questions. Point out how the questions that you asked could either be answered during your next stopping point or when you finished the book. Explain that asking questions during reading helps you to become good readers.

7. Independent Practice

Explain to students that asking questions after reading a book helps them to think more about the story or connect to the story in some way. For example, tell students that you wonder whether Nicki ever told his grandmother that he lost his mitten or if his grandmother will ever figure out why one of Nicki's mittens is so much larger than the other. Explain that questions you ask after reading are more open-ended and do not have definite answers that can be found in the book. Ask students to help you add questions to the "Questions After Reading" column. Some sample questions include:

- Did any of the predictions that I made about The Mitten come true?
Once students generate a list of questions, have students answer them. Explain how these questions have helped students to think about *The Mitten* by connecting to the story. Point out how remembering the answers to these questions will help them always remember what *The Mitten* is about.

8. **Assessment**

To assess whether students have mastered the importance of asking questions before, during, and after reading, generate six new questions about *The Mitten* and ask students to tell you under which heading the questions should go. Then, have students answer the questions to assess their reading comprehension (i.e., how much of the story they understand.) Then, select another book from the unit you are studying. Before you begin the book, ask students to come up with several questions by looking at the cover. Then, read the book aloud to students. Have students ask questions about the story at your designated stopping points. Then, have students ask questions after you've finished reading the story to them.

9. **Reflection and Planning**

Determine which students understand how to ask good questions before, during, and after reading by listening to the questions they ask for the Assessment activity and how they answer those questions. If a small number of students are struggling, form a small group to work with these students more intensively. As you go on to other lessons, encourage all students to ask questions before, during, and after reading any type of fiction or nonfiction in class.

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**Establishing Questioning, *Koko's Kitten***

**Grade Levels:** K - 3

**Objective**

This lesson is designed to establish primary students' skills in asking questions before, during, and after they listen to a story. You can help students learn to become better readers by modeling how and when you ask questions while reading aloud the true story, *Koko’s Kitten*, by Dr. Francine Patterson. This is the second lesson in a set of questioning lessons designed for primary grades. (See Questioning, *The Mitten* for the first lesson in this set.)

**Materials**

- *Koko's Kitten*, by Dr. Francine Patterson
- Chart paper

**Procedure**

1. **Planning and Diagnostics**

Asking questions before, during and after reading is a strategy that primary students can use to become better
2. **Hook/Engagement**

Ask students for examples of questions they ask their parents during a typical day, such as "What is for dinner?" or "Why can't I stay up later tonight?" Ask students why they ask their parents these questions. Lead them to explain that it is because they want answers. Many times, these answers will tell them something new, explain something to them, or make them think about something they didn't think about before. Explain that good readers ask questions about what they're reading because they are curious and want answers to help them understand the story better.

Ask students to name a favorite story that you read to them in class or that a family member reads to them at home. Then, ask them several questions about that story, such as, "What is the story about?" "Who is the main character?" "Is it a real or imaginary story?" Explain that after they have read the story, they can answer many questions about it, which helps them to understand the story better. They can also ask questions before and during reading to help them think about and understand what they are reading.

3. **Vocabulary**

   - **Preface**: where the author explains or introduces something that he or she is going to write about.
   - **Epilogue**: the ending part of a story that explains more about the story after the story is finished.

4. **Measurable Objectives**

   Explain to students that you are going to read *Koko's Kitten* aloud to them and you want them to help you make a list of questions to ask before, during, and after reading. Then, you'll ask them to answer those questions with you. Explain that asking questions before, during, and after they read a story will help them to really understand the story.

5. **Focused Instruction**

   **A.** Write on the blackboard or on three pieces of chart paper the headings: "Before Reading Questions," "During Reading Questions," and "After Reading Questions." You may want to use framework questions (see below) while teaching or print them for students to reference when using this strategy. Show the cover of *Koko's Kitten* to students. Explain that you are going to read the story aloud to them. Tell them that you often ask questions before you read by looking at the cover of the book you are about to read. Model by thinking aloud several questions that you would ask before you read *Koko's Kitten*, such as:

   - "Who is Koko?"
   - "What do I know about gorillas?"
   - "Why is a gorilla holding a kitten?"
   - "Do gorillas like kittens?"
   - "Are kittens afraid of gorillas?"

   **B.** Write your questions on the blackboard or chart paper under the heading "Before Reading Questions." Explain that these are questions that you are asking yourself before you have begun to read *Koko's Kitten*. Next, open the book and read the "Preface" to students. Explain that many books don't have a preface, but this one does. Explain that the preface is not part of the story. Point out how you can already answer some of the questions that you asked yourself now that you've read the preface. Think aloud several of the answers. "Koko is a gorilla. She is holding All Ball, her kitten. It seems like she likes kittens. Answering these questions has already helped me understand a little bit about what the story is about." Then think aloud some questions you would ask after reading the preface:

   - "How does the author teach Koko sign language?"
   - "How does Koko treat All Ball?"
   - "Do gorillas really have feelings?"

   **C.** Explain that you are asking these questions before reading because you haven't started the story. Write these questions on the blackboard or chart paper under the heading "Before Reading Questions." Explain to students that they
will be able to answer these questions as you’re reading.

**Guided Practice**

Begin reading the story. You may choose to write all of these questions or only some of the questions on the blackboard or chart paper under the heading "During Reading Questions." As you are reading the first three pages of text, think aloud one question that you would ask yourself while you’re reading these pages: "Will Koko will like her Christmas presents?"

A. Read the next three pages of text aloud to students. Think aloud several questions that you ask yourself while you’re reading these pages:
   - "Why does Koko want a pet?"
   - "Why does Koko choose the tailless tabby kitten?"

B. Read the next three pages of text aloud to students. Think aloud several questions that you ask yourself while you’re reading these pages:
   - "Will All Ball like Koko?"
   - "Will All Ball and Koko live together and get along?"
   - "Koko is good to All Ball, even though All Ball bites her. Do most people think of gorillas as mean and violent?"

C. Read the next three pages of text aloud to students. Think aloud several questions that you ask yourself while you’re reading these pages:
   - "Why does Koko like All Ball so much?"
   - "Why does Janet want Koko to tell her about All Ball?"

D. Stop at this point and explain to students that you are asking yourself these questions to make predictions about what will happen next in the story and to help you connect to and understand the story. Explain that these are the questions that you are asking, but students might come up with other questions. And, students may answer some of the nonfactual questions differently, which is fine. Show how you can answer your questions as you continue to read, and develop new questions, too.

**Independent Practice**

Read the final four pages aloud to students and ask them to think about some questions they have as you are reading. Once you have finished reading, call on volunteers to think aloud some of the questions they asked themselves as you were reading. Some sample questions could be:

- "How will Koko act when he hears that All Ball is dead?"
- "What does Koko mean when she signs ‘Blind’?"
- "Will Koko get another kitten?"

Next, read the Epilogue and then think aloud several questions that you have after you have read the book:

- "Why did Dr. Patterson want to tell this true story?"
- "What have I learned about gorillas that I didn’t know? Has it changed the way I feel about kittens and gorillas?"
- "How would this book make other people feel about gorillas?"

Then, ask students to think aloud several questions they have after reading Koko’s Kitten and write some of the questions on the blackboard or on chart paper under the heading "After Reading Questions."

**Assessment**

To assess whether students have mastered the importance of asking questions before, during, and after reading, go through the questions for Koko’s Kitten together and see if they can answer the questions. Then, select another book from a unit you are studying. Ask students to come up with several questions before you begin the book. Then, read the book aloud to students. Call on volunteers to ask questions as you are reading the book. Then, have students come up with some questions after you have read the story to them. Ask them how their
questions helped them think about the story. Ask them how the questions that they ask before, during, and after reading are different. Try to identify students who appear to be having difficulty asking questions before, during, or after reading.

Reflection and Planning

Determine which students understand how to ask good questions before, during, and after reading by listening to the questions they ask for the Assessment activity and how they answer those questions. If a small number of students are struggling, form a small group to work with these students more intensively. In the future, encourage all students to ask questions before, during, and after reading any type of fiction or nonfiction in class.

Further Expanding Questioning, Grandfather's Journey

Grade Levels: K - 3

Objective

This lesson is designed to help primary students continue to learn about the importance of asking questions before, during, and after reading by having the students generate all of the during-reading questions and some of the after-reading questions. Students should progress to this lesson once they have completed The Mitten lesson plan, Koko's Kitten lesson plan, and Frog and Toad Together lesson plan.

In this lesson, students will generate their own questions about the Caldecott Medal winner-Grandfather's Journey, by Allen Say. This is the fourth lesson of a set of questioning lessons designed for primary grades.

Materials

- Grandfather's Journey by Allen Say
- Double-entry journal template
- Writing or drawing paper

Procedure

1. Planning and Diagnositics

   Students will need some writing skills to complete this lesson, as they will be writing in a double-entry journal. You may want to pair struggling writers with a partner who can write. Students should have a good understanding of how to ask and answer questions before, during, and after reading.

2. Hook/Engagement

   Explain to students you want them to come up with "during-reading" questions as you read aloud to them, but you are going to ask them several before-reading questions to get them thinking about Grandfather's Journey. Show students the cover of the book and read the title aloud to them. Then, ask students the following questions:

   o What do you know about any of your grandparents' lives? Do you know where they grew up? Have you
visited there?
  o Have you ever been on a boat on the ocean or taken a long journey?
  o How do you think that you would feel if you left America and moved to another country? Would you be afraid, excited, and so forth.
  o After hearing the title of this story, what would you predict this story to be about?

Give students time to answer your questions; their answers will engage one another and get them ready to read the story. These questions will help them focus their "during-reading" questions more sharply by encouraging them to put themselves in the author's shoes and think about the idea of this story. Tell students that it is a true story; they are going to learn about the author's grandfather's journey to America, and how the author eventually had the same feelings about his "home" as his grandfather and therefore felt he really understood his grandfather.

3. **Vocabulary**
   - **Riverboat**: a boat that is used on a river
   - **Sculptures**: three three-dimensional works of art such as a statue
   - **Bewildered**: to be confused
   - **Warbler**: a small singing bird
   - **Silvereye**: a very small bird

4. **Measurable Objectives**

   Explain to students that you are going to read *Grandfather's Journey* aloud to them. Then you will ask them to think of some questions that they have about the story as you are reading to them. You will record their questions in a double-entry journal.

   At designated stopping points, they can tell you the answers they found, and you will record their answers. Then, after you've finished reading aloud to them, you'll ask them to write or draw an answer to a question they had about the book.

5. **Focused Instruction**

   A. Draw a double-entry journal on the blackboard, a piece of chart paper, or use an overhead projector. Read pages 4-13 aloud to students and then stop. Ask students to tell you some questions that they thought about as you read to them. Have them show you the page of text or picture that made them think about the question they asked. Record their questions in the left-hand column of the double entry journal. (Some sample questions include: When did the author's grandfather leave for North America? What do I already know about the author's grandfather? What new places will he go to next in America? Will he get homesick and want to go back to Japan?)

   B. Explain to students that there are no right or wrong questions to ask during reading. The important detail is that they are asking themselves questions as you read to help them think about the story and the main character (the grandfather) and to help them predict what might happen next in the story. Overall, asking questions makes them curious and want to know more about the story, which keeps their interest and helps them understand the story.

   C. Read pages 14-17 aloud to students. Again, stop and review the questions you recorded for them in the first section of your read-aloud. Can they answer any of the questions yet? If they can, then record their answers. Then, ask students to ask any new questions they have about the pages you just read to them. Write their new questions in the double-entry journal. (Sample questions include: What do I know about California? Will the grandfather's wife and daughter like America? Will the grandfather take his family to live in Japan?) You may choose to show students on a map where Japan is in relation to California and show them the Pacific Ocean – the ocean the grandfather sailed on in the steamship.

   D. Read pages 18-23 aloud to students. Review the questions they have asked already to see if they can answer any and then write their new questions in the double-entry journal. (Some sample questions include: How do I think that Japan and America were different at this time? Will the grandfather's daughter stay in Japan with her baby?)

   E. Read pages 24-32 aloud to students and follow the same process of reviewing previous questions and recording
students’ new ones. Point out that after reading this section you will record the questions they had while you were reading these pages. For example, after you read page 26, they might have wondered what war the author was talking about. (You may choose to give students a very brief explanation of WWII or just talk about the war generally to help them understand the setting of this part of the story.)

F. Review the process of asking questions during reading. Point to several questions that students asked and answered and show how asking those questions, and finding the answers to them later on in the book, helped students understand the book and the characters even more.

Guided practice

Review the idea of asking questions after reading. Explain that many of the questions that readers ask themselves after they have read a book are not questions that can be answered from the book. The stories or facts in books can make readers wonder about topics beyond what they just read. Model several questions that you had after reading Grandfather’s Journey:

- Why does the author end the story by saying that he thinks he knows his grandfather now?
- Have I ever really felt homesick before?

Pair students and have them think about a question that they had after you finished reading Grandfather’s Journey to them. Give students some time to formulate a question and accept any reflective question that can somehow be connected to the story. Ask pairs to relate their question and explain why they had that question.

Independent Practice

Explain to students that you want them to think more about Grandfather’s Journey now that you have finished reading the story to them. Ask each student to write or draw an answer to the “after-reading” question they asked with their partner in the Guided Practice activity. Once students are finished, ask them to share their writing or drawing and explain to the class why they came up with the answer they did.

Assessment

To assess whether students have learned the types of questions that you ask before, during, and after reading, write several questions about Grandfather’s Journey on the blackboard or on a piece of chart paper. Ask them to explain whether each question is a before-, a during-, or an after-reading question. Then, assess whether the questions have aided their reading comprehension level by having students answer the questions. To further assess students’ understanding of asking questions before, during, and after reading, select a new book that you have not read aloud to them and have them model the types of questions they should ask before you read, while you are reading to them, and after you have finished reading to them.

Reflection and Planning

Determine which students understand how and when to ask good questions before, during, and after reading by seeing if they correctly label the questions you gave them about Grandfather’s Journey in the Assessment activity. Encourage students to use this questioning process with any new book that you read with them in class or those they read at home. If students are struggling with this strategy, review previous lesson plans that use different books and review the strategy of asking and answering questions.

Primary Question-Answer Relationships
This lesson introduces primary students to the QAR strategy.

**Primary Question-Answer Relationships**

Grade Levels: K - 3

**Lesson Summary**

This lesson introduces the Question-Answer Relationship strategy to primary students. Students should be able to differentiate between a question and a statement, and to generate questions before, during, and after reading.

**Objectives**

- Students will identify and explain question-answer relationships in texts by identifying where to find the answers to questions.
- Students will categorize types of questions by sorting the question-answer relationships.

**Key Understandings**

- Asking and discussing questions improves our comprehension of the text.
- Understanding the question-answer relationship will help:
  - Look for the answer to a question in the right place
  - Answer questions accurately

**Procedure**

1. **Lesson Introduction**

   Say to students, "Today we are going to learn about question-answer relationships. Understanding question-answer relationships will help us look for the answers to questions in the right place. Why might it be important to understand where to look when we are trying to answer questions about a story?" Review the lesson objective and key understandings with students.

   The levels and types of comprehension questions are described below.

**A. In the Text**

The answers are right there in the text. These types of questions are literal.

- **Right There**
  
  The answer is in one sentence of the text; the question and answer usually have the same wording. Answers usually are one-word or short-phrase responses. There is usually only one right answer to Right There questions. Some examples of phrases used for Right There questions: Who is...? When is...? Where is...? How many..? When did...? What is...?

- **Think and Search**
  
  The answer is found in several parts of the text. The question and answer have different wordings. Answers are usually short answers. Some examples of phrases used for Think and Search questions: For
B. In My Head

Students must use their prior knowledge to answer these types of questions.

- **Author and Me**

  The answer to the question comes from both clues in the text and students' prior knowledge. Students must synthesize the text to fully understand the question. Some examples of phrases used for Author and Me questions: Would you...? Which character...? Did you agree with...? What did you think of...?

- **On My Own**

  The answer comes entirely from students' prior knowledge. These questions require inferential and evaluative thinking. Answers do not require information from the text, but do require that students make some type of judgment about or relate to the topic of the text. Some examples of phrases used for On My Own questions: Do you know...? Have you ever...? Would you ever...?

2. **Demonstration**

Say to students, "One strategy that good readers use to make sure they understand or comprehend what they read is to ask and answer questions. Today we are going to learn a questioning strategy that you can use whenever you read to help you understand the relationship between questions and answers. If we know where to find the answers to our questions, understanding or comprehending the text we read will be much easier! Now, just to get our brains warmed up, I'm going to ask you a few questions that I would like you to discuss with a partner."

Ask students the following questions, and then define as a class. Have them turn to a partner and share an example of each. Remind students to refer to the class definition to check their partner's answers.

1. What is a statement?
2. What is a question? Share student-generated questions and answers.

Then say to students, "Now, I know that the students in this class are already good readers, so let's see what you know about how to answer questions." Have students list prior knowledge about answering questions in their journals and then share answers with the class. List the collective prior knowledge on a chart. As students share answers, guide the discussion so it includes where they look to find the answers to questions.

3. **Explore**

Select a text that is familiar to students, for example, fairy tales, folktales, or a favorite class story. Before reading, ask students to discuss and examine the cover, noting the title, author, and illustrator. Discuss prior knowledge and predictions about the story. Assist students in crafting questions from their predictions. Choose a few students who are proficient writers to record the questions on sticky notes. With younger students, model the writing, or use shared writing. For example:

- **Prediction**: I predict that the third billy goat will push the troll off the bridge.
- **Question**: Will the third billy goat push the goat off the bridge?

While reading the text, stop occasionally and encourage students to ask additional questions about the story.
Record the questions on sticky notes. After reading the story, record on sticky notes, any remaining questions that the students may have.

4. Explain

Define QAR as stated in the key understandings. Provide several examples of each type of question. As a class, read some of the student-generated questions and help students classify the question-answer relationship. If students struggle, first ask them to split the sticky notes into two categories (The answer is in the book, The answer is in my head, I need my head and the book to answer the question). Then assist the students in refining the categories to Right There, Think and Search, Author and Me, and On My Own.

5. Guided Practice

Select a new text to read aloud. It may be easier to start with a narrative text and progress to expository and functional texts as students become proficient with this strategy. Record questions as a shared writing activity. Older students can write questions on sticky notes. Read one question aloud at a time. Ask students to state the QAR and then answer the question. Write the questions or categorize sticky notes on a class chart. Or, share answers using the popcorn popper game. Divide the class into four groups (Right There, Think and Search, On My Own, Author and Me). Read each question. Students should pretend they are popcorn kernels and pop when the answer to a question falls under their QAR category.

6. Assessment

Tell students that another class in your school will read the same book they read today and that both classes will have a book discussion. To be sure everyone understands the story, have each student write four questions for the other class to answer, one question for each QAR category. Then have students write a note to the other classroom’s teacher explaining why it is important to discuss a variety of types of question types.

7. Reflection Journal

Have students answer these questions in their reflection journals:

"What types of questions were easiest to categorize?"
"What types were most difficult?"
"What types of questions were easy to write?"
"What types were difficult to write?"

Intermediate Question-Answer Relationships

This lesson introduces intermediate students to the QAR strategy.

Intermediate Question-Answer Relationships

Grade Levels: 3 - 5
Lesson Summary

This lesson introduces the Question-Answer Relationship strategy to intermediate students. Students should be able to differentiate between a question and a statement, and to generate questions before, during, and after reading.

Objectives

- Students will identify and explain question-answer relationships in texts by identifying where to find the answers to questions.
- Students will categorize types of questions by sorting the question-answer relationships.

Key Understandings

- Asking and discussing questions improves our comprehension of the text.
- Understanding the question-answer relationship will help:
  - Look for the answer to a question in the right place
  - Answer questions accurately

Procedure

The levels and types of comprehension questions are described below.

A. In the Text The answers are right there in the text. These types of questions are literal.

- **Right There** The answer is in one sentence of the text; the question and answer usually have the same wording. Answers usually are one-word or short-phrase responses. There is usually only one right answer to Right There questions. Some examples of phrases used for Right There questions: Who is....?
  - When is...?
  - Where is...?
  - How many..?
  - When did...?
  - What is...?
- **Think and Search** The answer is found in several parts of the text. The question and answer have different wordings. Answers are usually short answers. Some examples of phrases used for Think and Search questions: For what reason...?
  - How did...?
  - Why was...?
  - What caused...?

B. In My Head Students must use their prior knowledge to answer these types of questions.

- **Author and Me** The answer to the question comes from both clues in the text and students' prior knowledge. Students must synthesize the text to fully understand the question. Some examples of phrases used for Author and Me questions:
  - Would you...?
  - Which character...?
  - Did you agree with...?
  - What did you think of...?
- **On My Own** The answer comes entirely from students' prior knowledge. These questions require inferential and evaluative thinking. Answers do not require information from the text, but do require that students make some type of judgment about or relate to the topic of the text. Some examples of phrases used for On My Own
questions: Do you know...? Have you ever...? Would you ever...?

Demonstration

Tell students that they will learn a questioning strategy that they can use whenever they read to understand the relationship between questions and answers. Explain that understanding these relationships will help them identify where to find answers in their reading. Discuss why being able to find an answer in a story is important (for example, to solve problems, comprehend the story, justify an opinion, or as practice for answering questions on tests). Introduce the QAR strategy. Discuss the two levels of questions: In the Text and In My Head. Explain that the levels tell where students can go to find the answers to questions. Next, introduce the two types of questions at each level. Discuss each type of question-answer relationship, what type of thinking each question-answer relationship requires, and provide examples of each. Read the following sentences aloud.

Sam and Tanya were hiking in the Black Mountains. The rain from the night before made the leaves and rocks slippery. They planned to reach the top of the mountain by noon, so they started hiking early in the morning and planned to reach the bottom of the mountain before dark. Halfway up the mountain Sam slipped and broke his leg.

Ask each student to write down one question about the above passage on a sticky note, with the answer on the back. Have them put their questions aside. Model an example of each type of question-answer relationship based on the reading passage. For each question-answer pair, talk through where you found your answer, and how you decided on which question-answer relationship to use.

**Question-Answer Pairs**

<table>
<thead>
<tr>
<th>Questions</th>
<th>Right There</th>
<th>Think and Search</th>
<th>Author and Me</th>
<th>On My Own</th>
</tr>
</thead>
<tbody>
<tr>
<td>Where did Sam and Tanya go hiking?</td>
<td>What did Sam and Tanya do?</td>
<td>Why did Sam fall?</td>
<td>Do you think they got down the mountain before dark?</td>
<td>Do you think it is smart for inexperienced people to do serious hiking on their own?</td>
</tr>
<tr>
<td>Answers: Sam and Tanya went hiking in the Black Mountains.</td>
<td>Sam probably fell on the slippery rocks and leaves.</td>
<td>No, I do not think that Tanya could carry Sam down. She would have to get help, and it would take a while to hike down, find help, and hike back. I think that it would be dark by the time all of that happened.</td>
<td>I think that people without much experience can go hiking on their own as long as they have a way to contact help in case of an emergency, such as a cell phone.</td>
<td></td>
</tr>
</tbody>
</table>

guided Practice

Divide students into cooperative groups. Have groups find the question-answer relationships for each question they wrote. Have students read the question-answer pairs, tell where they found the information, and categorize the question-answer relationships. Monitor students and give them immediate feedback on their progress. If students struggle, ask them to split the sticky notes into the two categories: In the Text or In My Head. Then assist the students in refining the categories to Right There, Think and Search, Author and Me, or On My Own.

Extension
Help students create a graph so they can compare the number of questions in each category. Discuss the implications of the results. Make a prediction: Do you think our reading comprehension is better when we ask and answer only one type of question or when we ask and answer many different kinds of questions? Explain your answer. Using an Excel spreadsheet, graph the data from the class chart. Data can be collected over time at a class or individual level to track progress.

**Assessment**

Provide students with another three to six-sentence reading passage. Direct them to categorize each question according to its question-answer relationship. Monitor students' progress by asking individuals to explain the question-answer relationships. Ask, "Why does that represent that particular type of QAR and not another?" Ask students to interpret the results of the graph. Discuss these questions.

- Under which category do most of our questions fall?
- Does the graph show variety in your questioning?
- Compare the first and second graphs. Did the variety of your questioning improve as a class?
- Is it getting easier to categorize the QAR? Who is an expert? Who would like more time to practice?
- If we read a book tomorrow for a different purpose (expository/functional), do you think our results will change? Why or why not? If you think that the results will change, explain how you think they will change.

**Reflection Journal**

Have students answer these questions in their reflection journals:
"What types of questions were easiest to categorize?"
"What types were most difficult?"
"What types of questions were easy to write?"
"What types were difficult to write?"
Literature Circles

What Is It?

Whether they are called literature discussion groups, book clubs, reading response groups, or reading clubs, members of literature circles come together to discuss and respond to a book that they are reading at the same time. Often they are modeled after adult book discussion groups, although they may be more structured to provide scaffolding for students. In some models, roles are assigned to members of the group to help the group function more productively and remain focused on the chosen book or related topic. In literature circles, students use their experiences to create meaning, make connections, and have lively discussions about the book. The emphasis is on thoughtful dialogue in order to share experience and ultimately come to a deeper understanding of the piece of literature.

Why Is It Important?

In literature discussion groups, students hone their communication and critical-thinking skills by coming together with peers to respond to literature. Good readers use a variety of strategies to construct meaning from what they read, such as predicting what will happen next or connecting what they are reading to their own experience. Literature discussion groups help readers develop and practice these skills.

The overall objectives are for students to deepen their comprehension skills, construct meaning together as a group, debate and challenge each other, and ultimately connect with books on a deeper level. Students who are struggling readers often benefit by being in heterogeneous literature circles. Collaboration with more advanced peers provides modeling of comprehension strategies and critical thinking, as well as providing motivation for students to stretch their abilities in order to meet the group's expectations. Literature discussion groups can even have larger, more comprehensive benefits for the classroom community and for a student's lifelong learning. Harvey Daniels, in his book Literature Circles, discusses these types of benefits:

...literature circles have the potential to transform power relationships in the classroom, to make kids both more responsible for and more in control of their own education, to unleash lifelong readers, and to nurture a critical, personal stance toward ideas. (Daniels, p.31)

When Should It Be Used?

Many teachers wait to start book clubs or discussion groups until students have some shared experience with books. Some teachers wait until January or February, after students have built their skills of responding to books, talking about books, sharing their thoughts and reflections, and listening to each others' opinions with respect. Yet the work of building toward independent book discussions should start from the first days of school when you allow students ample opportunity to respond to literature in a variety of ways.

Initiating these literature discussion groups a bit later in the school year gives students time to build these skills, gives the teacher time to get to know students a bit better, and gives students time to get to know each other. A respectful and safe classroom community is essential. Literature circles, like all cooperative grouping strategies, depend on students who respect each other, listen to one another, and feel safe enough to share their thoughts and feelings.

What does it look like?

Literature circles generally range from three to six members who get together to choose and discuss a book. Some teachers choose to establish groups that are short-term and disband after the book is completed, while others form long-lasting groups, with members staying together to read and discuss many books.
Groups of students gather together in different areas of the classroom, perhaps in a comfortable corner on the floor, at a table, or simply in several chairs gathered together. Students discuss their books, with their books in hand or nearby, engaging every member of the group. Students use the books to refresh their memories, back up their observations or points, read a pertinent excerpt, or point out something they noticed to the group. Students also use the books to raise any questions they may have, while the group searches the text for possible answers.

Some literature circles have students take on different roles within the group, such as leading the discussion and keeping the group on track, identifying key passages and sharing them with the group, or finding connections between the text and the outside world. The teacher is on the periphery, helping to redirect the group's focus when necessary, or even as an occasional participant contributing thoughts or reactions about the book. The groups are not directed or lead by the teacher, as the primary voices are the students'.

**How Can You Make It Happen?**

**The Foundation:**

It is critical to give students many opportunities, from the first days of the school year, to respond to literature in a variety of ways. It is especially important to get students talking or writing in response to literature as a whole class, in pairs, and in informal small groups. The simple strategy of consistently ending a shared read-aloud time by having students share their thoughts, responses, feelings, and questions, will pay off tremendously when students are asked to participate in literature circles.

When are students ready to form successful discussion groups? Below are some questions that Joanne Hindley and her colleagues use to help them determine students are ready.

- Do I know my students’ reading histories?
- Do they know each other as readers?
- Do they listen to each other for book recommendations?
- Do they talk informally about books?
- Have they read enough individual books to know how to choose a book to read together?
- Do they know how to write about books in a way that leads to good booktalks?
- Do they treat each other with respect? (Hindley)

For these and other practical ideas for getting students to respond to literature, see Joanne Hindley's excellent book, *In the Company of Children*, pages 125-134, especially. Lucy Calkins, in *The Art of Teaching Reading* (pgs. 404-5), also lists skills and traits of students who are ready for book clubs.

**Getting Started:**

Introduce the idea, structure, and function of literature discussion groups when you and your students are ready to start. Harvey Daniels, in his book *Literature Circles*, provides ideas and step-by-step instructions for how to begin, including more detailed scaffolding for students who have little experience in collaborative learning. He also includes a "quick training" method for students who have plenty of experience working together.

One effective way for teachers to introduce this strategy is to work closely with one group to get started, and allow the rest of the students to watch the group in a "fishbowl" experience. The rest of the class watches the group as it engages in a discussion about a book. The teacher intervenes when necessary to keep the thoughtful discussion going. With the large group, the teacher discusses effective strategies that the small group is using to continue and expand the discussion.
Another strategy is to form one group at a time, the teacher working with each one to get it started and working independently. When the first group is functioning productively, the next group can be started. This allows the teacher to spend quality time with each group during the critical forming phase and ensures that each group gets off to a productive start. Lucy Calkins describes a teacher using this strategy and provides other scaffolding strategies for newly formed groups in *The Art of Teaching Reading* (Pages 398-9).

**Forming Groups and Selecting Books:**

Groups can be formed for a short term, coming together for one book and then disbanding, while other groups can be kept together for a longer period of time, reading several books together. Both approaches have their advantages. Short-term groups allow students to interact with many different readers, styles, and points of view. Long-term groups allow students to get to know each other better and to develop deeper connections.

There are differing degrees of student choice that can be allowed in forming literature circles. Each group can choose a particular book it wants to read, or teachers can choose the books and let students sign up for the one they want to read.

In groups where students choose the book they would like to read, they usually have more ownership in the group and the chosen book. Even when students select their own books, teachers usually guide students, in varying degrees, in making their choices. Some teachers select the books when groups are first forming, or limit the choices from several preselected groups, maintaining some control of the quality and readability of the books. As students become more independent, they may become more capable of self-selecting all of their books.

Teachers can also choose groups for students, using information from a written reflection on themselves as readers. Lucy Calkins discusses forming groups in more detail in *The Art of Teaching Reading* (pp. 397-399). Most teachers maintain some degree of control over group membership, considering such issues as compatibility between group members, reading abilities, variety of group experiences, personalities, and such.

**Roles:**

Many teachers using literature circles assign students specific roles to provide a degree of structure to the groups, at least at the beginning stages of group formation. These roles are rotating, with students eventually taking a turn at each role as they proceed through several books or groups. Harvey Daniels, in his book *Literature Circles*, discusses in detail several different possible roles. Daniels includes sample role sheets with specific role descriptions, sample discussion questions, and other support available for group members. Some of these roles include:

- **Discussion Director** - this student's job includes keeping the discussion moving along, productive and focused.
- **Literary Luminary** - this student highlights particularly important parts of the text, perhaps reading them aloud to the group and discussing.
- **Questioner** - this student develops questions to start or continue a thoughtful discussion about the book.
- **Connector** - this student looks for connections between the text and the outside world and contributes this perspective to the discussion.
- **Illustrator** - this student's job is to draw some type of illustration related to the reading, perhaps an important scene, and bring that to the discussion. The picture should convey an idea or feeling from the reading.

**Questioning Strategies:**

Key to engendering good discussions in literature circles is for students to be adept at asking, and answering, a wide variety of questions at different cognitive levels. Strategies that encourage questioning and discussion at the higher
levels of Bloom’s Taxonomy will lead to much more successful, in-depth, and meaningful literature groups. The level of questions determines the depth of student understanding as well as their level of engagement with the literature.

Junior Great Books suggests a strategy called "shared inquiry" to structure book discussions. In this strategy, there are three general types of questions: factual, interpretive, and evaluative. Factual questions have one correct answer that can be supported by evidence from the text. Interpretive questions are more open-ended; they can have several answers that can be supported by evidence from the text. Evaluative questions ask the reader to evaluate something from the text based on their own knowledge or experience.

The following are some examples of each type:

**Factual**

What are the names of Harry Potter's two best friends?
What kind of creature is Charlotte in *Charlotte's Web*?

**Interpretive**

How does Harry feel about his fame throughout the wizard community?
Why does Charlotte try to help Wilbur?

**Evaluative**

Put yourself in the role of Harry Potter. What would you do differently?
How do you feel about the way *Charlotte's Web* ended?

The shared inquiry strategy used by Junior Great Books focuses on interpretive questions, as these are open-ended, yet call for supporting evidence from the text that is being read. This requires students to back up their reasoning by pointing directly to evidence from the text.

Further, divergent and higher-level questions expand the discussion rather than limit it. Factual questions elicit and answer and then discussion stops. Divergent questions encourage further discussion. The kinds of dialogue that these questions generate expand students' thinking, help them think more openly, expose them to various viewpoints and ideas on a topic, and stress application of knowledge.

**Reading Response Logs:**

Many teachers have students keep reading response logs in which they record thoughts, questions, ideas, and other responses to the literature they are reading. Response logs, although used in other parts of the reading curriculum, can also be very useful before, during, and after meeting in groups. While students are reading, they can record thoughts or questions they want to remember to bring up during discussion with their group. They may jot down an important quote or excerpt that they want to point out to their group, or record a key insight that occurs to them as they read.

During group meetings, students will refer to their response logs to jog their memory, and they might even quickly jot down an important idea that is brought up in the discussion. After the meeting, students can have more time to write about how the group’s discussion went, what role they took on and how they think they did, and any new insights that might have come up as a result of the group's interaction.

Overall success of literature discussion groups can be measured by the depth and quality of your students' response to literature as seen in their written responses and their conversations about books. With successful response groups, you
will find evidence of learning from students' increased comprehension of what they are reading, and their articulation of their understanding of a wide variety of texts. As you confer with groups and with individual students, you will take note of their progress and the challenges they face, so you will have a clear idea of the next steps they need to take to enhance their reading and comprehension skills.

As with other collaborative learning experiences, it is essential to have multiple measures in order to get a true picture of student progress. Daniels (1994) lists several general categories of measures:

- Kidwatching/anecdotal records
- Checklists
- Interviews/conferences
- Portfolios/work samples
- Performance assessment
- Classroom tests

Response logs, mentioned previously, can serve to enhance and prepare students for the work they do in groups, and also to document their progress as they become thoughtful readers. Reading response logs show evidence of student learning throughout the year and can be a major part of a student's reading and writing portfolio.

Book Discussions

Encourage your students to read for pleasure with book discussions. Students can share with the class or a small group a book that they have recently read in a variety of fun, creative ways.

**Book Discussions**

How do you create excitement about what your students are reading for pleasure? One way is to have them talk about books with other students. Students will share their pleasure of reading the book, and encourage others to read it also. These sharing times don't need to be lengthy or require much preparation on the part of the teacher. You might want to start sharing about what you are reading, or read excerpts from books that have a theme that is similar to what students are studying.

Here are a few different ways to organize a book sharing time in your classroom.

**The Book Commercial**

Students can write or present a two-minute commercial about a book they have read. It could describe the plot and then end with a question, or students can read a riveting paragraph that ends with a cliff-hanger. Students can post the title and author of books somewhere in the classroom so that interested students can look up the book in the library.

**Interview a Character**

Two students who read the same book could perform an interview, telling about interesting events in the book.

**Pairing and Sharing**

Students are paired and discuss the book they are reading with another student. The pairs can rotate through the week to ensure students get a variety of ideas about what to read next.

**Multi-age Sharing**

Students in older grades can be paired with students in younger grades to share what they are reading.

**Read Book Reviews**

Students can search Web sites with book reviews listed by title, author, interest level, or subject. When students have
found a book that they would like to read, they can read the summary to the class or a small group, and tell three reasons why they would like to read the book.
Establishing the Main Idea

What Is It?

An important task of reading comprehension is to determine the importance and meanings of individual words, sentences, paragraphs, sections, chapters, and entire texts. Readers decipher the meanings of words within sentences, of sentences within paragraphs, and so on. As readers begin to grasp main ideas, they better understand the purpose of the details—which further strengthens their understanding of those main ideas.

In understanding the concept of a "main idea," it is useful to distinguish between the following terms: topic, main idea, theme, topic sentence, and purpose.

The topic of a text is the subject, or what the text is about. A topic can be expressed as a noun or a noun phrase. Some examples of topics include recycling, mammals, trees of New England, and names.

An idea is what you say about a topic. Ideas, including the main idea, are expressed as sentences. If someone asks you to identify the main idea of a passage and you respond with a single word, you haven't said enough; you've probably just identified the topic. Some examples of main ideas include:

- Recycling is expensive in the short term, but yields long-term savings.
- All mammals are the same in certain ways.
- The trees of New England are the most beautiful in the world.
- It's no fun when someone makes fun of your name.

A theme is an idea that is repeated throughout a text or collection of texts. For example, "the importance of family in shaping identity" is a theme that can be found throughout literature.

A topic sentence is the term used to identify the sentence in a paragraph that contains the main idea. Conventionally, the topic sentence is the first sentence in a paragraph, but not always. It can be at the beginning, the middle, or the end. While some paragraphs don't really have an easily identifiable topic sentence, some have more than one. (Which is the topic sentence in this paragraph?) Nevertheless, topic sentences are useful in determining the relationship between main ideas and supporting details.

For example, consider the following:

- All mammals are the same in certain ways. They all have lungs, hair or fur, and the ability to nurse their young.

These two sentences obviously bear an important relationship: the first carries the main idea while the second supplies details that support the main idea.

Finally, we often define purpose as "what the author is trying to say"—as if an author is never quite capable of saying what he or she means. The work of reading comprehension is best understood as a joint enterprise between author and reader. Authors can't communicate properly by themselves. They need readers to understand them.

An author's purpose—or even the main idea—is not always obvious and is often open to interpretation. An author is expected to do his or her best to construct text in a way that readers will understand, and except in the case of certain kinds of mystery novels, we trust that an author will not try to trick us.
In expository prose (non-fiction), an author typically tries to make his or her ideas clear and explicit. Still, we filter even the most direct messages through our own experiences, knowledge, beliefs, and understanding of the meanings of particular words.

Reading fiction is more subjective because main ideas are seldom stated explicitly and are often intentionally hidden, as when they are filtered through the persona of an "untrustworthy narrator" like Nabokov’s Humbert Humbert in Lolita.

**Why Is It Important?**

Identifying main ideas and working out the relationship between main ideas and supporting details is really the essence of reading comprehension. If we cannot understand what an author is trying to say or why an author has chosen to provide us with certain details, then we are not understanding the text.

Identifying the main idea and determining what is important are prerequisite skills in summarizing a text. Summarizing requires readers to determine important—and discard unimportant—details and to put the main ideas in their own words. Summarizing has been shown to be an important strategy in helping readers improve their abilities to construct meaning.

Identifying the main idea teaches students to discriminate the important information from the less important details in a text. The ability to identify essential ideas and salient information is a prerequisite to developing insight.

**How Can You Make It Happen?**

The process of working out the relationship between main ideas and supporting details is not something you can teach students one morning and then move on. Rather, the pursuit of meaning should be a daily focus, something you talk about every day and build into every text-based lesson from the time that students can begin to understand what a "main idea" is (some time in first grade) through high school and beyond. In other words, while you can and ought to explicitly teach strategies for finding the main ideas in texts (e.g., look for ideas that are repeated frequently), conversations about the meaning of texts, and the more difficult question of purpose, should be part of the ongoing thoughtful classroom discourse that characterizes high-quality instruction.

When beginning instruction in finding the main idea, it is important to establish a common language and a common set of expectations. Students should understand and be able to use terms such as main idea, topic, topic sentence, supporting detail, and author's purpose.

Second, it is important to model the process of determining importance and choosing the main idea of a text. Use the think-aloud strategy to model how you determine the main idea and which details in the text support your conclusion. Students should understand that the search for meaning in texts is often hard work, requiring considerable mental effort. Provide students with tools, such as graphic organizers, for analyzing texts and documenting their analysis.

Third, there is sometimes more than one correct answer. One student’s idea of an author’s main idea may be legitimately different from—and equally acceptable as—another’s.

Finally, and most important, establish the expectation that students will provide "text-based arguments" for their expressed beliefs about the text. If a student wants to claim that Huck Finn is an unfortunate victim, then expect him or her to point to those parts of the text that support this claim.

Here’s an example of how to organize a discussion of main ideas and supporting details. First, copy a paragraph such as the following on the board or some other place where every student can read it.
Of all the inventions that had an impact on the Chinese culture during Medieval times, the most important was printing. Before there was printing, all books were copied by hand. Books were therefore rare and expensive. The Chinese began printing in the A.D. 500s. They carved characters from an entire page on blocks of wood. They then brushed ink over a wooden page and then laid a piece of paper over the block to make a print. In 1045, a Chinese printer invented printing using moveable type; the books that were made using this process helped spread knowledge throughout China, to a degree that had not been possible before.

Ask students to identify the topic or subject of the paragraph. (A good answer might be "Printing" or "The Chinese invention of printing.") If students are having trouble, you can think aloud and help them by saying that most of these sentences relate to printing, either how it was done or what it helped to do.

Next, ask students to locate the topic sentence and identify the main idea of the paragraph. (The first sentence is a good example of a topic sentence. The main idea of the paragraph is probably that printing was the most important invention because it allowed for the spread of knowledge throughout China.)

Next, ask students to identify the supporting details. Remind them that in some paragraphs, there may be sentences that are not really related to the main idea and that some details are more important than others. Point out that information about how the printing was actually done seems less important than the fact that books were previously made by hand and were therefore rare and expensive. The actual date that moveable type was invented is less important than the (implied) fact that this, in some way, made it even easier to mass-produce books. Consider asking students why this might be the case.

As a way of getting further into the idea that some details are more important than others, have students make lists of the sentences in a paragraph in descending order of importance. Then, ask them to discuss their lists in pairs or groups.

**How Can You Stretch Students’ Thinking?**

A word web, or spider map, is a useful way of analyzing meaning. For example, a word web of the key ideas in the previous paragraph might look something like this:

```
before invention of printing
books copied by hand
rare and expensive

invention of printing in China
AD 500s
characters carved on wood blocks

after invention of printing
AD 1500
movable type
books more common, less expensive
spread of knowledge
impact on Chinese culture
```

It is a useful exercise to have students make their own graphic organizers such as this and then compare and discuss them. Students can make maps of randomly selected paragraphs and have others try to re-create the original, or, given word webs, students can write paragraphs that fit the webs. They can then compare their new paragraphs with the original.
Maps such as this one also provide a good foundation for other kinds of conversation. For example, what was the impact on Chinese culture? In what specific ways did Chinese culture change after the invention of printing? In addition, questions such as this provide a purpose for further reading.

**When Can You Use It?**

**Reading**

Give students a piece of informative writing that relates to a unit you are studying or an author you are reading. Have them create a word web to identify the topic, the main idea, and the supporting details of the passage.

**Writing**

Write a short paragraph that does not contain a topic sentence and have students write a topic sentence for that paragraph. Then, assign each student a topic that he or she knows something about. Challenge them to write a short paragraph that relates to the topic but doesn't have a topic sentence. Pair students and have each student write a topic sentence for his or her partner's paragraph.

**Math**

Have students choose a section or chapter from their math textbook and read the introduction to the section or chapter, recording the main idea and supporting details in a graphic organizer. Have groups of students use their graphic organizers to introduce the section or chapter to the rest of the class.

**Social Studies**

Have a "Current Events" day during which you bring interesting articles about current affairs from a newspaper into class. (You can also assign this as a homework assignment.) Distribute articles to pairs of students and have them use their graphic organizers to record the topic, the main idea, and the supporting details. Then, have the pairs use their graphic organizers as notes to help them summarize their article for the class.

**Science**

Assign students a paragraph from their science textbook. Have each student identify the main idea and supporting details of the paragraphs and then record the supporting details in a word web, leaving the main idea section blank. Pair students and have them exchange papers. Ask them to fill in the topic and main idea sections of their partners' word web based on the supporting details.
Lesson Plans

Main Idea: Chrysanthemum
This lesson is designed to introduce primary students to finding the main idea as a reading comprehension strategy. The lesson asks students to choose the main idea for sections of the story from a few possible choices. This is the first lesson in a set designed to teach students how to find the main idea of a story.

**Main Idea: *Chrysanthemum***

Grade Levels: 1 - 3

**Objective**
This lesson is designed to introduce primary students to finding the main idea as a reading-comprehension strategy. The lesson uses the book *Chrysanthemum*, by Ken Henkes, and has students choose the main idea for sections of the story from a few possible choices. This is the first lesson in a set of lessons designed to teach students how to find the main idea of a story.

**Materials**
- *Chrysanthemum* by Kevin Henkes
- A chrysanthemum
- Chart paper
- Sticky notes

**Planning and Diagnostics**
Finding main ideas is a key skill in the process of making sense of texts. Primary readers are probably ready to discuss "main ideas" when they can respond to questions such as, "What is the most important thing about coming to school?" or "What is the most important thing about owning a pet?" When you ask students questions such as these, you're not looking for a correct answer—you just want to make sure they understand the question and can determine its importance. If they can, they are ready to begin talking about "main ideas" in stories. If not, wait a few weeks and try again.

**Procedure**

**Hook/Engagement**
Say,
"Today we're going to read the story *Chrysanthemum* by Kevin Henkes. It's about a little mouse with the name...can you guess? [Wait.] That's right, 'Chrysanthemum.' Does anyone know what a chrysanthemum is? [Wait.] It's a kind of flower. Do you think that the little mouse likes her name? Would you like to be named Chrysanthemum? Yes? No? Why? Why not? Let's make a list of nice things about the name Chrysanthemum and not-so-nice things."

Make a table such as the one below. Invite students to help fill in the table.

<table>
<thead>
<tr>
<th>Nice things</th>
<th>Not-So-Nice Things</th>
</tr>
</thead>
<tbody>
<tr>
<td>Sounds nice.</td>
<td>Too long.</td>
</tr>
</tbody>
</table>
Vocabulary

- **Chrysanthemum** - a type of flower
- **Absolutely perfect** - nothing wrong at all; couldn’t be better
- **Absolutely dreadful** - everything wrong; couldn’t be worse
- **Wilted** - collapsed, like a flower that hasn’t had enough water

Chrysanthemum’s father likes to use fancy words such as *jaundiced*, *begrudging*, and *winsome*. These are low-frequency words that are probably not worth specific instruction at this age level. You can just point out that Chrysanthemum’s father enjoys using big words.

**Measurable Objectives**

Say,
"Today we’re going to talk about main ideas. A main idea is the most important idea in a story or in part of a story. I’ll help you think about main ideas in the different parts of the story. Then I’m going to ask you to tell me the main idea of the whole story."

**Focused Instruction**

Write the following sentences on chart paper, and read them aloud to your class:

1. Chrysanthemum loved the way that her name looked on an envelope.
2. Chrysanthemum loved the way her name sounded when her mother woke her up.
3. Chrysanthemum loved the way her name sounded and looked.

Say,
"Often, the main idea in a story is one that is repeated several times. As you read the story or hear it told, you keep seeing or hearing the main idea over and over, again and again. All of the sentences on the board tell the main idea of the story, but in different ways. I want you to be thinking about the main idea of the first part of the story while I read it."

Read until Chrysanthemum starts school. Then read the sentences you’ve written on the chart paper. Tell students that you are going to look back in the story and ask yourself the question, "What is the main idea?" only looking for the most important information.

Say,
"The story begins with Chrysanthemum's birth. Her parents think that she is perfect, and that the name Chrysanthemum is perfect for her. That her parents think she is perfect and that the name Chrysanthemum is perfect seem important.

"That she loves her name when she is older seems important. That Chrysanthemum loves the way that her name sounds is important. That she loves the sound of it when her mother wakes her is important. That she loves the way that her name looks is important. That she loves the way that it looks on an envelope is important."

Write on the board or chart paper, while you are thinking aloud.

**Important:**
- Her parents think she is perfect.
- The name Chrysanthemum is perfect.
- She love how it sounds.
- She loves how it looks.

**Main Idea: Chrysanthemum loves her name.**

"So, the main idea is that Chrysanthemum loves her name. I am going to circle the main idea so that I will remember later."

**Guided Practice**

Write the following on chart paper:

1. All of the students in Chrysanthemum's class have short names.
2. The students tease Chrysanthemum about her name and she feels horrible.
3. Victoria picks on Chrysanthemum about her name.

Read the above statements to students. Read until Chrysanthemum arrives home from her first day of school. Look back with the students to answer the question, "What is the main idea of this part of the story?"

Using student-generated responses, help them to choose the main idea statement. Provide feedback in the form of guided questions. For example:

- What do you think is most important on this page?
- Are there any words that are repeated? Repeated words give clues to the main idea.
- What do you think the author wanted to say in this part of the story?
- Is that what you would tell someone if they asked you what was most important about this part of the story?

Circle the main idea statement: "The students tease Chrysanthemum about her name, and she feels horrible." Ask students to explain their thought processes, and why they chose this statement.

Write the following on chart paper:

1. Chrysanthemum's parents still think that her name is perfect.
2. On the second day, Chrysanthemum does not want to go to school because the other students tease her about her name.
3. Chrysanthemum wants her name to be "Jane."

Read the above statements to students. Read until Chrysanthemum walks slowly to school, writing her name in the dirt. Look back at this part of the story to find the main idea, talking about each page. Ask students, "What do you think was most important on this page?"

Using student-generated responses, help students choose the main idea statement. Ask students to explain their thought processes. Provide feedback in the form of guided questions, then circle the main idea statement.

**Independent Practice**

Write the following on chart paper:

1. The other students' teasing made Chrysanthemum feel horrible. She did not feel like school was a good place for
2. The other students said that Chrysanthemum even looked like a flower. She felt bad.
3. Victoria told Chrysanthemum, "I just cannot believe your name."

Read the above statements to the students. Read until the flowers seemed to say, "Chrysanthemum." Have students look back to find the main idea. They can use sticky notes to mark the main idea or they can write it on a piece of paper. Have students think about what happened on each page and ask themselves, "What is the most important idea?"

Have students work with a partner to talk about their answer. Ask them to explain their thinking to their partner, especially if they each chose a different statement. Walk around the room to monitor progress. Provide feedback as needed in the form of guiding questions. Give students a chance to change their answers after working with a partner.

**Assessment**

Have the following written on chart paper:

1. All of the other students stop teasing Chrysanthemum because Mrs. Twinkle thinks Chrysanthemum is an absolutely perfect name. Then Chrysanthemum knows her name is perfect.
2. All of the students think Mrs. Twinkle is wonderful. She is named after a flower.
3. Mrs. Twinkle thinks that the name Chrysanthemum is absolutely perfect.

Ask students to write down the number of the above statement that most clearly expresses the main idea. Have students work with a partner to talk about their answer. Ask them to explain their thinking to their partner, especially if they each chose a different statement. Walk around the room to monitor progress.

If students exhibit proficiency at finding the main idea, have them choose the main idea of the entire book, using the circled main idea statements from each part of the book to help them. Review the main idea statements from each part of the story, then read the final three choices below aloud to students.

1. Chrysanthemum is a funny name.
2. It's wrong to tease people about their names.
3. Everybody's name is absolutely perfect—for them.

Have students vote on the statement from the above list that seems to best express the main idea of the story, then have them explain their answers. Note: Sentences (2) and (3) are both reasonable ways of expressing the main idea.

**Reflection and Planning**

Being able to find and express the main idea of a story gives students a structure that helps them organize, explain, and remember what they have read. Think aloud as you model this skill for students so that they get a sense of how an adult thinks about main ideas in stories.

If students have difficulty finding the main idea, read other books aloud and provide choices for the main idea statement. Read the book, and then the sentences, having students choose the main idea statement. Continue to use the vocabulary from this lesson.

When students are proficient at choosing the main idea statement, have them practice stating the main idea in their own words.
**Main Idea: *Animals Born Alive and Well***

This lesson is designed to help primary students continue working to find the main idea as a reading comprehension strategy. The lesson asks students to make lists of what mammals have in common and to choose the story's main idea. This is the second lesson in a set designed to teach students how to find the main idea of a story.

**Main Idea: *Animals Born Alive and Well***

Grade Levels: 1 - 3

**Objective**

This lesson is designed to help primary students continue working to find the main idea as a reading-comprehension strategy. The lesson uses the book *Animals Born Alive and Well*, by Ruth Heller, and has students make a list of what mammals have in common, and choose the main idea of the story. This is the second lesson in a set of lessons designed to teach students how to find the main idea of a story.

This lesson builds on the skill of finding the main idea, and assumes that you have already been working with your students on the practice of finding main ideas in text. If not, you might want to use the introductory lesson, Main Idea: *Chrysanthemum*.

**Materials**

- *Animals Born Alive and Well*, by Ruth Heller
- Chart paper
- Paper

**Procedure**

1. **Hook/Engagement**

   Say something like, "Today we're going to read *Animals Born Alive and Well*, by Ruth Heller. It's a book about mammals. Does anyone know what a mammal is? [Wait.] It's a kind of animal. Let's talk about mammals and make a table with animals we know that are mammals and animals we know that are not mammals."

<table>
<thead>
<tr>
<th>Mammals</th>
<th>Not Mammals</th>
</tr>
</thead>
<tbody>
<tr>
<td>human</td>
<td>chickadee</td>
</tr>
<tr>
<td>dog</td>
<td>goldfish</td>
</tr>
</tbody>
</table>

   Now, create a table and start to list the things that are the same about mammals.
Features of Mammals

<table>
<thead>
<tr>
<th>warm blood</th>
</tr>
</thead>
<tbody>
<tr>
<td>hair</td>
</tr>
</tbody>
</table>

Don't worry if students suggest some features that are shared by non-mammals as well. However, if students suggest features that only some mammals have (e.g., long tails), then you can challenge them, saying, "Are you sure all mammals have long tails?"

Once you have a good list and students agree on what mammals are and that they have certain features in common, then read the book to find out more about mammals, adding to the list as you read.

2. **Vocabulary**
   - Mammals - animals that have hair and nurse their young
   - Nurse - to get milk from the mother

3. **Measurable Objectives**

Tell students that they will continue to work on finding main ideas. Ask students what a main idea is. They should respond that main ideas are the most important ideas in a text. Tell students that they can't really understand a book unless they understand the main ideas. During the lesson, you will help them find the main ideas in the different parts of this book. Later, they will tell you the main idea of the whole book.

4. **Focused Instruction**

Say,

"Let's look at this book carefully before we read it. Look at the cover. Look at the title. Look at the pictures. What do you think that this book is going to be about? Also, can you guess the main idea?"

You may want to take this opportunity to distinguish between the topic and the main idea. Tell students that the book is about mammals. That's the topic, but it's not the main idea. The main idea will be something about mammals. Tell students that you will find out what the author wants you to know about mammals. Ask them, "What do you think might be the main idea about mammals?" Then read and find out.

Say something such as,

"Often authors use something called a 'topic sentence' to tell readers what the main idea is. A topic sentence often comes at the beginning of a text. It tells the main idea of the text. Let's look at *Animals Born Alive and Well* to see if there is a topic sentence at the beginning that states the main idea. 'Mammals are animals with fur or hair that nurse their young and breathe fresh air...their babies are born alive and well.' Is that the main idea?"

"Remember that authors often repeat words and ideas that tell the main idea. Let's read the story and see if we can find the ideas in these first sentences repeated again in the book."

5. **Guided Practice**

Read until the sentence, "Mammals tame all do more or less the same." Have students retell the last few pages in their own words. Look back at the last few pages to find that the author shows animals nursing. She says that,
"Camels are like all the others, they are nourished by their mothers." So, ask students what to add to the list. They should respond that "nursing their young" should be added to the list of things that mammals have in common.

Read until, "But mammals living in the sea have to surface frequently." Ask students to think about what else mammals have in common. Let students add their own words to the list. They may add something such as, "breathe fresh air."

<table>
<thead>
<tr>
<th>Mammals</th>
</tr>
</thead>
<tbody>
<tr>
<td>warm blood</td>
</tr>
<tr>
<td>hair or fur</td>
</tr>
<tr>
<td>babies born alive</td>
</tr>
<tr>
<td>nurse their young with milk</td>
</tr>
<tr>
<td>breathe fresh air</td>
</tr>
</tbody>
</table>

6. **Independent Practice**

Write the numbered choices listed below on the board or chart paper, and have students think about what the main idea is. Have students write down the main idea, and draw a picture or write about their choice.

Some readers may think that the main idea of the book is something like "Mammals have fur, breathe fresh air, and nurse their young." Strictly speaking, the main idea is that all mammals have certain things in common. That mammals have fur or hair, breathe fresh air, and nurse their young are "supporting details" to the main idea.

Ask student to read the choices below and choose the main idea of the book.

1. Mammals
2. Mammals have nurse their young and breathe fresh air.
3. All mammals are the same in certain ways.

**Assessment**

Have students draw pictures of two different mammals, showing one thing that is the same. Students who are capable of writing should be encouraged to write something about their pictures at the bottom. If students have truly understood the lesson, they will write about what the two different mammals have in common. They might write something like "All mammals are the same in some ways."

**Reflection and Planning**

Finding main ideas is a difficult skill for early readers, so it's not unusual if many of your students are still struggling with the concept. A sign of progress is if students seem to be able to distinguish between a topic (mammals) and a main idea (e.g., all mammals are the same in some ways).

If students are struggling, you might want to reteach this lesson, along with the introductory lesson, Main Idea: *Chrysanthemum*, using different books to find the main ideas. For more help, read Main Idea, an introductory article on
Main Idea: The Great Kapok Tree

This lesson is designed to continue working with primary students to find the main idea as a reading comprehension strategy. The lesson asks students to complete graphic organizers to find the main idea of each page and to then tell the main idea of the story. This is the third lesson in a set designed to teach about the main idea of a story.

Materials

- The Great Kapok Tree, by Lynne Cherry
- Three-column chart on chart paper
- Copies of three-column chart to pass out to individual students

Procedure

1. Hook/Engagement

Say,

Today we’re going to read The Great Kapok Tree, by Lynne Cherry. The Kapok tree is found in the Amazon rain forest. Before we look at the book, let’s talk about rain forests. What do we already know about rain forests? Where is the Amazon rain forest and what is it like? Show where the Amazon rain forest is on a map. Ask where other rain forests might be. (In a band around the equator.)

You might want to make a chart such as the one below.

Features of Rain Forests
lots of rain

- tropical climate
- many different kinds of animals
- snakes, monkeys, birds, alligators
- large, leafy trees
- produce oxygen
- few humans
- growing smaller

Read the description of the rain forest in the book, on the page opposite the title page, and have students close their eyes and make pictures in their minds while you read. Ask students to draw a picture of what they think that the rain forest looks like.

2. Vocabulary

There are several words in this book that may be unfamiliar to early readers. Here are some of them:

- **Kapok tree** - also known as a ceiba tree, a large tropical tree with large pods of silky floss used for making mattresses and life preservers
- **Generations** - one family after another; a measure of time
- **Ancestors** - families that came before us
- **Pollination** - how plants reproduce
- **Oxygen** - the gas we breathe to stay alive
- **Canopy** - a kind of roof formed by treetops
- **Amazon** - a river in South America; the largest in the world
- **Understory** - the plants growing on the ground, under the canopy

See the page opposite the title page for help in reviewing some of the vocabulary. You may want to introduce these definitions one at a time, as you come across the words in the story.

3. Measurable Objectives

Tell students that they will continue to work with finding main ideas. Ask students what a main idea is. They should respond that main ideas are the most important ideas in a text. Tell students that they can't really understand a book unless they understand the main ideas. During the lesson, you will help them find the main ideas in the different parts of this book. Later, they will tell you the main idea of the whole book.

4. Focused Instruction

Show students how to use a Who/What/Why chart as a way of summarizing some of the important parts of a book. Show a chart such as this:
Read the first page, then say:

I want to retell the main idea of this page. I am going to reread it asking myself, "What is the most important information?" What kind of questions can I ask myself? I can ask myself who did or said what and why.

To answer who, I know there were two men so I write two men under Who. To answer what, I read and see that they entered the rain forest. So, I write entered the rain forest and one pointed to the Kapok tree under What. To answer why, I have to think and make a connection between the words, illustration and what I know. The words don't tell me why, but the illustration does. The man has an ax, I bet he is going to chop down the tree. So, I write chop down the tree under Why. I will use the information on the chart to tell the main idea; two men entered the rain forest, and they were going to chop down the Kapok tree.

<table>
<thead>
<tr>
<th>Who?</th>
<th>What?</th>
<th>Why?</th>
</tr>
</thead>
<tbody>
<tr>
<td>two men entered the rain forest</td>
<td>one pointed to the Kapok tree</td>
<td>They were going to chop down the tree.</td>
</tr>
</tbody>
</table>

Read the next page, then say: Again I ask myself, "What is the main idea of this page?" Remember that the main idea can answer the questions who did or said what and why.

Fill in the chart talking about your thought process, the headings, and where to write what.

<table>
<thead>
<tr>
<th>Who?</th>
<th>What?</th>
<th>Why?</th>
</tr>
</thead>
<tbody>
<tr>
<td>the smaller man started chopping down the tree</td>
<td>then fell asleep</td>
<td>because he was hot</td>
</tr>
</tbody>
</table>

Explain that the main idea of the page is that the smaller man started chopping down the tree, but fell asleep because he was hot.

Read the next page, and continue filling in the chart with student input. Ask, "Who is saying something on the page? What did he say? Why?"

<table>
<thead>
<tr>
<th>Who?</th>
<th>What?</th>
<th>Why?</th>
</tr>
</thead>
<tbody>
<tr>
<td>the boa constrictor</td>
<td>said not to chop the tree down</td>
<td>because the tree was a tree where he and his ancestors lived, a tree of miracles</td>
</tr>
</tbody>
</table>
Explain that the main idea of this page is that a boa constrictor said not to chop down the tree because it was where he and his ancestors lived.

Read the next page. Fill in the chart with student input. Help students fill in the chart, with either words or illustrations.

<table>
<thead>
<tr>
<th>Who?</th>
<th>What?</th>
<th>Why?</th>
</tr>
</thead>
<tbody>
<tr>
<td>a bee</td>
<td>said not to chop the tree down</td>
<td>because his home is in the tree</td>
</tr>
</tbody>
</table>

5. **Guided Practice**

Pass out smaller versions of the three-column chart, then read the next page. Have students fill in the chart with either words or illustrations. Have them answer the same questions, "Who is saying what and why?"

<table>
<thead>
<tr>
<th>Who?</th>
<th>What?</th>
<th>Why?</th>
</tr>
</thead>
<tbody>
<tr>
<td>a troupe of monkeys</td>
<td>said not to chop the tree down</td>
<td>after you chop this one down, you will chop others and ruin the rain forest</td>
</tr>
</tbody>
</table>

6. **Independent Practice**

Have the students try filling in the chart themselves, one for each page. Continue until you reach the page with the child from the Yanomamo tribe.

Read the next two pages (when the man woke up and looked around at all the wonders of the rain forest) with the students. Have them fill in the chart on their own. As they are working monitor their progress. When they are done, have them share their charts with a partner finishing the sentence, "The main idea of this page is..."

Once your students have mastered using the chart to tell the main idea of the different parts of the story, have them use the chart to identify the main idea of the whole story. Ask them to look at the main ideas they have identified for each page of the story and think about the main idea for the whole story. Walk around and monitor their work.

Students may answer something such as:

Many different animals do not want the Kapok tree to be cut down because their lives depend on it.

7. **Assessment**

Review the student work for this lesson. The students' responses to the main idea for each page and for the whole story will determine who has mastered the skill of finding the main idea.

**Reflection and Planning**
At this point it may be useful to reflect on how much progress you've made helping your students identify main ideas. Be sure to teach the process of identifying main ideas and supporting details in everything you read with your students. Some students will understand these concepts sooner than others. Introduce a range of different graphic organizers to help students think about the texts they read, how these texts are organized, what they mean, or what the author intends us to think and feel.

If students are still having difficulty distinguishing between a topic (what the story is about) and a main idea (what the author wants to say about the topic), don’t worry. Finding “main ideas” is often difficult for students at this age level because it goes beyond the concrete details of the story to understanding of the essence of a story and the author’s purpose.

For more lesson plans on finding the main idea, see Main Idea: *Chrysanthemum* and Main Idea: *Animals Born Alive and Well*. 
Focused Mini Lessons

What Is It?

A mini lesson is a short lesson with a narrow focus that provides instruction in a skill or concept that students will then relate to a larger lesson that will follow. A mini lesson typically precedes reading workshop or writing workshop, but it can serve as an introduction to a social studies, science, or math lesson. Mini lessons can be used to teach particular skills, extend previous learning, create interest in a topic and generate questions, or introduce strategies.

Why Is It Important?

As Lucy Calkins explains in *The Art of Teaching Writing*, the mini lesson allows a teacher to convey a tip or strategy to students that they will use often (Calkins 1986). Sharing tips and strategies in this way allows students to gain valuable, relevant skills on a regular basis without spending too much time on drill and worksheets that might otherwise be used to teach the same skills. The lessons can focus on any number of topics, including reading, writing, problem-solving strategies and skills, or even classroom procedures. Using authentic student work as a springboard, teacher-created mini lessons can serve the needs of students by focusing on a single topic across multiple instructional levels.

When Should It Be Taught?

The mini lesson serves as a lead-in to a larger lesson in just about any subject area and can be as short as 5 minutes or as long as 15 minutes.

What Does It Look Like?

The mini lesson may be taught to a whole class, a selected small group, or individual students. The mini lesson should be short and focused on one strategy, skill, or concept. Teachers introduce the topic; demonstrate the strategy, skill, or concept; guide student practice; discuss the topic; volunteer more examples; and talk about what was taught. At the end of the mini lesson, teachers should give directions for the next activity, the literacy centers, or independent assignments.

How Can You Make It Happen?

A great place to find ideas for mini lessons is right in your own classroom. What are your students struggling with? What errors pop up in their work over and over again? Take those errors and turn them into learning opportunities.

1. Primary

   If students are having trouble with bigger words, the strategy of finding little words in the word might help. Take a sentence that contains a big word, such as *sentence* in the following example, and write it for students to read.

   There were many words in the *sentence*.

   Model what would happen if you came across the word and did not know how to read it. Thinking aloud, try to find a little word in the word you don’t know. Are there any words that you know? Show students that you can find the words *sent* and *ten* in the big word. You could take the big word and write each letter on an index card to show students clearly how the little words can be found. Then you might ask, "What things have many words in them?" The answer might be dictionaries, books, paragraphs, sentences, and so forth. Tell students that finding little words within a bigger word might help them read a word they don't know.
2. **Intermediate**

A common problem that intermediate students have is how to use the words *there*, *their*, and *they're*. Searching through student writing is likely to turn up several cases of correct and incorrect usage of these words. Taking a few sentences from student work to analyze with students allows them to think about the words in an authentic context. These words can also be found in books the students are reading.

You might start a mini lesson on the uses of *there*, *their*, and *they’re* by showing four or five sentences from student work that uses these words. Some teachers put sentences on transparencies and use an overhead projector. You might also use a computer to link to a TV monitor to display sentences from student work. Allow students to try to figure out which sentences are correct. From this discussion, guide students toward describing the correct usage of each word.

Ask students to find a passage or two from books they are reading that contain the words. Students can use these passages to confirm their ideas about the correct usage of words that they came up with in their previous discussion.

As a class, create two correct sentences for each word. Post these sentences on the wall of the classroom so that students will be able to refer to them as they write in the future. This mini lesson might lead into writing workshop.

3. **Middle/High School**

Teaching students to elaborate on their ideas can help them better support and clarify their ideas and write more commanding essays and papers. Reflecting on and evaluating ideas is a strategy that students can use both in discussions and writing.

Model how to interact with texts in different ways to show students what it looks like to elaborate on an idea. Think aloud as you model how to clarify, speculate, observe, or argue with texts.

Some prompts students can use when clarifying ideas are:
- I think ___ because...
- I was surprised by ___
- This is the same as ___
- Now I see ___
- One example of ___ is...

After modeling these strategies using the prompts, have students practice using the strategies by discussing texts with a partner.

**How Can You Measure Success?**

To measure the success of the mini lesson, look at student work to see if it has been affected by the topics addressed in the mini lessons. For example, a week after a mini lesson on *there*, *their*, and *they’re*, look to see if the words are being used correctly more often. What about a month later?

It may be necessary to do more than one mini lesson on a given topic before improvement is seen throughout the class.
Predicting

What Is It?

Effective readers use pictures, titles, headings, and text—as well as personal experiences—to make predictions before they begin to read. Predicting involves thinking ahead while reading and anticipating information and events in the text. After making predictions, students can read through the text and refine, revise, and verify their predictions.

The strategy of making predictions actively engages students and connects them to the text by asking them what they think might occur in the story. Using the text, students refine, revise, and verify their thinking and predictions.

Why Is It Important?

Making predictions activates students' prior knowledge about the text and helps them make connections between new information and what they already know. By making predictions about the text before, during, and after reading, students use what they already know—as well as what they suppose might happen—to make connections to the text.

Snow (1998) has found that throughout the early grades, reading curricula should include explicit instruction on strategies used to comprehend text either read to the students or that students read themselves. These strategies include summarizing the main idea, predicting events or information to which the text is leading, drawing inferences, and monitoring for misunderstandings.

How Can You Make It Happen?

Teachers should begin modeling the strategy of making predictions regularly with young students, and they should continue using this strategy throughout elementary and middle school—until students have integrated the strategy into their independent reading.

Model how to make predictions for emergent readers. The "think-aloud" strategy, is particularly helpful.

- Think aloud before reading a book to students, modeling the process of predicting before reading. "I found an interesting book at the library and by looking at the cover I am guessing or predicting the story will be about ______ and _______. When we use what we know to make a guess before we read it is called 'predicting.'"
- Think aloud while reading a book to students, modeling the process of predicting while reading. "Hmmm... my prediction that the story would be about ____ was right, but I did not think that ____ would happen. I'll make a new prediction that _____ will happen based on what we read."
- Think aloud after reading, modeling the process of reflecting on predictions after reading. "My first prediction was ______. After reading part of the story I predicted ______. Now that I am finished reading I think my predictions were close/not close to what really happened because_____."

As students move toward independent integration of the strategy, teachers should provide opportunities for them to make, revise, and verify their own predictions before, during, and after reading. Here are some suggestions:

- Pre-select and mark stopping points throughout a book. Use sticky notes to mark students' books if they are reading independently.
- As a class or in groups, have students make and discuss predictions. Have them think aloud as they share their predictions.
- Have students write or draw predictions in journals, learning logs, or on chart paper to refer to throughout the story.
At the pre-selected stopping points, have students refine, revise, and verify their predictions. Make changes to the journals or chart as needed.

At the end of the story, have students reflect on their predictions in relation to the entire story and ask them to draw a final sketch or write a learning log response about their predictions. Encourage students to think about why their prediction was correct or incorrect and what information they are using to make that decision.

Taking Predicting to the Next Level

As students become proficient in making predictions, they can start using the Direct Reading-Thinking Activity (DR-TA) strategy, which guides students in making predictions about a text and then reading to confirm or refute their predictions. Students justify their predictions, discuss or write their explanations, and make new predictions based on evidence from the text. Students can also determine whether predictions came from their own prior knowledge and which predictions were based on evidence from the text.

When Can You Use It?

Reading/English

Use the prediction strategy when introducing new picture books to primary students or new chapter books to older students. With young students, read the book aloud making predictions as a class or a group and reading to confirm the predictions. With chapter books, have students make predictions at the start of each chapter so that their predictions draw from the chapters they have already read. Have students make predictions based on other books they have read by the same author or other books they have read in the same genre. After reading, discuss the text and any information that helped verify or caused them to revise their predictions.

Writing

After students read a text or passage using the prediction strategy, have them write a summary of their initial prediction and why it was correct or needed to be modified. Students can justify their ideas based on evidence from the text.

Another activity to use when teaching predicting is to have students write the first part of a story and then trade stories with a partner and continue that partner’s story, anticipating future events and the story’s resolution.

Lesson Plans

Predicting, *The Little Mouse, the Red Ripe Strawberry, and the Big Hungry Bear*

This lesson is designed to introduce predicting as a reading strategy to primary students using the book *The Little Mouse, the Red Ripe Strawberry, and the Big Hungry Bear* by Don and Audrey Wood. In this lesson, students make and refine predictions. This lesson is the first of a set of predicting lessons designed for students in primary grades.

Grade Levels: K - 2

Objectives

This lesson is designed to introduce predicting as a reading strategy to primary students using the book, *The Little Mouse, the Red Ripe Strawberry, and the Big Hungry Bear* by Don and Audrey Wood. In this lesson, students make and refine predictions. This lesson is the first of a set of predicting lessons designed for primary grades.

Predicting is an early primary skill that students should be introduced to early in the year. Students should have some...
experience making guesses and making predictions about events that are not story-related. As students develop their skills of making predictions, they will learn to modify or change their predictions, based on information from the text.

Materials

- *The Little Mouse, the Red Ripe Strawberry, and the Big Hungry Bear*, by Don and Audrey Wood
- Sticky notes
- Graphic Organizer
- At least one fresh strawberry per student placed in a paper bag
- One strawberry on a plate

Procedure

1. **Hook/Engagement**

   Engage students with this activity before making predictions about the book you will read. Activate prior knowledge and engage students by placing the closed paper bag with the strawberries in a central location. On the chalkboard write the word "prediction". Say, "I wonder what might be in this bag." Guide students as they make a prediction about what might be in the paper bag and upon what information they are basing that prediction. Once you have gathered student responses, open the bag, peer inside, and tell students that the item inside is red. Revise their predictions as needed emphasizing that you have more information to use now. Tear open the paper bag and make final revisions to the predictions emphasizing that the prediction changed based on the information you gathered. State that this process is the same when you read a book. Your predictions change based on the information you gather as you read.

   Ask students what the strawberries might have to do with the story you are going to read. Accept any reasonable answers and if needed provide the information that a strawberry is a sweet tasting fruit that people as well as animals eat.

2. **Vocabulary**

   **Predicting**: Using the pictures, the title, and what you already know to make guesses about a story before, during, and after reading.

3. **Measurable Objectives**

   Tell students they will be using a new reading strategy that calls for them to use prior knowledge to make predictions about the text and then read to prove or refine those predictions.

4. **Focused Instruction**

   Mark the book with a sticky note at the following stopping points:

   - First stopping point: Cover
   - Second stopping point: Page reading "But, little Mouse, haven't you heard about the big hungry bear?"
   - Third stopping point: Page reading, "BOOM! BOOM! BOOM!"...etc...
   - Fourth stopping point: Page reading, "Quick! There's only one way in the whole wide world... "etc...
   - Fifth stopping point: End of the story

   Model how a good reader makes predictions. Hold up the book *The Little Mouse, the Red Ripe Strawberry, and the Big Hungry Bear* by Don and Audrey Wood and show the cover to the class. Use the Think-aloud strategy to
model the process of predicting before reading.

"I found this interesting book at the library and by looking at the cover and reading the title, The Little Mouse, the Red Ripe Strawberry, and the Big Hungry Bear, I am guessing or predicting the story will be about a mouse, a bear, and a strawberry. Maybe the mouse takes a strawberry from the hungry bear. When we use what we know to make a guess before we read it is called "predicting".

Read the story aloud to the second stopping point. Think-aloud while reading the book to students, modeling the process of predicting while reading.

"Hmmm... my prediction that the story would be about a mouse, a bear, and a strawberry was right, but I did not think that the mouse would be picking the strawberry near his house. I'll make a new prediction that the bear comes to the mouse's house to take the strawberry from based on what we read."

Read the story aloud to the third stopping point. Think-aloud, modeling how to refine predictions and make new predictions while reading.

"Hmmm... my prediction that the story would be about a mouse, a bear, and a strawberry was right, but I did not think that the mouse would be so scared. I'll make a new prediction that the mouse is too afraid to eat the strawberry and runs away based on what we read."

Read the story aloud to the fourth stopping point. Think-aloud while reading a book to students, modeling the process of predicting while reading.

"Hmmm... my prediction that the story would be about a mouse, a bear, and a strawberry was right was right, but I did not think that the person telling the story would want a piece of the strawberry. Do you think I need to change my prediction?"

Elicit responses from the students about the prediction/s based on what the text is saying and what the pictures are telling them.

Read aloud to the end of the story. Think-aloud after reading, modeling the process of reflecting on predictions after reading. Cite evidence from the illustrations and text to support your thinking.

"My first prediction was that the story would be about a mouse, a bear, and a strawberry and that the mouse would take a strawberry from the hungry bear. After reading part of the story I predicted that the mouse was too afraid to eat the strawberry and would run away. Now that I am finished reading I think my predictions were close some of the time because there was a mouse and a strawberry. My predictions were not close because the bear did not come and take the strawberry but the person telling the story got the mouse to give him half of it. Who do you think was telling the story? Maybe it was a bear? Maybe it was a person trying to trick the mouse out of half of the strawberry? What do you think?"

5. **Guided Practice**

Select another book, possibly about mice, to read aloud. Assign three to five students to a group to share their predictions. Hand out the graphic organizer for students to keep track of their predictions. You may want to have other adults volunteer to assist students in writing their predictions.

Before reading the story aloud, share and discuss predictions as a class and then complete the 'before reading' section of the Prediction Organizer.
Read the story, stopping at various points to allow groups to revise, verify and make new predictions. Ask a student in each group to share a prediction using the "think-aloud" strategy. Students can take turns writing down the prediction or dictating it to an adult.

When you finish reading the story aloud allow time for the groups to make final revisions to predictions and complete the 'after reading' section of the Prediction Organizer. Ask a member of each group to "use the "think-aloud" strategy to share their groups' predictions."

Another suggestion is to use pictures to make a prediction about what may be happening. Cover part of the picture and have students make a prediction, and then uncover the picture and have students revise their predictions. Discuss how having more information can help to make a better prediction.

6. **Independent Practice**

Begin self-selected reading time by having students make a prediction about a book they have chosen. Have students write or draw a picture of the prediction on the Prediction Organizer. Circulate around the room during self-selected reading time asking students about their predictions and whether they need to revise the prediction based upon what they are reading or understanding from the pictures.

7. **Assessment**

Once students have had experience with using prediction as a strategy to improve reading comprehension, you will want to determine their success at using the strategy. Distribute the Prediction Organizer at the beginning of read aloud time, and select a book that students may not be familiar with. Before you read, ask students to write or draw a picture prediction on the Prediction Organizer. During reading, pause to allow students to verify or revise predictions without offering guidance. After reading, ask students to respond to the last section of the Prediction Organizer "Did I predict what happened in the story? Why or why not?"

**Reflection and Planning**

Collect and review student responses to determine students who are in need of additional instruction. Reflect on how you could enhance the lesson, and determine whether students would benefit from another lesson to reinforce the strategy of predicting. Be sure it is not a student's inability to write that you are assessing, but the student's ability to make predictions about the text.

For more practice with predicting, try the lesson plans Predicting: *Strega Nona* and Predicting, DR-TA: *The Garden of Abdul Gasazi*.

**Predicting: *Strega Nona***

This lesson is designed to establish predicting as a strategy for primary students and uses the book *Strega Nona* by Tomie de Paola. Students will make predictions prior to reading and refine predictions while reading to help them more easily understand new concepts. This lesson is the second of a set of predicting lessons designed for students in primary grades.

Grade Levels: K - 2
Objectives

This lesson is designed to establish predicting as a strategy for primary students, using the book, Strega Nona by Tomie de Paola. Students will predict prior to reading and refine predictions while reading in order to more easily understand new concepts. This lesson is the second of a set of predicting lessons designed for primary grades.

Predicting is an early primary skill that students should be introduced to early in the year. Students should have some experience making predictions before participating in this lesson.

Materials

- Strega Nona by Tomie de Paola
- Large cooking pot
- Strega Nona vocabulary
- Board to post Strega Nona vocabulary words and to write predictions on
- Sticky notes
- Prediction Handout (label the three columns with "before reading", "during reading", and "after reading")
- predict definition

Procedure

1. Hook/Engagement

Prior to the lesson, write Strega Nona vocabulary words/phrases ("Calabria", "Grandma Witch", and "magic pot") on separate sheets of paper and place them into the cooking pot along with the copy of the book Strega Nona. You can also choose additional vocabulary if needed. Place the pot in the read aloud area of the classroom where students can see it but not what is inside of it. Post the definition of predict. Remove one vocabulary word from the pot at a time and read the word/phrase to the students. Tell students that these words and phrases are used in the story and ask if anyone knows what they mean. You might wish to have a map of the world with your location as well as Calabria, Italy marked on it for reference. Ask students to think about what the story might be about. Have them share their predictions. If students are struggling, think-aloud to model a prediction. "Since the words 'Grandma Witch' and 'magic pot' are in the story, I think the old lady on the front cover is the witch and that she has a magic pot."

2. Measurable Objectives

Tell students that they will use prior knowledge make predictions about this story. They will make and refine predictions as they read, and this will help them to understand the story.

3. Vocabulary

- Calabria-a region in Italy
- Grandma Witch-an old woman who knows magic
- Magic Pot-a cooking pot that has magic powers
- Predict-using the pictures, the title, and what you already know to make guesses about a story before, during and after reading

4. Focused Instruction

Mark the book with a sticky note at the following stopping points:

- First stopping point: Page reading, "In a town in Calabria..."
- Second stopping point: Page reading, "And Strega Nona called Big Anthony in for supper..."
Read to the first stopping point. Tell students they will be using the reading strategy that calls for them to make predictions about what they will read and then read to prove those predictions. Review the poster with the definition of the word predict. Remove the copy of Strega Nona and show the cover to students. Before reading ask students to "think-aloud" and give predictions about the story. Elicit from students what information they are using to make predictions (cover illustration and title). Students should also be encouraged to use correct vocabulary as they think-aloud, "Looking at the illustration on the cover I think the story might be about an old woman and her pet rabbit because they are in the picture together." Distribute Prediction Handouts and have students write or draw predictions to complete the "before reading" section. Read aloud to the second stopping point at the end of the first page. Ask students "What do you think now? Why? What in the text makes you believe that? What changes need to be made to our predictions? What do you think will happen next?" Encourage students to explain their thinking and reasoning as they discuss changes or verifications to their predictions.

5. Guided Practice

Repeat this process for the third stopping point. At the fourth stopping point allow time for students to check the original prediction they made and make any changes needed to the "during reading" section on the prediction handout. Encourage students to reflect on what they have heard. Then have students make a new prediction. After students have heard the entire story divide them into pairs. Discuss the importance of finding and citing evidence in the text to prove or refute their predictions. Ask them to discuss their initial predictions with their partner and then complete the "after reading" section of the Prediction Handout. Circulate around the room listening to students' responses and assisting as needed.

6. Independent Practice

Review the Prediction Handout with students to ensure they understand the process. Select another text at the appropriate reading level and pre-mark several stopping points. Have students write initial predictions on a Prediction Handout before, during, and after reading. Circulate among students as they complete each section to offer assistance and encourage reflection.

7. Assessment

As a method of assessing student comprehension of using prediction as a reading strategy select several students per day over the course of a week to verbally discuss with you how predictions are made. Determine if students are able to use titles, illustrations, as well as information from the text to verify or modify predictions as a story is being read.

Reflection and Planning

For students who need additional practice predicting, have them repeat this lesson using a different story. If students are struggling with writing or drawing predictions, have the verbally explain predictions to you or to a partner. To continue working on predicting, you may use the additional lesson on this topic. Each will explore the topic in a bit more depth, expanding students' understanding of the concept.

For more help use the lesson that introduces prediction, Predicting: The Little Mouse, the Red Ripe Strawberry, and the
Big Hungry Bear. When your students are ready to move on, try Predicting: The Garden of Abdul Gasazi.

Predicting: DR-TA, The Garden of Abdul Gasazi
This lesson is designed to expand students' predicting skills using the Directed Reading-Thinking Activity (DR-TA) strategy. Predicting prior to reading and refining predictions while reading can help students more easily understand new and unfamiliar concepts. Revisiting text to verify and clarify predictions increases comprehension of the reading material.

Grade Levels: K - 2

Objective
This lesson is designed to expand students' predicting skills using the Directed Reading-Thinking Activity (DR-TA) strategy. Predicting prior to reading and refining predictions while reading can help students more easily understand new and unfamiliar concepts. Revisiting text to verify and clarify predictions increases comprehension of the reading material.

For students to be able to use the DR-TA strategy to understand texts, they need to be able to make predictions and read to determine if the predictions are correct or if they need to be modified. Students who do not understand how to make predictions might need to participate in the two previous lesson plans, Predicting: The Little Mouse, the Red Ripe Strawberry, and the Big Hungry Bear, and Predicting: Strega Nona using different texts to practice the skill of predicting.

Materials
- The Garden of Abdul Gasazi by Chris Van Allsburg
- DR-TA bookmark guide (see below)
- sticky notes

Procedure
1. Hook/Engagement
   Start the lesson by engaging students in the problem of the book. Ask them, "What would you do if you had to watch a neighbor's dog that was not well-behaved?" Brainstorm all of the things that could happen in this situation, such as: the dog could chew something valuable, the dog could bite, the dog could run away. Have students make predictions about what this story is about, based on your question.

2. Measurable Objectives
   Tell students that they will make and refine predictions and understand how to use the DR-TA bookmark guide to refine predictions as they read.

3. Focused Instruction
   Prior to the lesson, write the definition of predict (to tell in advance) on the board, and mark the book with
sticky notes at points to stop and make predictions. Below are suggested stopping points.

- First stopping point: Mark the end of the page illustrated with Alan and Fritz walking across a bridge.
- Second stopping point: Mark the end of the page illustrated with Alan running through the garden gate.
- Third stopping point: Mark the end of the page illustrated with Alan talking with Abdul Gasazi in front of the fireplace.
- Fourth stopping point: Mark the end of the page illustrated with Alan and Abdul Gasazi standing in front of a group of geese.
- Fifth stopping point: Mark the end of the page illustrated with Alan walking toward Miss Hester’s house.
- The sixth stopping point is the end of the book. You may decide you do not need to mark it.

Distribute one copy of the DR-TA bookmark guide to each student, and introduce Chris Van Allsburg’s book *The Garden of Abdul Gasazi*. Tell students you will show them a new reading strategy that calls for them to make predictions about what they will read and then read to prove those predictions. Review the definition of **predict**, and review step one of the DR-TA bookmark guide. Ask students, "What do you already know about this subject?" Then ask students what they already know about Chris Van Allsburg. Write responses on the board.

Show the book to students and ask them to look at the title and picture and then to predict what they think the story might be about. Write all predictions on the board without judging the validity of the predictions. Ask students, "Why do you think that? What in the title or illustration makes you believe that will be what the story is about?" To model this activity, share your own prediction with students and explain your thinking and reasoning.

Read to students to the first stopping point. Then ask them to prove or modify their predictions. Ask students, "What do you think now? Can you prove your predictions or do you need to modify them? What do you think will happen next and why? What in the text makes you believe that?" Review your own prediction, and verify or modify it based on the reading. Explain your thinking and reasoning. Make changes to your prediction by marking through it, not erasing it; you will want to revisit your original prediction as well as the students' predictions as the lesson progresses.

### 4. Guided Practice

Read to the second stopping point. Then ask them to review step three of the DR-TA bookmark guide, prove or modify predictions, and be prepared to respond. When all students have had a chance to review step three, ask, "What do you think now? Why? What in the text makes you believe that? What changes need to be made to our predictions? What do you think will happen next?" Encourage students to explain their thinking and reasoning as they discuss changes or verifications to their predictions. Mark any changes on the board.

Repeat this process for stopping points three, four, five, and six. Encourage students to refer to the bookmark-guide when at the end of each section and reflect on what they have read.

After students have read the entire text and have been given a chance to verify or modify predictions they made, provide them with the following prompts: "I know I could verify/would have to modify my prediction when I read this: ______ that verified or made me modify my prediction." Discuss the importance of finding and citing evidence in the text to prove or refute their predictions. You may want to divide the class into groups for this discussion. Circulate through the room listening to students' responses.

### 5. Independent Practice

Review the DR-TA bookmark guide with students to ensure they understand the DR-TA process. Assign a text at the appropriate reading level and pre-mark several stopping points. Have students write initial predictions in a
learning log, journal, or on a piece of paper. Circulate among students as they read to offer assistance and encourage reflection.

6. **Assessment**

As a method of assessing student comprehension of the material, have students write a brief summary of their initial predictions and how those were verified or modified as they read the text. Ask students to cite text as evidence.

**Reflection and Planning**

For students who need additional practice using the DR-TA strategy, have them repeat this lesson using a different story. If students are struggling with the skill of making and refining predictions, have them repeat a previous lesson on predictions, using different texts.

When students are proficient at using this strategy, have them focus on finding evidence from the text to support their predictions, and encourage them to make predictions independently as they read.
**Reading Aloud**

**What Is It?**

Reading aloud means just that—reading aloud. When we read to students, we take advantage of the fact that until about the eighth grade, young people have a "listening level" that significantly surpasses their reading level. When we read aloud to students, we engage them in texts that they might not be able to read. In the process, we expand their imaginations, provide new knowledge, support language acquisition, build vocabulary, and promote reading as a worthwhile, enjoyable activity. All students, from pre-school through high school, can benefit from being read to. Listening to a fluent, expressive, and animated reader can help students make connections between written and spoken language.

**Why Is It Important?**

- The single most important activity you can do to build the knowledge students require for eventual success in reading is to *read aloud* to them (Anderson et al. 1985).
- Students can listen on a higher language level than they can read, so reading aloud makes complex ideas more accessible to students and exposes them to vocabulary and language patterns that are not part of their everyday speech. This, in turn, helps students understand the structure of books when they read independently (Fountas and Pinnell 1996).
- Reading aloud is the foundation for literacy development. It is the single most important activity for reading success (Neuman, Copple, and Bredekamp 2000).
- The reader's pauses and emphases allow students to better understand the phrasing and fluency of the language and to hear new vocabulary and the way the words are used (Fountas and Pinnell 1996).
- Listening to others read helps students develop key understanding and skills, such as an appreciation for how a story is written and familiarity with book conventions, such as "once upon a time" and "happily ever after" (Neuman et al. 2000).

**All Students**

To become lifetime readers, students of all ages need role models who are readers. By getting excited about books, taking time to read to students, and sharing your interest in books, you inspire students by showing them the positive effects of reading. The discussions, memories, and time you spend reading with students can help them gain a desire to read for pure pleasure.

**Elementary Students**

Reading aloud to students, regardless of their reading ability, provides them with the understanding that print has meaning and can tell a story. Young students can become familiar with the phrasing, expression, and flow of sentences in stories or texts that are read aloud to them.

A student's listening level, the level of text that he or she can understand when it is read aloud, is far above the reading level until about eighth grade. When students listen to a text that is above their reading level, they comprehend more difficult and interesting material and broaden their vocabulary. Fourth-grade students can understand texts written on a seventh-grade level, and these texts are most often more interesting and complex than those students can read on their own. For example, five- and six-year-olds usually enjoy listening to *Charlotte's Web*, even though it is written on a fourth-grade reading level.
Middle- and High-School Students

Reading aloud to middle- and high-school students can motivate them to read, enticing them with good storytelling and providing a model of excellent reading, phrasing, expression, and pronunciation. Reading aloud to students whose second language is English can help them to make connections between written and spoken language.

If students follow along as you read aloud, they can see how the pauses in speech match the punctuation and structure of written sentences. This connection can also be reinforced by reading students' writing aloud to determine whether the written phrases and sentences flow as they should. This should be done in a safe environment with students' permission, and students should be encouraged to read their own writing aloud to determine if revisions are needed.

Provide experiences for students to listen to fluent, expressive, and animated readers. Reading aloud also provides a good forum for dialogue and interpretation. There are many texts, such as poetry, speeches, and plays, that are meant to be read aloud and can take on a new meaning when performed. Encourage students to choose a particular character when reading Shakespeare aloud, and discuss how the text can become more powerful, meaningful, and entertaining when read aloud as opposed to when it is read silently.

How Can You Make It Happen?

Reading aloud can be done with students from preschool through high school, making reading an enjoyable part of the day. When students within one classroom are reading on different levels, and therefore reading different texts, reading aloud a common book can help to create a classroom community with shared experiences. A text that is read aloud provides a base from which to discuss themes and ideas or to model reading and thinking strategies.

Guidelines for Choosing Texts to Read Aloud

Any text is suitable for reading aloud: books, poems, newspaper or magazine articles, or anything else that is interesting and engaging.

- Choose texts that match your instructional goals.
- Keep students' hobbies and maturity and reading levels in mind, and choose texts that most of the class might be interested in.
- Read texts from all subjects, including science articles, math word problems, historical accounts, biographies, literature, and so on.
- Increase the complexity of the texts as the year progresses.

Guidelines for Reading Aloud

Any text that is chosen to be read aloud should be thoroughly reviewed by the adult reading the text and familiar enough to be read with expression and meaning.

- Start by reading aloud for 10 minutes each day, beginning with fairly simple texts and moving to more difficult material. As students' attention spans grow, lengthen the read-aloud time.
- Be clear about your purpose of having students read aloud. If the purpose is to have students perform for the class or increase their fluency, then provide time for students to practice.
- Read with expression and show enthusiasm about the texts you read. Be dramatic: Use different voices for different characters, whisper scary parts, read quickly and loudly during exciting parts, and so on.
- Discuss the text's language and events and students' responses. By choosing the breaks carefully, you can create logical stopping places to take questions or comments. Have students turn to a neighbor to share their thoughts, or have a whole class discussion.
To help develop critical thinking, ask questions before, during, and after reading, such as:
- "What is the problem here?"
- "What do you think will happen next?"
- "What would you do in this situation?"
- "Why did you like or dislike the resolution?"
- "What is the most important part of the text?"
- "How would you summarize this chapter?"

Having students read aloud for the purpose of assessing reading skills and monitoring reading strategies should be done in an environment that is safe and will promote students' self-esteem. Having students read consecutive paragraphs aloud for the first time or "round robin reading" may not be the best ways to improve student comprehension.

Reading aloud is only one component in a balanced literacy program and should not replace the time students spend reading silently.

**How Can You Stretch Students' Thinking?**

Teachers may combine reading aloud with a companion technique, the Think-Aloud Strategy, verbally modeling the thinking that goes on during active reading.

Older students can read aloud to younger students after practicing with text until they are confident. Provide a safe environment, and do not force students to read aloud if they are not willing. Ensure enough practice so the reading is fluent, expressive, and successful.

You may read passages of difficult texts while students follow along or take notes. Since students can listen at a higher level than they can read, hearing the text allows them to process the information using a different learning style. It also provides modeling for phrasing and pronunciation of difficult texts.

**When Can You Use It?**

**Reading/English**

Reading aloud can be used to develop story structure, increase vocabulary, and provide students with material for higher-level discussions. Several versions of a story, such as *Cinderella*, can be read aloud in order to do a comparative analysis, or several stories by one author can be read aloud before an author study.

**Writing**

Students can write about texts that have been read to them and make connections to their prior knowledge and other texts. Students' writing can also be read aloud to determine if the writing needs revisions or clarification.

**Math**

Read word-problems aloud so that students can focus on the problem's meaning before they try to find the answer. Biographies of mathematicians or stories about new mathematical theories can be read aloud to students to help them gain a better understanding of the processes used by mathematicians. For example, during a study of the development of hyperbolas, parabolas, and ellipses, a teacher or student may read an article about Hypatia, one of the first female mathematicians.
**Social Studies**

You can read aloud and discuss with students primary documents or speeches that relate to the time period being studied.

**Science**

Read aloud news articles or scientific journal articles that relate to the science topic being studied. Students can read along and then discuss the article's vocabulary or content.
Repeated Reading

When asked about reasonable adaptations teachers can make to support learning from instructional materials, some of the most frequently cited adaptations are those involving peer support (i.e., cooperative learning groups, student pairing) (Schumm & Vaughn, 1991; Schumm, Vaughn, & Saumell, 1994). Fortunately, students like working in small groups and in pairs (Elbaum, Schumm, & Vaughn, 1997) and appreciate it when teachers provide structure in teaching students how to work together and learn from each other (Elbaum, Moody, & Schumm, in press).

What is the adaptation?

Nonfluent readers typically read in a piece-by-piece, word-by-word manner and are slower and less accurate than fluent readers in decoding. With such inadequate reading patterns, non-fluent readers typically fall behind their peers and do not find enjoyment in reading. Moreover, because their reading is laborious, understanding of text is hampered.

The method of repeated reading was developed to help non-fluent readers improve fluency and, ultimately, reading comprehension. Initially, repeated reading for students with reading and learning disabilities was designed as a one-to-one clinical intervention (Heckelman, 1969; Samuels, 1979). This is not always possible for teachers to schedule in the busy school day. How can teachers provide students with the direct assistance they need to become more fluent readers? Teachers can incorporate repeated reading in the weekly routine using one or more grouping patterns so that peers can provide each other with direct assistance and support.

How to Teach It

Start by working with students to develop a purpose for repeated reading. This can be done through a brainstorming session initiated with the question "What are some things we learn that are improved with practice?" Explain to your students that reading needs practice, too, and best of all, reading practice can be fun!

Next, model repeated reading using the following procedure:

1. Select a book you will enjoy reading to your students again and again.
2. Read the story aloud as if you were a child reading it for the first time.
3. Include behaviors that might characterize a first reading, such as stopping to focus on difficult words.
4. After reading, talk about some parts that were difficult for you, and reread sentences to improve your reading.
5. Read the story a second time. During this reading, improve fluency, reduce the number of miscues, and add greater intonation and expressiveness.
6. With successive readings, become more expressive, fluid, and animated to achieve greater fluency and to promote greater comprehension and enjoyment.

Repeated Reading in Groups

Repeated reading can be incorporated in whole-class or small-group instructional routines. Big Books (i.e. books with large pictures and words that can be seen by the whole group), posters, or overhead transparencies are ideal for repeated readings in groups. Pointers can be used to keep students on track.

Repeated Reading in Pairs

The activity takes 10 to 15 minutes. Students can be grouped in pairs to read to each other. This pairing can be either informal or formal. The pairing can be with same-age or cross-age peers (Bergeron, 1998).
Koskinen and Blum (1985) discussed a procedure for informal repeated readings in pairs.

- With the informal pairing, each child selects his or her own passage to read to a partner.
- The first reader reads the self-selected passage three times.
- After the second and third reading, the first reader tells the partner how his or her reading improved and notes this improvement in a reading log.
- The listener provides support with new words as needed.
- Then the students switch roles and repeat the process.

Class-wide Peer Tutoring (CWPT) is a more formal, structured way to provide students with paired practice (Delquadri, Greenwood, Whorton, Carta, & Hall, 1986; Mathes, Fuchs, Fuchs, Henley, & Sanders, 1994). CWPT differs from the informal procedure just described in that teachers appoint pairs (usually one more proficient reader with one less proficient reader), select reading material (at the lower reader's independent level), and allow the readers to read the same material to each other.

Intensive instruction is necessary to prepare students, but once the procedures are understood, they become automatic.

- The more proficient reader goes first, reading aloud to the partner for 5 minutes.
- The less proficient reader reads next, reading the same passage as the first reader.
- During CWPT sessions, which last approximately 30 minutes, students complete the repeated reading routine and also engage in correction, summarization, and prediction exercises.
- Students work with a carefully developed "script" that helps them to follow the sequence of activities and to provide feedback in sensitive and productive ways.
- As students work through the script they can earn points as a pair.

**Repeated Reading Individually**

While direct assistance from peers is worthwhile and productive, it does have its limitations. Some students need more interactions with a trained professional to make progress in reading. There are several ways teachers can structure practice for students who need more intensive help in becoming more fluent readers. One way is through the use of a tape recorder.

- The student can practice reading into a tape recorder.
- When he or she is finished practicing and self-monitoring using a tape recorder, then the student can read to the teacher.

Of course, individual practice with repeated readings can be facilitated by engaging the help of classroom volunteers and parents. Teachers can plan for regular monitoring of individual students' repeated readings by having "students of the day." For example, the teacher might have three "Monday" children who read to him or her during a center time. Other children are assigned on other days of the week. This rotation provides a systematic way to plan for monitoring of student repeated readings.

**What research backs it up?**

Numerous research studies have documented the impact of repeated reading in improving reading fluency and word recognition accuracy and in playing a significant role in improving reading comprehension (e.g., O'Shea, Sindelar, & O'Shea, 1987; Rashotte & Torgesen, 1985).
What does it look like in practice?

Ms. Yaden has planned a variety of repeated reading activities for her second grade class. Each week she selects one trade book or poem related to her current thematic unit for a whole-class repeated reading. She selects books or poetry with predictable rhymes or story patterns. Class-wide Peer Tutoring is part of the regular schedule on Mondays, Wednesdays, and Fridays. The activity takes only 20 minutes or so, but Ms. Yaden has seen that her students have made progress in becoming more fluent readers in a short period of time. From time to time she takes a break from more structured Class-wide Peer Tutoring and lets children select their own reading material and their own partners during the paired reading period.

Four of Ms. Yaden’s students need even more practice with repeated readings and even more careful monitoring. She has trained her paraprofessional in how to conduct repeated readings on a one-to-one basis. Ms. Yaden has planned for daily practice sessions for each child with the paraprofessional. Ms. Yaden has also scheduled a rotation so that she can listen to each of the children at least once a week and record their progress in their reading portfolios.
Sequencing

What Is It?

Sequencing is one of many skills that contributes to students' ability to comprehend what they read. Sequencing refers to the identification of the components of a story, such as the beginning, middle, and end, and also to the ability to retell the events within a given text in the order in which they occurred.

The ability to sequence events in a text is a key comprehension strategy, especially for narrative texts. Finding meaning in a text depends on the ability to understand and place the details, the sequence of events, within some larger context—the beginning, middle, and end of a story. The ordering of events in a story, along with connecting words such as once upon a time, then, later, afterwards, and in the end, are good examples of textual features, an understanding of which gives the reader a way of integrating the story's individual parts into its larger framework—and thereby understanding the author's purpose.

Why Is It Important?

As students listen to or read text, they are best served if they can understand the information as it is presented and then recall it at a later point. Beginning readers and those that have not had much opportunity to work on their sequencing skills have a tendency to retell a story by starting with the end, since it is the part that they read or heard most recently. Even more experienced readers may re-tell a story by focusing primarily on the sections that were most appealing to them rather than by giving a more complete picture of the events that occurred. (Fox and Allen, 1983)

Practicing sequencing helps remedy both of these issues and makes this aspect of reading comprehension second nature. If students are encouraged to identify the parts of a story, for instance, they will be better able to retell it to someone else, as it is a more manageable task to think of a story in pieces—the beginning, middle, and end—rather than try to recall it as one large chunk. Sequencing activities also provide an opportunity for students to examine text and story structure, which, in turn, strengthens their writing skills.

How Can You Make It Happen?

Sequencing is a skill that can be incorporated into any subject area, but it is often associated with teaching early readers. When selecting a text for a sequencing activity, start with a piece that contains distinct events; has a clear beginning, middle, and end; and that lends itself to being retold. Familiar examples of such stories include fairy tales and fables.

A variety of ways exist to help students hone their sequencing skills. Below are some ideas for practicing sequencing in the context of a read-aloud story or during independent reading.

Read Aloud

Prior to reading a story aloud, remind students that they will be working on their sequencing skills. Depending on your lesson, you might say, "As we read, let's think about what happens during the beginning, middle, and end of the story," or "After we finish reading, we're going to try to retell the story."

As you read, pause frequently to ask students to identify the events in the story and to encourage them to think about when the beginning gives way to the middle and the middle transitions to the end.
Once you have read the story, make lists with students about the events that occurred, trying to arrange them sequentially. Sentence strips work well for this type of activity, since events can be written on individual strips and then rearranged as necessary to put the events in the correct order. Let students use these lists or strips as reminders as they retell the story by acting it out with puppets, for instance.

**Independent Reading**

Begin by reminding students that they will be working on their sequencing skills. One strategy that may be helpful is to give students pieces of paper and pencils to use as they read. Students can write page numbers and a few words to remind them of important events in the story. For instance, a student who is reading *Goldilocks and the Three Bears* in order to retell it may jot down:

Goldilocks comes in  
She eats the porridge  
She breaks the chair  
She falls asleep  
The bears come home

This list doesn't tell the whole story, but it does provide the key elements, in order, and would serve as a good outline for someone wanting to retell it themselves. If this procedure is new to students, model it before asking them to do it on their own, using a read aloud story and recording your own ideas in a think aloud style to show students how to do this on their own.

Once students have completed reading, give them opportunities to write about their stories' sequences in a reading journal, to discuss their stories with partners, or to retell them to family members for homework.

**Taking Sequencing to the Next Level**

Students will benefit from a variety of experiences with sequencing. Practice sequencing in different ways and with a variety of texts. Make games of sequencing practice by photocopying a short story, mixing the pages up, and asking students to reassemble them in the correct order (be sure to take the page numbers off the pages for this activity!). This type of activity can also be done with pictures by giving students a set of illustrations that tell a story or show a familiar step-by-step procedure, such as making a sandwich or getting dressed. Students then assemble the pictures so that the steps are in a logical order.

Older students who are being asked to retell a story can participate in self-evaluation by tape recording themselves as they do so. This technique allows students not only to practice the retelling but to listen to themselves and evaluate their own performances. Questions students can think about during this self-assessment include: Did I include the important aspects of the story? Are there any elements I should have included? Will my retelling make sense to someone who isn't familiar with the story?

Students can also expand on their retelling skills by rewriting plays they have read or heard and then performing those plays for their classmates or another class. This provides students with opportunities to think about sequencing in the roles of both readers and writers.
When Can You Use It?

Reading

Students can sharpen their sequencing skills as they read independently, participate in small group reading activities, or listen to you read a story. Before reading a longer story with students, make charts labeled, "beginning," "middle," and "end." Pause after each section of the story to discuss what has happened and to record information on your charts.

Writing

Sequencing is an important skill in writing. One way for students to plan their writing is by creating an outline or a graphic organizer before beginning a piece. This provides opportunities for students to think about the sequence of events in a story they wish to tell or the most logical sequence in which to provide information in a nonfiction piece.

Math

Math provides many opportunities for students to think about a process for solving a given type of problem. This process can be thought of as a sequence of steps. Students can list the steps of a process, such as finding a common denominator for a pair of fractions, and work with partners to follow those steps while solving applicable problems.

Social Studies

As students study history, they are often asked to keep track of series of events. Sequencing is a critical skill for this type of learning. Students can practice this skill by creating timelines showing the order of events. Students who are not yet involved in the study of historical events can still practice their sequencing skills by creating personal timelines, illustrating the course of their own lives.

Science

Science experiments provide a great opportunity for honing sequencing skills. Not only can students practice following a sequence of steps to investigate a particular concept but many experiments provide a dramatic way for students to try to take a set of mixed-up instructions and put them in a logical sequence. Students may find that some experiments can only be done in a specific order while others can be done in a variety of sequences. For instance, one experiment to investigate the chemical reaction between acids and bases involves pouring a small amount of baking soda into a balloon. Vinegar is then added to the balloon. The gas produced by the reaction between the baking soda and the vinegar inflates the balloon. Students might extend this experiment by altering the sequence of the steps. Ask them if the results are same if they put the vinegar in the balloon first, for example.
Lesson Plans

Sequencing: The Very Hungry Caterpillar

This lesson is designed to introduce sequencing to primary students. In this lesson, students discuss events at the beginning, middle, and end of the story, and then sequence those events. This lesson is the first of a set of sequencing lessons designed for primary grades.

Grade Levels: K - 2

Objective

Sequencing refers to the ability to understand and talk about a story as an ordered series of events. This lesson is designed to introduce this skill to primary students using the book The Very Hungry Caterpillar by Eric Carle. In this lesson, students discuss events at the beginning, middle, and end of the story, and then sequence the events. This lesson is the first in a set of sequencing lessons designed for primary grades.

For students to be able to successfully sequence events in a text, they should have some understanding of time sequence within a larger context of the beginning, middle, and end of a story. They should be able to determine the order of events in a story and thereby understand the author's purpose.

Materials

- The Very Hungry Caterpillar, by Eric Carle
- A chalkboard, white board, or chart paper to record information from the text
- Beginning, Middle, End Graphic Organizer
- Blank paper, pencils, and crayons or markers.

Procedure

1. Hook/Engagement

Tell students that they will learn about the beginning, middle, and end of a story. Have them identify the beginning, middle, and end of common things, such as:

- A school day
- How a caterpillar becomes a butterfly
- Sounds in words such as: cat
- A field trip
- Songs during a favorite cartoon episode, such as Sponge Bob Squarepants
- A baseball game
- A week

For example, students might explain that at the beginning of the day the lunch count is taken, at the middle of the day, students eat lunch, and then at the end of the day students pack their backpacks. Discuss how there may be more than one event that can be classified as the beginning, middle, or end, and how some endings are really the beginning of a new process. You might also talk about how certain words and phrases in a story give clues about whether it is at the beginning, middle, or end. You could give students this list and ask them to tell where these words and phrases would be found—at the beginning, middle, or end. (A clue: if it's not clearly the beginning or the end, it's probably the middle.)
<table>
<thead>
<tr>
<th>Word or Phrase</th>
<th>Where in the Story</th>
</tr>
</thead>
<tbody>
<tr>
<td>Once upon a time...</td>
<td>beginning</td>
</tr>
<tr>
<td>The End</td>
<td></td>
</tr>
<tr>
<td>They lived happily ever after.</td>
<td></td>
</tr>
<tr>
<td>The next day...</td>
<td></td>
</tr>
<tr>
<td>After several months...</td>
<td></td>
</tr>
<tr>
<td>Finally...</td>
<td></td>
</tr>
</tbody>
</table>

Another version of a table could look like this:

<table>
<thead>
<tr>
<th>Beginning</th>
<th>Middle</th>
<th>End</th>
</tr>
</thead>
<tbody>
<tr>
<td>Once upon a time...</td>
<td>The next day...</td>
<td>They lived happily ever after.</td>
</tr>
<tr>
<td>Henry was born...</td>
<td>After several months...</td>
<td>In the end...</td>
</tr>
</tbody>
</table>

2. **Vocabulary**
   - **Caterpillar** - the larva of a butterfly or moth

3. **Measurable Objectives**

   Explain to students that they will be discussing what happens at the beginning, middle, and end of the story. At the end of the lesson, you will ask them to tell what happens at the beginning, middle, and end of the story so that you will know whether they have learned what you want to teach them.

4. **Focused Instruction**

   Introduce the book by asking students to consider the title. Ask, "What do you think a very hungry caterpillar eats?" and allow students an opportunity to share their ideas. Begin reading the book to your class. As you read, pause to identify the parts of the text. For instance, before reading the first page say, "Let's see what happens at the beginning of the book." When you get to the part where the caterpillar begins to eat you might say, "Here comes the middle of the story." Finally, as the caterpillar builds his cocoon you might wonder aloud, "I think this is the ending of the book." After you have read the book, draw a three-column chart on the board or chart paper, with the column labels, "Beginning," "Middle," and "End." Since you are modeling this for students, think aloud while you say something such as,

   "What happened at the beginning of *The Very Hungry Caterpillar*? Well, in the beginning, there was an egg. The
caterpillar was born in the beginning of the story. Let's see. I'll look back at the book to find out what else happened at the beginning of the story. At the beginning of the story, it was Sunday.

Record these ideas in the "Beginning" column of your chart.

- There was an egg.
- The caterpillar was born.
- It was Sunday.

5. Guided Practice

Complete the next part of the chart with students, asking the question, "What happened in the middle of the story? What happened at the end of the story?" If a student offers an idea that fits better in another section of the chart, you might reply with a comment such as, "Oh, I remember that part, too. I think it would be great to add that to the 'end' section of our chart." By the end of the discussion, your chart should include some of the following ideas:

<table>
<thead>
<tr>
<th>Beginning</th>
<th>Middle</th>
<th>End</th>
</tr>
</thead>
<tbody>
<tr>
<td>The caterpillar was born and was hungry.</td>
<td>Each day the caterpillar ate a little more than the day before.</td>
<td>The caterpillar changed into a butterfly.</td>
</tr>
</tbody>
</table>

Be sure to review the sequence of the days of the week and review which days are at the beginning, middle, and end of the week, understanding this is somewhat arbitrary.

6. Independent Practice

For independent practice, have students identify events in the beginning, middle, and end of the story, writing a sentence and drawing a picture for each section. An extension activity is to create a collaborative book, *The Very Hungry Animal*. Students can choose another animal to write about, and decide what the animal eats each day of the week, and explain what might happen when the animal is full. The class can be separated into three groups to form "Beginning," "Middle," and "End" groups. Be specific about where the groups will start and stop their portions of the story. For instance, the "Beginning" group could start the story with the raccoon being born or appearing at the edge of the forest. The "Middle" group could write about what the raccoon ate on each day of one week. The "End" group could write about the raccoon falling asleep and then waking up larger than it was a week before.

7. Assessment

One way to assess student understanding of the sequence of a story is to choose a different, familiar book and ask students to identify the beginning, middle, and end of that story. You can strengthen students' understanding of these ideas by focusing on the beginning, middle, and end of a familiar event, such as the school day, and ask students to describe it using these terms.

Reflection and Planning

To continue working on sequencing, you may use the two additional lessons on this topic. Each lesson explores the topic in a bit more depth, expanding students' understanding of the concept. You may also choose to reinforce the ideas in this lesson with another book by Eric Carle, *Rooster's Off to See the World*. If students are struggling with the skill of
Sequencing: *Lyle, Lyle, Crocodile*

This lesson is designed to establish the skill of sequencing for primary students. In this lesson, students discuss the order of events in the story using a graphic organizer. This lesson is the second of a set of sequencing lessons designed for primary grades.

Grade Levels: K - 2

Objectives

This lesson is designed to establish the skill of sequencing for primary students, using the text *Lyle, Lyle, Crocodile* by Bernard Waber. In this lesson, students discuss the order of events in the story using a graphic organizer. This lesson is the second in a set of sequencing lessons designed for primary grades.

For students to successfully complete this lesson, they should have a good understanding of sequence, or putting events in order. They should be able to write phrases in the graphic organizer. If some students have difficulty writing, they can be paired with other students who can write to complete the graphic organizer together.

Materials

- *Lyle, Lyle, Crocodile* by Bernard Waber
- A chalkboard, white board, or chart paper to record information from the text
- Sequence Chain graphic organizer
- Blank paper, pencils, and crayons or markers
- Other books that students know well

Procedure

1. **Hook/Engagement**

   Write sentences from the story *Lyle, Lyle, Crocodile* on separate sticky notes. Paste a sticky note on the back of every child. Tell them you want them to line up in such a way that the sticky notes tell the story in the right order. You can help them by reading the notes on their backs. Don’t worry about having this work out perfectly. Just have some fun with it at the beginning of the lesson. If you have time, you can have students play the game again at the end of the lesson.

2. **Vocabulary**
   - **Persuaded** - to convince or urge
   - **Permitted** - to allow or make possible
   - **Dismissed** - to leave, remove, or reject

3. **Measurable Objectives**

   Pass out copies of the Sequence Chain graphic organizer. Tell students that as you read the story, you will ask
them to identify the main events of the story and put them in the correct order, or sequence, using the Sequence Chain.

4. **Focused Instruction**

Show students the book and discuss what it might be about. The large crocodile and the building on the cover may lead to the conclusion that this story is about a crocodile who lives in a city. Tell students that as you read the story, they will write down the events in the story—or draw pictures if they are not writing yet. Show them the graphic organizer and explain that because there are six boxes in the sequence chain, they will choose one event from the beginning, four events from the middle, and one event from the end of the book and write them all on the graphic organizer. Read the beginning of the story, stopping with the page that ends, "Now he knew he would be snappy, irritable and impossible to live with when he returned to his job in a big department store the following day." Then, make a list of the events. After the list is compiled, think aloud and put the events in order, using words such as *first, next, then,* and *afterwards.* Discuss the order and look back at the text to check that events are in the correct order. Then think aloud as you choose the most important event from that section of the story, and write it in the graphic organizer.

5. **Guided Practice**

Continue reading, stopping before the ending. Ask students to help you think of all the events from the middle of the book. List the events and ask students to arrange the ideas into the sequence that they happen in the story. Then, narrow the events to the two most important events from that part of the story. Responses may include:

1. Mr. Grumps rescues Loretta.
2. Lyle and Mrs. Primm visit the store where Mr. Grump works.
3. Mr. Grumps gets angry and puts Lyle in the zoo.
4. Signor Valenti helps Lyle escape from the zoo.

**Independent Practice**

Then, continue reading through the end of the story. Have students complete the last box of the sequence chain on their own. Have them think about the events at the end of the story, and write them down.

**Assessment**

Take time to share and discuss the events at the end of the story. Ask students to make sure the events in the sequence chain tell about what happens in the book in an order that makes sense. As an assessment, provide students with sentence strips of the events in the story and have them arrange the events in the order that they happened in the book.

**Reflection and Planning**

To continue working on sequencing, you may use the expanding lesson, Sequencing: *The Hare and the Tortoise.* It will explore the topic in a bit more depth, expanding students’ understanding of the concept. If students are struggling with the skill of sequencing, review the skills taught in the previous lesson, using different texts during small group instruction. It may be helpful to continue using the "beginning, middle, and end" graphic organizer until students solidly understand the concept, and then have them work up to sequencing individual events in a story. Another idea for reinforcing this skill is to have a literacy center with events or sentences from the story on sentence strips to sequence. You may also choose to reinforce the ideas in this lesson by choosing another Bernard Waber book, such as *Ira Sleeps Over,* for students to sequence events.
Sequencing:  The Hare and the Tortoise

This lesson is designed to expand the skill of sequencing for primary students. In this lesson, students discuss the sequence of events in the story and retell the story with partners. This is the final lesson of a set of sequencing lessons designed for primary grades.

Sequencing: The Hare and the Tortoise

Grade Levels: K - 2

Objective

This lesson is designed to expand the skill of sequencing for primary students, using the text The Hare and the Tortoise. In this lesson, students discuss the sequence of events in the story and retell the story with a partner. This is the final lesson in a set of sequencing lesson plans designed for primary grades. (For the first two lessons, see Sequencing: The Very Hungry Caterpillar and Sequencing: Lyle, Lyle, Crocodile.)

For students to successfully complete this lesson, they should have a good understanding of sequence and be able to put individual events of a story in order. Students should also have had some practice retelling familiar stories. Do a quick assessment by asking three or four students to tell you the story of a book you have read as a class or a familiar tale such as Goldilocks and the Three Bears, or The Three Little Pigs. Students should be able to write phrases in the graphic organizer and read those phrases while they are retelling the story. If students have difficulty writing, they can be paired with another student who can write to complete the graphic organizer together.

Materials

- The Hare and the Tortoise, which is one of Aesop's fables. There are many text versions. One that you might use is The Hare and the Tortoise retold and illustrated by Helen Ward.
- A chalkboard, white board, or chart paper to record information from the text.
- Sequence Chain graphic organizer
- Blank paper, pencils, and crayons or markers, and paper lunch bags.

Procedure

1. Hook/Engagement

Tell students that they will be putting the events of this story in order and then retelling the story. Model an incorrect retelling of a story. Here's an example.

Martha told Billy not to worry—she would have done the same thing. Marta started to cry. The end. Then Billy told Martha he was sorry. Billy got angry and shouted at Marta. Once, Marta stepped on Billy's toe by accident. Billy and Marta were best friends.

Have students tell you which events are not in the correct order and then have them retell the story in the correct sequence, discussing how much the order of events, or sequence, changes the story.

2. Vocabulary
   - Retell-to tell again
3. Measurable Objectives

Explain to students that after you read the story you will be talking about the sequence of events. Explain that they will use a Sequence Chain graphic organizer to remember the parts of the story and then retell the story to the class.

4. Focused Instruction

Before reading the *Hare and the Tortoise*, discuss the terms hare and tortoise and explain that a hare is similar to a rabbit, and a tortoise is similar to a turtle. Discuss how fast a hare can run and how fast a tortoise can walk, and predict who would win a race between them. Talk about the story as an example of a fable, which is a story that teaches a lesson called a moral. Some versions of this fable will include the moral, "Slow and steady wins the race," while others may not explicitly state this.

Read the story, having students use a graphic organizer to record events in the story. Show them the graphic organizer, and explain that because there are six boxes in the sequence chain, they will choose one event from the beginning, four events from the middle, and one event from the end of the book and write them all on the graphic organizer. Think aloud while you complete the first box in the graphic organizer and look back at the text to check the events.

Continue reading and have students think of the events from the middle of the book. List the events and ask students to arrange the ideas into the sequence that they happen in the story. Then, narrow the events to the four most important ones and have students write them in the middle boxes of the graphic organizer. Continue reading to the end of the story and have students complete the last box of the sequence chain on their own. Using the graphic organizer, model a retelling of the first two events in the story. Tell students that they do not need to say exactly what is written down, but that the events need to be in the correct order.

5. Guided Practice

Group students and have them practice retelling the story including all the events from the beginning, middle, or end of the story. Tell them that they will make puppets for the hare and the tortoise and retell the story for the class. Circulate through the room as students use the graphic organizer to retell the story, providing feedback as necessary.

6. Independent Practice

Provide materials for students to create paper bag puppets and assign students a character they will create. Once they have been made, give students some time to practice using the puppets to retell the story. After additional practice, a few pairs may wish to share their retelling of *The Hare and the Tortoise* for a different audience such as another class, another teacher, the principal, or other adult in the school. Help students arrange these opportunities and be sure that positive feedback finds its way to the students who perform these retellings. Discuss the performances and ask if anyone remembered afterward an event that they forgot to include in their retelling of the story. Discuss which important parts of the story everyone included in their retellings.

7. Assessment
Video or audiotape the performances to assess whether the stories were retold in the proper sequence. Ask students which parts of the story they thought were most important to include.

**Reflection and Planning**

If students need some support with this lesson, start out by retelling the story yourself as students act out the story with their puppets. As students become more familiar with this, transition to having the students tell the story themselves, as they act it out. Students can also use teacher-created graphic organizers to practice retelling stories to each other. If students need additional support with this lesson, review the skills taught in the previous lessons, using different texts during small group instruction. You may choose to reinforce the ideas in this lesson by choosing another fable for students to retell such as *The Lion and the Mouse* or *The Fox and the Crow*. 
Story Elements

What Is It?

Commonly identified elements of a story include plot, character, setting, and theme. The plot usually revolves around a problem or conflict that is presented at the beginning of the story and resolved at the end. The ability to identify the elements of a story aids in comprehension, leads to a deeper understanding and appreciation of stories, and helps students learn to write stories of their own.

A graphic organizer, such as a story map, can help students visually organize a story's elements, increasing their ability to retell, summarize, and comprehend the story.

Why Is It Important?

Discerning the way reading material is organized is important to comprehension. According to Dickson, et al. (1998), teaching narrative text organization, using characters, a setting, problems, solutions to the problems, and so on, gives students a frame of reference for processing and storing information. Irvin (1998) identifies "awareness of text structures" as an important metacognitive skill.

How Can You Make It Happen?

Begin talking with students about story elements as early as preschool, and continue through middle and high school. The experiences and background of the students should determine the depth of the discussion and the detail of the graphic organizer that you use, should you choose to use one. Organizers can be quite sophisticated. Some story elements for older students can include: plot, conflict, resolution, theme, atmosphere, rising action, climax, and turning point.

For emergent readers, introduce the elements of a story that students are familiar with, such as a favorite fairy tale, and define each element.

Characters: Who is in the story?

Setting/Place: Where does the story take place?

Time: When does the story happen?

Problem: What is it that one or more characters wants to do or wants to happen by the end of the story?

Events: What happens in the story that helps the characters solve the problem?

Tell students that all stories have the same elements, and identifying these elements can help to increase their understanding of the story. For students new to this strategy, choose stories with clear problems and solutions. As students’ comprehension increases, introduce more complex stories to promote critical-thinking skills.

For emergent readers, read the text aloud to them, stopping at key points to discuss the information and ask and answer questions. Complete the graphic organizer as a collaborative classroom activity by thinking aloud to help students identify each element.
Once students are familiar with the process, either read the text aloud to them, or have them read on their own. Ask guiding questions related to story elements in addition to specific content questions.

Who are the main characters in the story? How would you describe them?

What is the setting of the story (where and when does it take place)?

What is the central problem of the story? How is it solved?

How does the author want us to feel after reading the story?

Students may complete the graphic organizer in groups, independently, or as a class. The graphic organizer can be used to make predictions or as a discussion tool.

As students become more competent with identifying story elements, increase the sophistication of the graphic organizer or add components such as the theme or resolution.

**How Can You Stretch Students' Thinking?**

Challenge students' ability to define and limit the main events of the story by choosing stories that include multiple characters and events that have varying degrees of importance.

Students can also use the story elements graphic organizer as a prewriting activity. Another idea is to have students create 4 x 6 cards containing information about a variety of characters, settings, and conflicts for a possible story. Then, students in groups can pool their cards and choose different elements to write a story. They can write and illustrate their newly created tale and present it to the class.

At the upper-grade levels, you should help students analyze stories on multiple levels, including decoding symbolism. For example, on one level, *Huckleberry Finn* is a story about two boys and their adventures growing up in a small town on the Mississippi River. On another level, it is a story about racism and the conflicts between freedom and civilization.

As students talk and write about stories, they should be challenged to ground their statements about the story in evidence from the text, for example, citing actions in the story that demonstrate a character's courage.

**When Can You Use It?**

Use this strategy to identify parts of a story, prepare for book talks, retell or summarize a story, or show a story's sequence of events.

Students may use the graphic organizer as a prewriting tool to plan the beginning, middle, and end of a story. In addition, students can create illustrations for each story element instead of writing. These can be used for wordless picture books, or students can then write stories to accompany the illustrations.

**Lesson Plans**

**Story Elements, Donny and the Dinosaur**
This lesson introduces primary students to the elements of a story that is read aloud. Students begin by identifying the beginning, middle, and end of the story, and then use a story map to organize the story elements.
Story Elements: *Danny and the Dinosaur*

Grade Levels: K - 3

Objectives

This lesson introduces primary students to the elements of a story that is read aloud. Students begin by identifying the beginning, middle, and end of the story, and then use a story map to organize the story elements.

Materials

- *Danny and the Dinosaur* by Syd Hoff
- Three-Column Graphic Organizer (label columns with Beginning, Middle, and End)
- Story map graphic organizer, one completed example and one blank
- Plain paper
- Crayons
- Popsicle sticks

Procedure

1. **Hook/Engagement**
   
   Discuss the beginning, middle, and end of a popular movie, and have students talk about the events. Show students a completed version of this graphic organizer using a familiar story, such as a fairy tale, as an example.

2. **Vocabulary**
   
   Characters, setting, problem, solution, and events

3. **Measurable Objectives**
   
   Tell students that they will listen to *Danny and the Dinosaur* by Syd Hoff and then describe the story elements in *Danny and the Dinosaur*. Introduce the elements of a story and define each element, using the graphic organizer. Tell students that organizing the parts of a story can help them understand the story better.

   - **Characters**: Who is in the story? (beginning)
   - **Setting/Place**: Where does the story take place? (beginning)
   - **Time**: When does the story happen? (beginning)
   - **Problem**: What is it that one or more characters wants to do or wants to happen by the end of the story? (middle)
   - **Events**: What happens in the story that helps the characters solve the problem? (middle)
   - **Solution**: What happened at the end of the story that tells how the characters solved the problem? (end)

   Tell students they will be able to identify the parts of this story (beginning, middle, and end) which will help them understand the story and allow them to explain the important parts of the story to their friends.

4. **Focused Instruction**
   
   Introduce the story by discussing whether the students have ever been to a museum. For those who have, ask what their favorite part was. For those students who have never been to a museum, you might show some
pictures of museums on the Internet, or give examples of different kinds of museums and what students might see if they visit. Read the story, *Danny and the Dinosaur* by Syd Hoff. As you read, be sure to ask questions about the elements of the story, and to check student understanding. Sample questions:

- Cover: Who do you think the characters will be in this story?
- Cover: Where does this story take place?
- p. 8: What did Danny like best about the museum? If you were in the museum with Danny, which displays would you be sure to visit? Why?
- p. 13: Make a prediction. What event do you think will happen next?
- p. 20: Why did the dinosaur think that the buildings were rocks?
- p. 36: How did the other animals at the zoo feel when Danny and the dinosaur visited?
- p. 38: What are some of the places Danny and the dinosaur have been so far?
- p. 59: Why did the children pretend that they couldn’t find the dinosaur?
- p. 62: What was the solution of the story? Where did the dinosaur go at the end of the day?

You may want to stop throughout the story to draw some quick illustrations to keep track of the events of the story. Be sure to emphasize that the drawings are just to help you organize the story’s events and do not have to be artistic. After reading the story, have students volunteer ideas to complete the Beginning, Middle, and End graphic organizer. Once the basic events of the story are organized, introduce the Story Map graphic organizer and discuss the elements of the story. Use the following questions to guide the students through the process of filling in the graphic organizer as you discuss the story.

- Who are the main characters?
- What is the problem in the story?
- What is the setting of the story?
- What are three main events?
- How do the characters solve the problem?

5. **Guided Practice**

Once the story has been discussed, assign students to groups of five and have each student in each group draw a picture of one story element. For example, one student in each group can draw the characters and another student can draw the problem in the story. Circulate around the room to give suggestions and guide students who are struggling. When each student has completed his or drawing, cut them out, attached to popsicle sticks, and then have each group summarize the story using the mounted story elements to give a puppet show. If students have difficulty identifying story elements, encourage them to use the sequence chain graphic organizer to organize the events of the story first, then use that information to complete the story elements map.

6. **Independent Practice**

Provide each student with a blank story map graphic organizer. Have them complete it for a story they have read, using pictures and/or words.

7. **Assessment**

Students will demonstrate their mastery of the new skill(s) and/or knowledge through their completed drawing and their puppet show performance of the story. You may use informal questions to assess individual student’s understanding of story elements.

**Reflection and Planning**

Through observation of the students’ performances and their participation during the completion of the story map, you
should be able to determine if students are capable of moving forward with more independent assignments. If it appears the majority of students need help with most areas, continue to support them during the completion of the story map. Additional independent written activities can be assigned as follow-up to the lessons to challenge the students and encourage mastery and independence. Once mastery is achieved, students should be expected to complete their own story maps, either through writing or drawing.
Summarizing

What Is It?

To summarize is to put in your own words a shortened version of written or spoken material, stating the main points and leaving out everything that is not essential. Summarizing is more than retelling; it involves analyzing information, distinguishing important from unimportant elements and translating large chunks of information into a few short cohesive sentences. Fiction and nonfiction texts, media, conversations, meetings, and events can all be summarized.

For example, to summarize the movie *Memento*, you might state: The movie *Memento* is a backward chronology of a man who tries to find his wife's killer, but has short-term memory loss. He keeps track of facts by taking pictures of events and tattooing facts onto himself.

Why Is It Important?

- Summarizing allows both students and teachers to monitor comprehension of material.
- Summarizing helps students understand the organizational structure of lessons or texts.
- Summarizing is a skill at which most adults must be proficient to be successful.

Summarizing and reviewing integrate and reinforce the learning of major points...these structuring elements not only facilitate memory for the information but allow for its apprehension as an integrative whole with recognition of the relationships between parts.

How Can You Make It Happen?

Introduce summarizing to students by pointing out that they verbally summarize every day. Model a verbal summary by summarizing something you watched on television or a conversation that you had with a friend or another teacher. Point out that summaries don't include opinions.

For example:

"Last night, the San Francisco Giants beat the Atlanta Braves 3-1, to win the National League Division Series. Barry Bonds hit his third home run of the series in the fourth inning against pitcher Kevin Millwood. The Braves had a chance to win in the ninth inning, but Sheffield struck out with two men on base, and Jones grounded into a double play."

Explain how you decided what to recall to the class in your summary. The score, big hits, and the ending of the game were included in the summary. Each hit, who played each position, and the score at each inning's end were not included in the summary. The main idea was stated in the first sentence, or topic sentence. Point out that the summary doesn't include any opinions about the game.

Have students practice verbalizing summaries of familiar or interesting topics, such as "What I did last weekend" or "What do we do during a typical school day" before summarizing written texts.

To introduce the different strategies in summarizing fiction and nonfiction, review the essential ways in which fiction and nonfiction differ.
Fiction

To help students summarize fiction, introduce a story map or other graphic organizer, and ask them to fill in the information for a recent fictional text they read, or have them summarize a chapter of their favorite novel or story. They can also summarize the lyrics from a favorite song or poem. With younger students, read a story as a class, and then fill out a story map together. The lesson Story Elements: Danny and the Dinosaur can assist you in this process.

Once students complete the story map, have them use it to help verbally summarize the fictional text to a partner. Then, have them use the story map to write a paragraph that summarizes the text. Be sure that their summaries tell about the main characters, conflict, and conflict resolution.

Nonfiction

In summarizing nonfiction texts, introduce these steps:

- Skim the text to get a general idea of the topic
- Delete unnecessary or redundant material
- Find the main ideas in the text
- Find or create a topic sentence
- Substitute general or "umbrella" terms when appropriate (for example, trees instead of oak, maple, and pine)

Demonstrate how to use the steps above to summarize an informative article or nonfiction text. (Examples can be found in the lesson plans below.)

Have students use the steps to summarize something they read in their local newspaper or in a magazine, a part of the school handbook, or a passage from a textbook. If you are working with younger students, work together to summarize a biography or any factual material that you have displayed in your classroom.

1. Start by skimming the text to get an idea of what the text is about.
2. Cross out sentences that are not necessary or that are redundant to help them pull out what is crucial to the message of the piece.
3. Mark key words and phrases and jot down notes about the main idea. Instruct students to look for signal words such as therefore, in conclusion, or in summary.
4. Have them verbally summarize the nonfiction piece to a peer.
5. Then, have them reread the text and write a summary paragraph. In the summary, students should state the text's main idea in the first sentence and include the most important information. Be sure that students have not included any opinions of their own or sentences word-for-word from the original text.

How Can You Stretch Students' Thinking?

Here are some general questions for students to consider when summarizing either fiction or nonfiction:

- What happened?
- Who was involved?
- What was the outcome?
- Is the essential piece of information included?
- Are interesting but nonessential facts or details eliminated?
- Would someone who read my summary really understand the main points of the text?
Some students may get paraphrasing and summarizing confused. Explain that summarizing is similar to paraphrasing because both strategies require students to put the main ideas of a story or article into their own words. However, the major difference between the two is that a summary usually recounts an entire article or story whereas a paraphrase recounts specific information within an article or story. For example, you might ask students to paraphrase a passage in a chapter of their textbook and to summarize the entire chapter.

**When Can You Use It?**

**Reading/English**

Have students summarize stories, a chapter from a novel, an act from a play, a poem, or an entire short story. Ask students to summarize the life of an author or a piece of science fiction or historical fiction.

**Writing**

Have students use a story map to summarize a work of fiction or nonfiction in a paragraph. Have them write a paragraph that summarizes a style of writing that their favorite author uses.

**Math**

Have students summarize an important theorem in geometry such as the Pythagorean theorem, the quadratic formula, or how to do long division. Have them summarize the life of an important mathematician such as Pythagoras.

**Social Studies**

Summarize the events leading up to an historical event such as the Civil War. Have students summarize an interesting case such as the Dred Scott case or the life of an important historical figure such as Martin Luther King, or Abigail Adams.

**Science**

Have students summarize the process of photosynthesis, a recent science experiment, or the life of an important scientist such as Marie Curie or Thomas Edison.

**Lesson Plans**

- These lesson plans are for primary students:

  **Summarizing: Cloudy With a Chance of Meatballs**
  Use a lesson that is designed to expand primary students' summarizing skills using the book *Cloudy With a Chance of Meatballs*.

  **Summarizing: Cloudy With a Chance of Meatballs**
  Grade Levels: K - 3

  **Objective**
  This lesson is designed to expand primary students' summarizing skills. In this lesson, students will summarize *Cloudy With a Chance of Meatballs* by Judi Barrett. First, they will work in groups to complete assigned parts of a story map. Then, they will summarize the entire story as a class. Finally, they will create their own summary.
picture books to help them summarize the story. This is the final lesson in a set of summarizing lessons designed for primary grades. (For the first two lessons, see Summarizing: Play Ball, Amelia Bedelia and Summarizing: Nate the Great.

This lesson, which focuses on summarizing, assumes that students are already familiar with basic Story Elements, including character, plot, and setting. Summarizing also requires students to be familiar with sequencing events and determining importance. If students are unfamiliar with these concepts, you will need to take some time introducing them.

Materials

- Cloudy With a Chance of Meatballs by Judi Barrett
- Chart paper
- Story map
- Drawing paper

Procedure

1. **Hook/Engagement**

   Begin by telling students a story with the title "The Worst Weather I Ever Experienced"—for example, a time you were caught in a hurricane, a snowstorm, or some such experience (the more death-defying, the better.) Make it as dramatic as possible. Make it a long story, with plenty of details.

   Next, ask a student to tell you the story, with "just the important parts. Keep it short and sweet." Quite likely, the first child who tries this will provide too many details. Say, "Too many details!!! Someone else try. I want just a summary. Keep it short and sweet." Keep going until someone gives you a really nice, short summary.

   Have students individually draw pictures of "The Worst Weather I Ever Experienced." Then have them tell the story to a partner. They can tell a long story, with plenty of details. Then, have the partner tell the story back to them, keeping it "short and sweet." The person who listens to the summary can decide whether it's short and sweet enough.

   If your children are not yet comfortable working in pairs, you can do this as a whole-class activity. The important thing is to make sure everyone understands what a summary is.

   Explain to students that they are going to read a funny story that has to do with unbelievable weather. Explain that they are going to be summarizing some weather conditions they have never ever seen before!

2. **Vocabulary**

   Tall tale—a funny story that includes exaggerated details and problems that are solved in funny ways

   Students should know the terms: character, setting, problem, main event, and solution.

3. **Measurable Objectives**

   Tell students that now that they have completed several lessons about summarizing, they are going to show you that they really know how to summarize. First, you'll ask them to break into groups and fill in
one part of a story map, without too much of your help, about *Cloudy With a Chance of Meatballs*. Second, you'll ask them to help you put the parts of the story map in order. Third, they will summarize *Cloudy With a Chance of Meatballs* to you as a class. Finally, you are going to give them "book" pages on which they will write and draw about *Cloudy With a Chance of Meatballs*. They will use their books to summarize the story for their family members. Remind them that their summaries should always be shorter than the real book because a summary only includes the most important information about a story. It should be "short and sweet."

4. **Focused Instruction**

Review the vocabulary words on the story map. Explain that the reason they need to fill information in a story map is because it helps them keep track of the most important information they need to remember to be able to summarize a story.

Write the name of each part of a story map section (characters, setting, problem, main event [label 1st, 2nd and 3rd], and solution) on a piece of chart paper and draw a small picture beside each section to remind students which section they have. Have students help you brainstorm a quick image for each section of the story map. For example, you can draw a stick figure next to the character section.

Divide students into seven groups (one for each section of the story map) and give each group one section of the story map. Explain that you are going to read *Cloudy With a Chance of Meatballs* aloud to them and they are going to write or draw the information in their section of the story map. Tell them that you are going to stop reading at certain points, and groups should talk about what you have read to figure out if they need to add any important information to their section of the story map.

Before you begin reading, explain to students that *Cloudy With a Chance of Meatballs* is a story that really has two stories. The grandfather in this story tells his grandchildren a tall-tale—the story within the story. Point out that students should record all of the characters they hear, and tell them to listen closely for the beginning of the tall-tale that the grandfather tells. Start reading aloud *Cloudy With a Chance of Meatballs* to students. Stop reading right after Grandpa begins the tall-tale and make sure that students understand this is the beginning of Grandpa's story. Give groups a chance to fill-in information.

At this point, try not to do any modeling as you have done in the previous two lessons. Instead, if groups need help, ask questions such as, "Who is in the story so far?" and "What do I know about the setting?" Make sure that the groups who have the "Character" section are recording information. Continue reading aloud and be sure to monitor students' discussions as they determine what information to include. You may have to clue groups who have the main event sections that the first main event has happened, and so on. For students who are struggling writers, tell them that they can draw whatever they want that reminds them of their section. For example, students who have the second main event section could just draw a big pancake covering a school.

**Suggested stopping points:**

- After reading the page about the Sanitation Department
- After reading that the people had to abandon Chewandswallow
- The end of the story

**Sample Story Map answers:**
**Characters:** Henry, Henry's sister, Grandpa, Mom

**Problem:** The good food stopped falling and it was replaced by bad food that was too big; the people had to leave Chewandswallow.

**Setting:** house; Chewandswallow

**First Main Event:** It rained food three times a day in Chewandswallow. The people ate whatever weather was served, and they didn't have to worry about going food shopping. People just carried their utensils with them.

**Second Main Event:** The weather took a turn for the worse. Bad food kept falling, and then food that was too big. People got sick trying to eat too much, and they had to close school. People decided to leave Chewandswallow.

**Third Main Event:** The townspeople made a boat out of stale bread and sailed to a new town. They had to get used to shopping for food at the supermarket.

**Solution:** The people of Chewandswallow survived in a new town, and Grandpa's story put the children to sleep!

5. **Guided Practice**

Create a decorative story-map title page on a piece of chart paper that includes the title of the story, and the author's and illustrator's names. Collect the chart paper from each group and beginning with your title page, have children tell you where to tape all of the pieces of chart paper in the same order as the story map across the front board. Tell students that they are going to use their words or pictures to help them summarize *Cloudy With a Chance of Meatballs*. Begin the summary by stating the name of the story and the name of the author and illustrator. Then, call on the "character" group to tell who the main characters are, the "setting" group to tell about the setting, and so on. Guide groups to summarize their part of the story in one or two sentences including only the most important points. Tell groups to listen to one another so that they can hear *Cloudy With a Chance of Meatballs* being summarized.

6. **Independent Practice**

Tell students that when they are summarizing a story to somebody, they usually do not have the book available to look through as they are talking. Explain that you want them to write and draw their own summary of *Cloudy With a Chance of Meatballs* so that they can summarize the story to you and to their family members at home.

Create a title page with the story's name and then create blank pages with these sentence frames on top:

The main characters are ________.

The setting of the story is: ________.

The problem in the story is ________.

The first funny event that happened is ________.
The second funny event that happened is ________.

The third funny event that happened is ________.

The story ended when ________.

Copy the book pages and distribute them to the class. Show students how to put their "books" in order and then staple them. (If appropriate, students should number the pages at the bottom.) Have students draw a fun picture on the title page and on each page to tell about the sentence frame. Advanced students may be able to fill in some words, but if they can't, tell students that a family member can write the information when students are summarizing *Cloudy With a Chance of Meatballs* for them. Help children read the sentence frames and remind them that they should draw just one main picture that tells about the sentence frame. Their "book summary" should be shorter than the actual story and should only include the most important details.

7. **Assessment**

To assess whether students have learned how to summarize an entire story, ask each student to use his or her book to give you a summary of *Cloudy With a Chance of Meatballs*. Check that they only tell you the most important parts of the story. To further assess students' understanding of how to summarize, you could have them work on a story map for a story that you had already read aloud in class and then ask them to use their story map to summarize the story for you. Be sure to assess the class's summary of *Cloudy With a Chance of Meatballs* before you assess their independent understanding of summarizing. Encourage students to bring home their summary books so that they can summarize this funny story to people in their family—what fun table talk!

**Reflection and Planning**

Determine which students understand how to summarize a story. For students who need more help, use this lesson plan using stories that students already know well. If additional support is needed, use the previous summarizing lesson plans, and use different books. Encourage students to make "summary books" of stories that you read aloud to them throughout the year and have them share their summaries with other classes to encourage other students to read the same wonderful books your students are reading in class.

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**Summarizing: Nate the Great**

Use a lesson that is designed to establish primary students' skills in summarizing a story using the book, *Nate the Great* by Marjorie Weinman Sharmat.

**Summarizing: Nate the Great**

**Grade Levels:** K - 3

**Objective**

This lesson is designed to establish primary students' skills in summarizing a story. The lesson uses the book, *Nate the Great* by Marjorie Weinman Sharmat. In this lesson, students summarize a story using a story map and picture clues. This is the second lesson in a set of summarizing lessons designed for primary grades. (See the first
This lesson, which focuses on summarizing, assumes that students are already familiar with basic story elements including character, plot, and setting. Summarizing also requires students to be familiar with sequencing events and determining importance. If students are unfamiliar with these concepts, you will need to take some time introducing them.

Materials

- *Nate the Great* by Marjorie Weinman Sharmat
- Chart paper
- Story map
- Drawing paper

Procedure

1. **Hook/Engagement**

   To engage students, tell them that *Nate the Great* is a detective in the story they're about to read. Ask students what they think a detective does and write their answers on the blackboard. Guide them to understand that detectives use clues to help find missing things or people. Tell them that in this story, Nate the Great is going to help his friend find something that is very important to her that she lost. Ask students to draw a picture of something that is very important to them that they would never want to lose.

   Then, have students "summarize" their picture—talk about the main details of their picture and explain briefly why they would never want to lose it. Tell students that they should only include the most important details in their verbal summary. For example, "I have had my brown stuffed teddy bear since I was born. It is my favorite toy, and I would never want to lose it." Note that students don't have to tell every story about their teddy bear or describe it in detail. They just have to tell what their important thing is and why they would not want to lose it. You may want to do a drawing and give the first summary as an example to students.

2. **Vocabulary**

   Students should be familiar with the story element terms: character, setting, problem, main event, and solution.

3. **Measurable Objectives**

   Tell students that they will learn more about how to summarize a story. First, they will help you complete a story map about *Nate the Great*. Information in a story map will help them remember the most important parts of a story. Then you are going to put them into groups and give each group some pictures from the story. The groups are going to have to use the pictures to help them summarize the part of the story that the pictures show. Then, each group is going to put its pictures in the right sequence and give a verbal summary so that the groups together summarize the whole story. Students' ability to complete this task successfully will help you understand how much they have learned.

4. **Focused Instruction**

   Remind students that *summarizing* means to tell the most important parts. In the Engagement activity,
they summarized the most important details about an important thing they would never want to lose. Now, you’d like them to summarize the important parts of *Nate the Great*. Tell them that you are going to read *Nate the Great* aloud to them and stop at certain points, asking for new information to fill in the story map. Remind them that they can’t include every piece of information; they can only include the most important information so that they can summarize the story. Tell them to listen closely and look at the pictures on each page so that they can use the pictures to help them summarize parts of the story. Draw a story map, such as the one below on the blackboard or on a piece of chart paper—but don’t fill it in yet. Start by reading the print on the cover of the Storybook, and then begin reading the story. Stop before Nate the Great arrives at Annie’s. Think aloud what information you are recording in the story map:

"The name of this story is *Nate the Great*. The author’s name is on the cover—Marjorie Weinman Sharmat. The illustrator is Marc Simont. [Point to where you find this information. I know Nate the Great is a main character in the story. This is a story, a piece of fiction. Annie is also a main character in the story, so I will write her name, too. One main event is that Nate the Great is going to Annie’s house to find her lost picture."

Point out that you didn’t record funny or interesting details like Nate’s letter to his mom or what Annie looks like. If you were going to summarize this story to a friend, you wouldn’t have to tell them that information—you will include only the most important information. Based on what they’ve heard you read so far, ask students what they think the problem in this story is. Begin reading to students when Nate arrives at Annie’s house and continue to read until the next stopping point. Suggested stopping points are listed below.

When you stop reading, ask students to help you fill in the story map, having students provide the information themselves or answering your pointed questions. When they can verbally identify the information to be included in the story map, they are closer to understanding the main points of the story and therefore will be able to begin to summarize. As you read, be sure to point to the pictures that best illustrate the main points of the story that you are including in the story map. Suggested stopping points:

1. After Nate realizes that Fang did not bury the picture
2. After Nate and Annie leave Rosamond’s house
3. After Harry notices the monster Harry painted is orange
4. The end of the story

5. **Guided Practice**

Review the completed story map with the class and take a picture walk through *Nate the Great*, talking aloud the main parts of the story and pointing to the pictures that best illustrate the main points. You do not need to reread the story to them. Instead, use the pictures to help you summarize it. Divide students into groups of three. Tell them that you are going to give them pictures from *Nate the Great*, and they are going to use the pictures to help them summarize that part of the story for you. Reemphasize that they do not need to talk about every part of that picture. Although most students cannot read the text of this story, this activity will help them use text clues or the pictures to give a verbal summary of part of the story. This activity moves students one step closer to summarizing than the activity from the first lesson because they are using actual book clues; they are being required to figure out what part of the story they need to summarize, and they are not drawing, but giving a verbal summary.

Photocopy pages from the story that adequately represent the main parts of the story and give them to groups. For example, you might photocopy the first three pages of *Nate the Great* to give to one group.
A sample summary for those pages could be: Nate the Great is a detective who is going to help his friend Annie find a lost picture. Note that the summary does not include a description of every image on every page. Monitor each group's progress and guide them to include only the most important information in their summary. Have groups decide whether they will have one spokesperson share their verbal summary with the class or whether each member will say part of their summary. When groups are ready, ask them to take turns and show their pictures and give their summary.

6. **Independent Practice**

Write on index cards as many of the terms (characters, setting, problem, main event, and the solution) as there are groups and place the cards on a table. Ask groups to take the card that matches their pictures and summary. Then, challenge groups to put themselves in sequence of the story map. Tell them that if their groups are in the correct sequence, then each group will be able to show its pictures and tell its summary, and once the last group finishes, they should have successfully summarized *Nate the Great*.

7. **Assessment**

To assess whether students have learned how to summarize a part of a story, ask each group to meet with you and explain how they came up with their verbal summary and why they chose the index card they did. To test a student's individual understanding of summarizing, meet with each student and show him or her several photocopied pages from the story. Be sure the pages are not the same as the pages he or she received in the group. Ask the student to use the picture clues to give you a verbal summary of that part of the story.

**Reflection and Planning**

Determine which students understand how to summarize a part of a story using picture clues. For students who need more help, show them pictures from a story that they already know and ask them to summarize the part of the story the pictures illustrate. Once students are more comfortable with summarizing using picture clues, ask them to look carefully at the pictures from the next story that you read aloud together. Once you have finished the book, turn back through the pages and have them summarize that story to you using picture clues. As students begin to learn to write, have them summarize stories in writing. If students are still struggling with the concept of summarizing, review the skills of finding the main idea and sequencing, before going on to other summarizing lessons.

**Summarizing: Play Ball, Amelia Bedelia**

Use a lesson that is designed to introduce primary students to summarizing a story using a part of the book *Play Ball, Amelia Bedelia*.

**Summarizing: Play Ball, Amelia Bedelia**

**Grade Levels:** K - 3

**Objective**

This lesson is designed to introduce primary students to summarizing a story. The lesson shows students how to
summarize a part of *Play Ball, Amelia Bedelia*. In this lesson, students will help you complete a story map, and then they will illustrate a part of the story. They will use their drawings to help them summarize a part of the story. This is the first lesson of a set of summarizing lessons designed for primary grades.

This lesson, which focuses on summarizing, assumes that students are already familiar with basic story elements including character, plot, and setting. Summarizing also requires students to be familiar with sequencing events and determining importance. If students are unfamiliar with these concepts, you will need to take some time introducing them.

**Materials**

- *Play Ball, Amelia Bedelia* by Peggy Parish
- Chart paper
- Story map
- Drawing paper

**Procedure**

1. **Hook/Engagement**

   Engage students with this activity by writing these questions on the blackboard or on a piece of chart paper:

   - Who plays the game (characters)?
   - Where is the best place to play the game (setting)?
   - How do you play the game (events)?
   - Who wins the game (solution)?

   Ask students to think about a favorite game or sport that they play. Examples include neighborhood games such as Kick the Can or organized sports such as Tball and soccer. Read through each of the questions you wrote on the board, and have students answer the questions about the sport or game they choose. Explain to them that answering the four questions helps them remember and talk about the most important parts of their game or sport. There could be other important information, or details, about their game or sport, but these questions help students think about the most important aspects. Explain to students that they are going to read *Play Ball, Amelia Bedelia* and summarize some of the parts of the story, including the baseball game.

2. **Vocabulary**

   1. Gloomy: joyless
   2. Puzzled: confused

   Students should be familiar with the story element terms: character, setting, problem, main event, and solution.

**Measurable Objectives**

Tell students they will learn how to summarize a part of *Play Ball, Amelia Bedelia* using a story map to record the important points in the story. Then, working in groups they will read a part of the story and draw a picture that illustrates the main details for their assigned part of the story. Then, they will use their pictures to help them summarize that part of the story.
Focused Instruction

Before students can summarize a story, they need to read the story and record the most important parts of that story: the characters, the setting, the problem, the main events, and the solution using a story map. Explain to students that when you summarize, you use your own words to retell the most important parts of something that you read or heard. Point out that students could use their answers to the questions about their game or sport in the Engagement activity to describe their game or sport to somebody who doesn't know how to play it. Tell them that filling in a story map can help them remember the most important parts of a story so that they can summarize, or retell, it to someone.

Draw a story map (without completing it) on the blackboard or on a piece of chart paper and review the terms characters, setting, problem, events, and solution with students. Explain that you are going to read aloud Play Ball, Amelia Bedelia to them, stop at certain points, and ask them to help you fill in the story map. For the first few stopping points, model your thoughts about how you decide what information to include.

Example story map answers:

**Characters:** Amelia, Grizzlies, Tornados

**Problem:** Grizzlies need Amelia's help, but she can't really play baseball.

**Setting:** baseball field

**Main Event:** Amelia makes mistakes on the baseball field.

**Main Event:** Amelia keeps making mistakes on the field and the Tornadoes get frustrated.

**Main Event:** Amelia Bedelia hits a homerun!

**Solution:** Amelia helps the Grizzlies win. They want her to be their scorekeeper.

Read pages 5-18 and then think aloud about how to record the characters and the problem: "I know that I can't include all of the information from the story. I'm only supposed to include the people who seem to be the most important characters. I'll list Amelia Bedelia as a character because she is the main character of the story. I will list the Grizzlies because they are the baseball team who need Amelia Bedelia's help. The problem is that Amelia Bedelia doesn't know how to play baseball."

Read pages 19-32 and then think aloud how to record more characters, the setting, and one main event: "I need to add the Tornados to the character list because they are the team playing against Amelia and the Grizzlies. The main setting is the baseball field. And, the first event is that Amelia is playing for the Grizzlies, but she doesn't really understand the baseball terms, so she is doing funny things, such as putting a tag on a boy." Have students help you fill in the rest of the main events and the solution for the story. Suggested stopping points:

Read pages 33-45

Read pages 46-55

Read pages 56-end
4. Guided Practice

Explain to students that now that they have recorded the most important parts of *Play Ball, Amelia Bedelia*, they can start to summarize some of those parts. Note that because this is the first lesson on summarizing, students will only need to summarize part of the story. They will work up to summarizing an entire story in the final lesson plan. Group students into teams of three or four and assign each group a section of the story map. For example, one group can have "characters," another group can have "setting," and so on. Tell each group that they need to draw a picture that summarizes, or tells, about the main part of their topic. Remind students that they cannot include every detail; they need only to draw the most important parts. For example, for the "character" group, they should draw Amelia Bedelia and the two baseball teams. They do not need to draw a picture of Jimmy, Bob, and so forth. The "setting" group should draw the baseball field, but they should not draw Amelia’s house even though some of the book’s action happens there. Review the story map with students, and if possible, give each group a copy of the book so that they can look at the pictures and remind themselves of the important details for the part they are drawing. Guide students to draw only the most important parts of the story.

Ask groups to share their picture and summarize (retell) that section of the story map for the class. Help students with sentence frames for their assigned section. For example: The main characters are _______; The main setting of the story is: _________; The problem in the story is _________. When they say their sentences, explain what part they are summarizing, the most important characters, a major event in the story, and so on.

Independent Practice

Tell students they might summarize part of a story, or an entire story, because they liked it so much that they want their friends to read the story. Ask students to think about their most favorite part of *Play Ball, Amelia Bedelia*—the one part that they would want to tell a friend about to get him or her to read the story. Ask them to draw their favorite part of the story. Remind them that they should only include the most important details of that part of the story in their drawing because they are going to use the picture to help them summarize it for you.

Assessment

To assess whether students have learned how to summarize a part of a story, ask them to meet with you individually and have them show you their drawing. Then, ask them to summarize their favorite part of the story. Listen to see whether students have included only the most important details that are needed to summarize this part of the story. Ask each student a question about the topic they were assigned; for example, you could ask a student in the "Character" group to tell you about (summarize) Amelia Bedelia’s character.

Reflection and Planning

Determine which students understand how to summarize a part of a story and which students need help with this skill. For students who need more help, ask them to summarize something that they already know, such as how to make their favorite snack or how to feed their pet. Encourage students to draw a picture and then use that picture to tell someone how to make their favorite snack. Once students are more comfortable with summarizing something they already know, challenge them to summarize part of the next story that you read as a class. If students are still struggling with the concept of summarizing, review the skills of finding the main idea and sequencing, before going on to other summarizing lessons.
These lesson plans are for middle or high school students:

**Summarizing an O. Henry Short Story (fiction)**

During this high school language arts lesson, students will summarize, verbally and in writing, the short story "Confessions of a Humorist" by O. Henry.

### Summarizing an O. Henry Short Story

**Grade Levels:** 9 - 12

**Lesson Summary**

This is a high school language arts lesson. During the lesson, students will summarize, verbally and in writing, the short story "Confessions of a Humorist" by O. Henry.

**Objectives**

1. The students will read a short story and use a graphic organizer to note the main points of the short story.
2. The students will write a summary of the short story that will include characters, setting, conflict, and resolution.

**Materials**

- Story Map
- "Confessions of a Humorist" by O. Henry (see below)

**Procedure**

1. **Demonstration**

Ask students whether they find it easier to summarize a short story, a play, or a novel. Point out that although novels and plays are typically longer than short stories, all contain characters, a setting, a conflict, and a resolution. Therefore, these works of fiction, regardless of their length, can be summarized in the same way.

Distribute a copy of a story map. Have students read "Confessions of a Humorist" by O. Henry, which can be found at [http://www.classicreader.com/read.php/sid.6/bookid.1518](http://www.classicreader.com/read.php/sid.6/bookid.1518). Then fill out the story map for the short story as a class.

This is an example of the content in the story map.

- **Characters:** the narrator, Louisa, Guy, Viola, Peter Heffelbower
- **Setting:** The narrator's home and neighborhood
- **Conflict:** The narrator becomes a professional humorist and is first very successful but then becomes joyless and struggles to come up with witty material.
Main Events: The narrator becomes professional humorist; narrator steals material from friends and family; narrator visits an undertaking establishment and becomes friendly with the owner; narrator loses his writing job.

Resolution: The narrator becomes a partner in an undertaking establishment and finds joy again in his life.

Pair students and have them use their story maps to verbally summarize the short story to one another. Talk about any differences or similarities in their summaries. Point out that only the main point of the story should be retold. In this short story, O. Henry includes information, such as what the narrator and his wife ate at their celebratory dinner or what the couple did with their money, that contributes to the story and the characterization of the narrator but is not essential and therefore should not be included in the summary.

Have students use their story map to write a paragraph that summarizes "Confessions of a Humorist." Explain that students should use their story map as an outline for their paragraph; their summary should tell who the main characters are, what the conflict is, what the main events are, and how the story ends. Instruct students to use transition words such as then, after, as a result, and finally. Encourage students to exchange their written summaries and compare them.

2. Guided practice

Have students select a work of fiction to summarize (preferably a play, a short story, or a novel) that they recently read in class or for leisure. First have them use a story map to outline the work, and then have them write a paragraph that summarizes the work. Encourage students to then reduce their paragraph to a two-sentence summary.

3. Assessment

Evaluate students' understanding of summarization by asking them to write a paragraph that defines a summary and explains how to summarize a work of fiction. Evaluate their written summaries of the O. Henry short story. Have students write a short paragraph that gives some examples of interesting information contained in the work of fiction that was not included in the summary and then explain why it wasn't included.

Confessions of a Humorist by O Henry

There was a painless stage of incubation that lasted twenty-five years, and then it broke out on me, and people said I was It.

But they called it humor instead of measles.

The employees in the store bought a silver inkstand for the senior partner on his fiftieth birthday. We crowded into his private office to present it. I had been selected for spokesman, and I made a little speech that I had been preparing for a week.

It made a hit. It was full of puns and epigrams and funny twists that brought
down the house—which was a very solid one in the wholesale hardware line. Old Marlowe himself actually grinned, and the employees took their cue and roared.

My reputation as a humorist dates from half-past nine o'clock on that morning. For weeks afterward my fellow clerks fanned the flame of my self-esteem. One by one they came to me, saying what an awfully clever speech that was, old man, and carefully explained to me the point of each one of my jokes.

Gradually I found that I was expected to keep it up. Others might speak sanely on business matters and the day's topics, but from me something gamesome and airy was required.

I was expected to crack jokes about the crockery and lighten up the granite ware with persiflage. I was second bookkeeper, and if I failed to show up a balance sheet without something comic about the footings or could find no cause for laughter in an invoice of plows, the other clerks were disappointed. By degrees my fame spread, and I became a local "character." Our town was small enough to make this possible. The daily newspaper quoted me. At social gatherings I was indispensable.

I believe I did possess considerable wit and a facility for quick and spontaneous repartee. This gift I cultivated and improved by practice. And the nature of it was kindly and genial, not running to sarcasm or offending others. People began to smile when they saw me coming, and by the time we had met I generally had the word ready to broaden the smile into a laugh.

I had married early. We had a charming boy of three and a girl of five. Naturally, we lived in a vine-covered cottage, and were happy. My salary as bookkeeper in the hardware concern kept at a distance those ills attendant upon superfluous wealth.

At sundry times I had written out a few jokes and conceits that I considered peculiarly happy, and had sent them to certain periodicals that print such things. All of them had been instantly accepted. Several of the editors had written to request further contributions.

One day I received a letter from the editor of a famous weekly publication. He suggested that I submit to him a humorous composition to fill a column of space; hinting that he would make it a regular feature of each issue if the work proved satisfactory. I did so, and at the end of two weeks he offered to make a contract with me for a year at a figure that was considerably higher than the amount paid me by the hardware firm.

I was filled with delight. My wife already crowned me in her mind with the
imperishable evergreens of literary success. We had lobster croquettes and a bottle of blackberry wine for supper that night. Here was the chance to liberate myself from drudgery. I talked over the matter very seriously with Louisa. We agreed that I must resign my place at the store and devote myself to humor.

I resigned. My fellow clerks gave me a farewell banquet. The speech I made there coruscated. It was printed in full by the Gazette. The next morning I awoke and looked at the clock.

"Late, by George!" I exclaimed, and grabbed for my clothes. Louisa reminded me that I was no longer a slave to hardware and contractors' supplies. I was now a professional humorist.

After breakfast she proudly led me to the little room off the kitchen. Dear girl! There was my table and chair, writing pad, ink, and pipe tray. And all the author's trappings--the celery stand full of fresh roses and honeysuckle, last year's calendar on the wall, the dictionary, and a little bag of chocolates to nibble between inspirations. Dear girl!

I sat me to work. The wall paper is patterned with arabesques or odalisks or--perhaps--it is trapezoids. Upon one of the figures I fixed my eyes. I bethought me of humor.

A voice startled me--Louisa's voice.

"If you aren't too busy, dear," it said, "come to dinner."

I looked at my watch. Yes, five hours had been gathered in by the grim scytheman. I went to dinner.

"You mustn't work too hard at first," said Louisa. "Goethe--or was it Napoleon?--said five hours a day is enough for mental labor. Couldn't you take me and the children to the woods this afternoon?"

"I am a little tired," I admitted. So we went to the woods.

But I soon got the swing of it. Within a month I was turning out copy as regular as shipments of hardware.

And I had success. My column in the weekly made some stir, and I was referred to in a gossipy way by the critics as something fresh in the line of humorists. I augmented my income considerably by contributing to other publications.

I picked up the tricks of the trade. I could take a funny idea and make a two-line
joke of it, earning a dollar. With false whiskers on, it would serve up cold as a quatrain, doubling its producing value. By turning the skirt and adding a ruffle of rhyme you would hardly recognize it as vers de société with neatly shod feet and a fashion-plate illustration.

I began to save up money, and we had new carpets, and a parlor organ. My townspeople began to look upon me as a citizen of some consequence instead of the merry trifler I had been when I clerked in the hardware store.

After five or six months the spontaneity seemed to depart from my humor. Quips and droll sayings no longer fell carelessly from my lips. I was sometimes hard run for material. I found myself listening to catch available ideas from the conversation of my friends. Sometimes I chewed my pencil and gazed at the wall paper for hours trying to build up some gay little bubble of unstudied fun.

And then I became a harpy, a Moloch, a Jonah, a vampire, to my acquaintances. Anxious, haggard, greedy, I stood among them like a veritable killjoy. Let a bright saying, a witty comparison, a piquant phrase fall from their lips and I was after it like a hound springing upon a bone. I dared not trust my memory; but, turning aside guiltily and meanly, I would make a note of it in my ever-present memorandum book or upon my cuff for my own future use.

My friends regarded me in sorrow and wonder. I was not the same man. Where once I had furnished them entertainment and jollity, I now preyed upon them. No jests from me ever bid for their smiles now. They were too precious. I could not afford to dispense gratuitously the means of my livelihood.

I was a lugubrious fox praising the singing of my friends, the crow's, that they might drop from their beaks the morsels of wit that I coveted.

Nearly every one began to avoid me. I even forgot how to smile, not even paying that much for the sayings I appropriated.

No persons, places, times, or subjects were exempt from my plundering in search of material. Even in church my demoralized fancy went hunting among the solemn aisles and pillars for spoil.

Did the minister give out the long-meter doxology, at once I began: "Doxology -- sockdology--sockdolager--meter--meet her."

The sermon ran through my mental sieve, its precepts filtering unheeded, could I but glean a suggestion of a pun or a bon mot. The solemnest anthems of the choir were but an accompaniment to my thoughts as I conceived new changes to ring upon the ancient comicalities concerning the jealousies of soprano, tenor, and
basso.

My own home became a hunting ground. My wife is a singularly feminine creature, candid, sympathetic, and impulsive. Once her conversation was my delight, and her ideas a source of unfailing pleasure. Now I worked her. She was a gold mine of those amusing but lovable inconsistencies that distinguish the female mind.

I began to market those pearls of unwisdom and humor that should have enriched only the sacred precincts of home. With devilish cunning I encouraged her to talk. Unsuspecting, she laid her heart bare. Upon the cold, conspicuous, common, printed page I offered it to the public gaze.

A literary Judas, I kissed her and betrayed her. For pieces of silver I dressed her sweet confidences in the pantalettes and frills of folly and made them dance in the market place.

Dear Louisa! Of nights I have bent over her cruel as a wolf above a tender lamb, hearkening even to her soft words murmured in sleep, hoping to catch an idea for my next day's grind. There is worse to come.

God help me! Next my fangs were buried deep in the neck of the fugitive sayings of my little children.

Guy and Viola were two bright fountains of childish, quaint thoughts and speeches. I found a ready sale for this kind of humor, and was furnishing a regular department in a magazine with "Funny Fancies of Childhood." I began to stalk them as an Indian stalks the antelope. I would hide behind sofas and doors, or crawl on my hands and knees among the bushes in the yard to eavesdrop while they were at play. I had all the qualities of a harpy except remorse.

Once, when I was barren of ideas, and my copy must leave in the next mail, I covered myself in a pile of autumn leaves in the yard, where I knew they intended to come to play. I cannot bring myself to believe that Guy was aware of my hiding place, but even if he was, I would be loath to blame him for his setting fire to the leaves, causing the destruction of my new suit of clothes, and nearly cremating a parent.

Soon my own children began to shun me as a pest. Often, when I was creeping upon them like a melancholy ghoul, I would hear them say to each other: "Here comes papa," and they would gather their toys and scurry away to some safer hiding place. Miserable wretch that I was!

And yet I was doing well financially. Before the first year had passed I had saved
a thousand dollars, and we had lived in comfort.

But at what a cost! I am not quite clear as to what a pariah is, but I was everything that it sounds like. I had no friends, no amusements, no enjoyment of life. The happiness of my family had been sacrificed. I was a bee, sucking sordid honey from life's fairest flowers, dreaded and shunned on account of my stingo.

One day a man spoke to me, with a pleasant and friendly smile. Not in months had the thing happened. I was passing the undertaking establishment of Peter Heffelbower. Peter stood in the door and saluted me. I stopped, strangely wrung in my heart by his greeting. He asked me inside.

The day was chill and rainy. We went into the back room, where a fire burned, in a little stove. A customer came, and Peter left me alone for a while. Presently I felt a new feeling stealing over me --a sense of beautiful calm and content, I looked around the place. There were rows of shining rosewood caskets, black palls, trestles, hearse plumes, mourning streamers, and all the paraphernalia of the solemn trade. Here was peace, order, silence, the abode of grave and dignified reflections. Here, on the brink of life, was a little niche pervaded by the spirit of eternal rest.

When I entered it, the follies of the world abandoned me at the door. I felt no inclination to wrest a humorous idea from those sombre and stately trappings. My mind seemed to stretch itself to grateful repose upon a couch draped with gentle thoughts.

A quarter of an hour ago I was an abandoned humorist. Now I was a philosopher, full of serenity and ease. I had found a refuge from humor, from the hot chase of the shy quip, from the degrading pursuit of the panting joke, from the restless reach after the nimble repartee.

I had not known Heffelbower well. When he came back, I let him talk, fearful that he might prove to be a jarring note in the sweet, dirgelike harmony of his establishment.

But, no. He chimed truly. I gave a long sigh of happiness. Never have I known a man's talk to be as magnificently dull as Peter's was. Compared with it the Dead Sea is a geyser. Never a sparkle or a glimmer of wit marred his words. Commonplaces as trite and as plentiful as blackberries flowed from his lips no more stirring in quality than a last week's tape running from a ticker. Quaking a little, I tried upon him one of my best pointed jokes. It fell back ineffectual, with the point broken. I loved that man from then on.

Two or three evenings each week I would steal down to Heffelbower's and revel
in his back room. That was my only joy. I began to rise early and hurry through my work, that I might spend more time in my haven. In no other place could I throw off my habit of extracting humorous ideas from my surroundings. Peter's talk left me no opening had I besieged it ever so hard.

Under this influence I began to improve in spirits. It was the recreation from one's labor which every man needs. I surprised one or two of my former friends by throwing them a smile and a cheery word as I passed them on the streets. Several times I dumfounded my family by relaxing long enough to make a jocose remark in their presence.

I had so long been ridden by the incubus of humor that I seized my hours of holiday with a schoolboy's zest.

My work began to suffer. It was not the pain and burden to me that it had been. I often whistled at my desk, and wrote with far more fluency than before. I accomplished my tasks impatiently, as anxious to be off to my helpful retreat as a drunkard is to get to his tavern.

My wife had some anxious hours in conjecturing where I spent my afternoons. I thought it best not to tell her; women do not understand these things. Poor girl!—she had one shock out of it.

One day I brought home a silver coffin handle for a paper weight and a fine, fluffy hearse plume to dust my papers with.

I loved to see them on my desk, and think of the beloved back room down at Heffelbower's. But Louisa found them, and she shrieked with horror. I had to console her with some lame excuse for having them, but I saw in her eyes that the prejudice was not removed. I had to remove the articles, though, at double-quick time.

One day Peter Heffelbower laid before me a temptation that swept me off my feet. In his sensible, uninspired way he showed me his books, and explained that his profits and his business were increasing rapidly. He had thought of taking in a partner with some cash. He would rather have me than any one he knew. When I left his place that afternoon Peter had my check for the thousand dollars I had in the bank, and I was a partner in his undertaking business.

I went home with feelings of delirious joy, mingled with a certain amount of doubt. I was dreading to tell my wife about it. But I walked on air. To give up the writing of humorous stuff, once more to enjoy the apples of life, instead of squeezing them to a pulp for a few drops of hard cider to make the pubic feel
funny--what a boon that would be!

At the supper table Louisa handed me some letters that had come during my absence. Several of them contained rejected manuscript. Ever since I first began going to Heffelbower's my stuff had been coming back with alarming frequency. Lately I had been dashing off my jokes and articles with the greatest fluency. Previously I had labored like a bricklayer, slowly and with agony.

Presently I opened a letter from the editor of the weekly with which I had a regular contract. The checks for that weekly article were still our main dependence. The letter ran thus:

DEAR SIR:

As you are aware, our contract for the year expires with the present month. While regretting the necessity for so doing, we must say that we do not care to renew same for the coming year. We were quite pleased with your style of humor, which seems to have delighted quite a large proportion of our readers. But for the past two months we have noticed a decided falling off in its quality. Your earlier work showed a spontaneous, easy, natural flow of fun and wit. Of late it is labored, studied, and unconvincing, giving painful evidence of hard toil and drudging mechanism.

Again regretting that we do not consider your contributions available any longer, we are, yours sincerely,

THE EDITOR.

I handed this letter to my wife. After she had read it her face grew extremely long, and there were tears in her eyes.

"The mean old thing!" she exclaimed indignantly. "I'm sure your pieces are just as good as they ever were. And it doesn't take you half as long to write them as it did." And then, I suppose, Louisa thought of the checks that would cease coming. "Oh, John," she wailed, "what will you do now?"

For an answer I got up and began to do a polka step around the supper table. I am sure Louisa thought the trouble had driven me mad; and I think the children hoped it had, for they tore after me, yelling with glee and emulating my steps. I was now something like their old playmate as of yore.

"The theatre for us to-night!" I shouted; "nothing less. And a late, wild, disreputable supper for all of us at the Palace Restaurant. Lumpty-diddle-de-dee-de-dum!"

And then I explained my glee by declaring that I was now a partner in a prosperous undertaking establishment, and that written jokes might go hide their heads in sackcloth and ashes for all me.

With the editor's letter in her hand to justify the deed I had done, my wife could advance no objections save a few mild ones based on the feminine inability to
appreciate a good thing such as the little back room of Peter Hef--no, of Heffelbower & Co's. undertaking establishment.

In conclusion, I will say that to-day you will find no man in our town as well liked, as jovial, and full of merry sayings as I. My jokes are again noised about and quoted; once more I take pleasure in my wife's confidential chatter without a mercenary thought, while Guy and Viola play at my feet distributing gems of childish humor without fear of the ghastly tormentor who used to dog their steps, notebook in hand.

Our business has prospered finely. I keep the books and look after the shop, while Pete attends to outside matters. He says that my levity and high spirits would simply turn any funeral into a regular Irish wake.

Summarizing a John F. Kennedy Speech (nonfiction)
During this high school language arts lesson, students will summarize, verbally and in writing, a speech that John F. Kennedy gave about the need for America to land a man on the moon.

Summarizing a John F. Kennedy Speech

Grade Levels: 9 - 12

Lesson Summary

This lesson is for a high school language arts class. During the lesson, students will summarize, verbally and in writing, a speech that John F. Kennedy gave about the need for America to land a man on the moon.

Objectives

1. The students will analyze a speech and identify its main idea.
2. The students will first verbally summarize and then write a summary paragraph about the speech.

Procedure

1. Demonstration

   Discuss speeches and the particular objectives of a person who writes a speech. Usually, the writer wants a group of people to be persuaded to act a particular way or to believe in something. In this speech, found at http://www.historyplace.com/speeches/jfk-space.htm, John F. Kennedy wanted to convince people that America needed to send a man to the moon. (there is a copy of the speech below
but the website offers an audio version)

Review the steps of summarizing nonfiction texts:

- Skim the text to get a general idea of the topic
- Delete unnecessary or redundant material
- Find the main ideas in the text
- Find or create a topic sentence
- Substitute general or "umbrella" terms when appropriate (for example, trees instead of oak, maple, and pine)

Have students scan the speech to get an idea of Kennedy's specific message and some of his main points.

Next, have them read the speech carefully and cross out sentences or parts of the speech that they don’t think are central to Kennedy's message. For example, the first four paragraphs are illustrative, but they are not central to Kennedy's main point and therefore should not be included in a paragraph summary of this speech, so students can cross out the passages.

Ask students to circle sentences that are crucial to the speech and that support Kennedy's main idea. For example, in the eleventh paragraph, the following sentence should be circled because it is a reason that supports why Americans should go into space (the main idea): "For the eyes of the world now look into space, to the moon and to the planets beyond, and we have vowed that we shall not see it governed by a hostile flag of conquest, but by a banner of freedom and peace. We have vowed that we shall not see space filled with weapons of mass destruction, but with instruments of knowledge and understanding."

Point out that in more sophisticated writing, the main idea is not necessarily found in the very first paragraph, which is the case in this speech.

Arrange students in pairs, and have them use their marked-up speech to help them verbally summarize the speech to one another.

Have students write a paragraph that summarizes Kennedy's speech and a topic sentence that states the main idea of the speech.

Have pairs share their written summaries and discuss how their summaries differed and how they were the same. Have students check that the first sentence of their partner's paragraph states the main idea of the speech and that the sentences that follow contain points that support the main idea. Explain to students that Kennedy is trying to persuade Americans of his viewpoint. Remind students that they must be sure that they do not include their opinion of Kennedy's speech or of his message in their summary.

Challenge students further by having them reduce their paragraph summary to one sentence.

2. Guided practice

Have students choose another famous speech, diary entry, letter, or article that was written by or about an author that you are studying in class. Have them first scan the text to get an idea of what the text is about. Then have them read the text more closely, crossing out any sentences that are not essential and circling those sentences that support the main idea of the text. Have students use their marked-up text as an outline for a summary paragraph of what they've read.
3. **Assessment**

Evaluate students' understanding of summarization by asking them to write a paragraph that defines summary and explains how to summarize nonfiction. Use the summary paragraphs that they wrote independently to determine whether they understand summarizing nonfiction. Encourage peer assessment by dividing students into pairs and having them exchange the nonfiction text that they summarized (JFK speech) and their summary paragraph and evaluate whether their paragraphs aptly summarize the texts.

Below is a copy of the Speech; however, if you go to the website listed above you can have an audio version for students also.

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**John F. Kennedy**

"We choose to go to the Moon..."

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On a very hot late summer’s day in 1962, President Kennedy visited Rice University in Houston, Texas, and gave this speech outdoors in the football stadium. The President spoke in philosophical terms about the need to solve the mysteries of space, reaffirmed America's commitment to landing a man on the moon before the end of the 1960s and also defended the enormous expense of the space program. Along the way, the President made humorous mentions of the Rice-Texas football rivalry and the blazingly hot weather. President Pitzer, Mr. Vice President, Governor, Congressman Thomas, Senator Wiley, and Congressman Miller, Mr. Webb, Mr. Bell, scientists, distinguished guests, and ladies and gentlemen:

I appreciate your president having made me an honorary visiting professor, and I will assure you that my first lecture will be very brief.

I am delighted to be here and I’m particularly delighted to be here on this occasion.

We meet at a college noted for knowledge, in a city noted for progress, in a state noted for strength, and we stand in need of all three, for we meet in an hour of change and challenge, in a decade of hope and fear, in an age of both knowledge and ignorance. The greater our knowledge increases, the greater our ignorance unfolds.

Despite the striking fact that most of the scientists that the world has ever known are alive and working today, despite the fact that this Nation's own scientific manpower is doubling every 12 years in a rate of growth more than three times that of our population as a whole, despite that, the vast stretches of the unknown and the unanswered and the unfinished still far outstrip our collective comprehension.

No man can fully grasp how far and how fast we have come, but condense, if you will, the 50,000 years of man’s recorded history in a time span of but a half-century. Stated in these terms, we know very little about the first 40 years, except at the end of them advanced man had learned to use the skins of animals to cover them. Then about 10 years ago, under this standard, man emerged from his caves to construct other kinds of shelter. Only five years ago man learned to write and use a cart with wheels. Christianity began less than two years ago. The printing press came this year, and then less than two months ago, during this whole 50-year span of human history, the steam engine provided a new source of power. Newton explored the meaning of gravity. Last month electric lights and telephones and automobiles and airplanes became available. Only last week did we develop penicillin and television and nuclear power, and now if America's new spacecraft succeeds in reaching Venus, we will have literally reached the stars before midnight tonight.
This is a breathtaking pace, and such a pace cannot help but create new ills as it dispels old, new ignorance, new problems, new dangers. Surely the opening vistas of space promise high costs and hardships, as well as high reward.

So it is not surprising that some would have us stay where we are a little longer to rest, to wait. But this city of Houston, this state of Texas, this country of the United States was not built by those who waited and rested and wished to look behind them. This country was conquered by those who moved forward—and so will space.

William Bradford, speaking in 1630 of the founding of the Plymouth Bay Colony, said that all great and honorable actions are accompanied with great difficulties, and both must be enterprised and overcome with answerable courage.

If this capsule history of our progress teaches us anything, it is that man, in his quest for knowledge and progress, is determined and cannot be deterred. The exploration of space will go ahead, whether we join in it or not, and it is one of the great adventures of all time, and no nation which expects to be the leader of other nations can expect to stay behind in this race for space.

Those who came before us made certain that this country rode the first waves of the industrial revolution, the first waves of modern invention, and the first wave of nuclear power, and this generation does not intend to founder in the backwash of the coming age of space. We mean to be a part of it—we mean to lead it. For the eyes of the world now look into space, to the moon and to the planets beyond, and we have vowed that we shall not see it governed by a hostile flag of conquest, but by a banner of freedom and peace. We have vowed that we shall not see space filled with weapons of mass destruction, but with instruments of knowledge and understanding.

Yet the vows of this Nation can only be fulfilled if we in this Nation are first, and, therefore, we intend to be first. In short, our leadership in science and industry, our hopes for peace and security, our obligations to ourselves as well as others, all require us to make this effort, to solve these mysteries, to solve them for the good of all men, and to become the world’s leading space-faring nation.

We set sail on this new sea because there is new knowledge to be gained, and new rights to be won, and they must be won and used for the progress of all people. For space science, like nuclear science and all technology, has no conscience of its own. Whether it will become a force for good or ill depends on man, and only if the United States occupies a position of pre-eminence can we help decide whether this new ocean will be a sea of peace or a new terrifying theater of war. I do not say that we should or will go unprotected against the hostile misuse of space any more than we go unprotected against the hostile use of land or sea, but I do say that space can be explored and mastered without feeding the fires of war, without repeating the mistakes that man has made in extending his writ around this globe of ours.

There is no strife, no prejudice, no national conflict in outer space as yet. Its hazards are hostile to us all. Its conquest deserves the best of all mankind, and its opportunity for peaceful cooperation many never come again. But why, some say, the moon? Why choose this as our goal? And they may well ask why climb the highest mountain? Why, 35 years ago, fly the Atlantic? Why does Rice play Texas?

We choose to go to the moon. We choose to go to the moon in this decade and do the other things, not because they are easy, but because they are hard, because that goal will serve to organize and measure the best of our energies and skills, because that challenge is one that we are willing to accept, one we are unwilling to postpone, and one which we intend to win, and the others, too.

It is for these reasons that I regard the decision last year to shift our efforts in space from low to high gear as
among the most important decisions that will be made during my incumbency in the office of the Presidency.

In the last 24 hours we have seen facilities now being created for the greatest and most complex exploration in man's history. We have felt the ground shake and the air shattered by the testing of a Saturn C-1 booster rocket, many times as powerful as the Atlas which launched John Glenn, generating power equivalent to 10,000 automobiles with their accelerators on the floor. We have seen the site where five F-1 rocket engines, each one as powerful as all eight engines of the Saturn combined, will be clustered together to make the advanced Saturn missile, assembled in a new building to be built at Cape Canaveral as tall as a 48 story structure, as wide as a city block, and as long as two lengths of this field.

Within these last 19 months at least 45 satellites have circled the earth. Some 40 of them were made in the United States of America and they were far more sophisticated and supplied far more knowledge to the people of the world than those of the Soviet Union.

The Mariner spacecraft now on its way to Venus is the most intricate instrument in the history of space science. The accuracy of that shot is comparable to firing a missile from Cape Canaveral and dropping it in this stadium between the 40-yard lines.

Transit satellites are helping our ships at sea to steer a safer course. Tiros satellites have given us unprecedented warnings of hurricanes and storms, and will do the same for forest fires and icebergs.

We have had our failures, but so have others, even if they do not admit them. And they may be less public.

To be sure, we are behind, and will be behind for some time in manned flight. But we do not intend to stay behind, and in this decade, we shall make up and move ahead.

The growth of our science and education will be enriched by new knowledge of our universe and environment, by new techniques of learning and mapping and observation, by new tools and computers for industry, medicine, the home as well as the school. Technical institutions, such as Rice, will reap the harvest of these gains.

And finally, the space effort itself, while still in its infancy, has already created a great number of new companies, and tens of thousands of new jobs. Space and related industries are generating new demands in investment and skilled personnel, and this city and this state, and this region, will share greatly in this growth. What was once the furthest outpost on the old frontier of the West will be the furthest outpost on the new frontier of science and space. Houston, your city of Houston, with its Manned Spacecraft Center, will become the heart of a large scientific and engineering community. During the next 5 years the National Aeronautics and Space Administration expects to double the number of scientists and engineers in this area, to increase its outlays for salaries and expenses to $60 million a year; to invest some $200 million in plant and laboratory facilities; and to direct or contract for new space efforts over $1 billion from this center in this city.

To be sure, all this costs us all a good deal of money. This year's space budget is three times what it was in January 1961, and it is greater than the space budget of the previous eight years combined. That budget now stands at $5,400 million a year--a staggering sum, though somewhat less than we pay for cigarettes and cigars every year. Space expenditures will soon rise some more, from 40 cents per person per week to more than 50 cents a week for every man, woman and child in the United States, for we have given this program a high national priority--even though I realize that this is in some measure an act of faith and vision, for we do not now know what benefits await us. But if I were to say, my fellow citizens, that we shall send to the moon, 240,000 miles away from the control station in Houston, a giant rocket more than 300 feet tall, the length of this football field, made of new metal alloys, some of which have not yet been invented, capable of standing heat and stresses several times more than have ever been experienced, fitted together with a precision better than the finest watch, carrying all the equipment needed for propulsion, guidance, control, communications, food and
survival, on an untried mission, to an unknown celestial body, and then return it safely to earth, re-entering the atmosphere at speeds of over 25,000 miles per hour, causing heat about half that of the temperature of the sun--almost as hot as it is here today--and do all this, and do it right, and do it first before this decade is out--then we must be bold.

I’m the one who is doing all the work, so we just want you to stay cool for a minute. [laughter]

However, I think we’re going to do it, and I think that we must pay what needs to be paid. I don’t think we ought to waste any money, but I think we ought to do the job. And this will be done in the decade of the Sixties. It may be done while some of you are still here at school at this college and university. It will be done during the terms of office of some of the people who sit here on this platform. But it will be done. And it will be done before the end of this decade.

And I am delighted that this university is playing a part in putting a man on the moon as part of a great national effort of the United States of America.

Many years ago the great British explorer George Mallory, who was to die on Mount Everest, was asked why did he want to climb it. He said, "Because it is there."

Well, space is there, and we’re going to climb it, and the moon and the planets are there, and new hopes for knowledge and peace are there. And, therefore, as we set sail we ask God’s blessing on the most hazardous and dangerous and greatest adventure on which man has ever embarked.

Thank you.

President John F. Kennedy - September 12, 1962
Visualizing

What Is It?

Visualizing refers to our ability to create pictures in our heads based on text we read or words we hear. It is one of many skills that makes reading comprehension possible.

Why Is It Important?

Visualizing strengthens reading comprehension skills as students gain a more thorough understanding of the text they are reading by consciously using the words to create mental images. As students gain more deliberate practice with this skill, the act of visualizing text becomes automatic. Students who visualize as they read not only have a richer reading experience but can recall what they have read for longer periods of time. (Harvey & Goudvis 2000)

Visualizing text as it is being read or heard also creates personal links between the readers/listeners and text. Readers who can imagine the characters they read about, for instance, may become more involved with what they are reading. This makes for a more meaningful reading experience and promotes continued reading.

How Can You Make It Happen?

Visualizing is a skill that can be helpful in many domains, and while it is often associated with teaching early readers, even experienced readers can benefit from practice with this skill. When selecting a text for a visualizing activity, start with a piece that contains descriptive language and strong verbs and that lends itself to conjuring vivid images. It is not necessary to start with an entire book—even a well-crafted sentence or short paragraph can provide a rich springboard for a visualizing lesson.

Starting Small

To begin a series of lessons that will focus on improving visualizing skills, you might choose to start with a short passage taken from a text or of your own creation. For instance, the following sentences could be used to spark discussions:

Joan could barely believe her eyes. All these gifts were for her! She had never seen so many packages, not even on all her birthdays combined!

After listening to or reading the sentences once or twice, students can discuss the mental images created by the sentences. Students will likely differ in their descriptions of the scene. For instance, some may picture a small child surrounded by stacks of gifts. Others may imagine an older girl in front of a table piled with presents. There is no single correct answer, and those three simple sentences, though not particularly rich in detail, do offer enough information for the reader or listener to begin to form a mental picture.

Group Activities

Students can work on their visualizing skills as a whole class or in small groups. One way to challenge young students to improve their visualizing is to read a picture book aloud, sharing only portions of the illustrations. Then ask students to create their own illustrations based on the text they heard. More advanced readers might listen to a selection from a novel that the class has been reading and create a picture or written description of a character or setting based on the information in the text.
**Independent Reading**

Students can also practice their visualization skills as a follow up to independent reading. Ask young students who keep track of their reading in reading logs or journals to respond to prompts regarding the images created by the text they have read: "Does the main character remind you of anyone you know?" "Have you ever been to or seen any place that is like the setting of your book?" Very young students can also draw images in their journals, recording their mental pictures in response to their reading. You can discuss these drawings during one-on-one reading conferences.

Older students who are reading novels can think about questions such as, "If you were going to make a movie based on your book, who would you want to play the main characters?" "What would the scenery look like?" and "Where would you want to do the filming?" These questions get at the imagery created in the mind of the readers and encourage those readers to share their mental pictures in their responses.

**Taking Visualizing to the Next Level**

Visualization activities lend themselves to follow-up lessons. For example, the few sentences suggested in the "Starting Small" activity lead the way for deeper discussions about making inferences. Students can discuss not only what they visualize when they hear or read given text but also the questions that the text suggests, such as, "Why do you think Joan received all of these gifts?" or "What do you think Joan will do next?" You can take this particular discussion further by allowing students to personalize the experience by answering questions such as, "What would you do if you were Joan?" or "How would you feel if you were in Joan's place?"

**When Can You Use It?**

**Reading**

Students can sharpen their visualizing skills as they read independently, participate in small group reading activities, or listen to a text. To encourage visualizing, turn out the lights and ask students to close their eyes as they listen. Pause frequently to allow students to share their images and mental pictures with the class. The ability to generate visual images from texts becomes increasingly important as students move from richly illustrated storybooks into "chapter books" with relatively few pictures. Ease the transition by explaining that skillful writers use descriptive language designed to generate imagery in their readers' imaginations. Encourage students to create their own mental images, thereby illustrating the books themselves—filling in the pictures that the author paints using only words.

**Writing**

Text that is easy to visualize is often filled with vivid descriptions or strong verbs. Watch for sentences or paragraphs in students' writing that lend themselves to practice with visualization. With students' permission, share these examples with the class, encouraging discussion not only of the images created by the text but about why the chosen text allows for visualization. And encourage young writers to use language that generates images—this is when writing really sparkles!

**Math**

Visualization is a helpful skill in mathematics as well. Students often use manipulatives to make math concepts more concrete, and visualization is a way of internalizing the concepts the manipulatives reinforce. For instance, a class that has been studying fractions and using fraction bars can segue into a discussion comparing the sizes of fractions using common images. A question such as, "Would you rather have 1/2 or 1/3 of a pizza?" is more easily answered if students can picture a pizza (or at least a circle) and what 1/2 versus 1/3 looks like. At the beginning of such a conversation, you can draw two pizzas on the board, shading in 1/2 of the first and 1/3 of the second. As the discussion continues, (1/4...
versus 1/8, 2/3 versus 3/4, and so on) challenge students to picture the pizzas in their minds or to draw their visual images.

**Social Studies**

As students study history, they are sometimes presented with a list of dates and names. For students to really visualize historic events, they need sufficient details to create rich pictures. Allow students opportunities to listen to or read personal accounts of an event or time period they are studying. When available, pieces written from a child's perspective are helpful in forging personal links between students and the time period in question. For instance, *Sarah Morton's Day: A Day In The Life of a Pilgrim Girl* and *Samuel Eaton's Day: A Day In The Life of a Pilgrim Boy*, both by Kate Waters, provide context to help young children understand colonial life.

**Science**

Visualizing is sometimes a good challenge with some of the more abstract concepts studied in science. For instance, many classes study plants, and students are told that plants need water to grow. While students can memorize the fact that water travels from a plant's roots through the stem to its leaves or buds, putting a white carnation in a vase filled with water that has been tinted blue with food coloring provides a vivid example of this process as students witness the flower eventually turn blue.

**Lesson Plans**

**Visualizing: Following the Drinking Gourd**

This lesson is designed to establish the skill of visualizing for primary students. In this lesson, students use clues from the text to create their own images and imagine how characters are thinking and feeling.

**Visualizing: Follow the Drinking Gourd**

Grade Levels: K - 3

**Objectives**

This lesson is designed to establish the skill of visualizing for primary students, using the story *Follow the Drinking Gourd* by Jeanette Winter. In this lesson, students use clues from the text to create their own images and imagine how characters are thinking and feeling.

Students should already have some familiarity with the concept of visualizing. For students to be able to use visualization as a comprehension strategy, they need to imagine what is described in the text. As students advance in their visualizing skills, they should be able to visualize not only concrete examples, but also a character's thoughts and actions.

If this is going to be students' first experience discussing slavery and the Underground Railroad, take time to give students some context for the story before beginning the lesson.

**Materials**

- *Follow the Drinking Gourd* by Jeanette Winter.
- A chalkboard, white board, or chart paper to record information from the text.
- Blank paper, pencils, and crayons or markers.
Procedure

1. **Hook/Engagement**

   Invite students to gather together to listen to a story. Explain that you are going to read a story called *Follow the Drinking Gourd*. Give students a context for the story, reminding them of the Underground Railroad, and the flight of slaves from plantation workers to freedom, and explain that sometimes songs were used to give slaves information that would lead them to safety.

   Ask students to close their eyes and visualize a starry sky at night. One of the stars is the North Star. If you're lost at night and want to head north, you can head in the direction of Polaris, the North Star, which appears over the North Pole. Describe the Big Dipper and the Little Dipper. Ask students to make a drawing of the Big Dipper and the Little Dipper while you describe them.

   Note: The two stars at the end of the bowl of the Big Dipper point to Polaris, the North Star, which is the last star in the handle of the Little Dipper.

   If you need more background information, you can start with the book section "A Note About the Story."

2. **Vocabulary**

   - **Drinking gourd**—the hallowed out shell of a vegetable, like a squash
   - **Big Dipper, Little Dipper**—constellations of stars
   - **Drinking Gourd**—another name for the big dipper (ask students why the slaves called the Big Dipper the Drinking Gourd)
   - **Polaris**—the North Star
   - **Underground Railroad**—a route that escaping slaves followed from the south to the north

3. **Measurable Objectives**

   Explain to students that there are several characters in the story, including Peg Leg Joe, Molly, James, Hattie, George, and Isaiah. As they listen to the story, students will visualize the scenes and imagine themselves in Molly's place. They will think about how she is feeling throughout the story.

4. **Focused Instruction**

   Read the book to the class, pausing to ask students to think about how Molly is feeling at any given point. Share your own visualizations of the text. One good pausing point is on the page that begins "When daylight came, they hid in the trees," and ends with the sentence, "They hid all day in the woods." Tell students how you would describe the illustrations, and describe certain parts of the illustration such as the dogs' teeth or the family huddled together. Then have students visualize themselves in Molly's place, contemplating how Molly is feeling. Model this, using the illustrations and text to articulate your feelings.

5. **Guided Practice**

   Pair students and have them tell one another how they would feel and what they would do in Molly's place. Discuss student responses, guiding them to use clues in the text and illustrations. Encourage students to use their imagination to describe how they would feel, and invite many students to participate in the discussion. Focus on the visualizations and remind students that there is no one correct answer to these questions.

   Continue reading and pausing to allow students to reflect on Molly's feelings until the book is completed.
6. **Independent Practice**

Once you have read the story and discussed the characters' feelings, focus on the last scene of the book, which begins with the words, "At last they came to the shores of Lake Erie." You could adapt the lesson to fit any of the scenes from the book.

Organize students into groups of two or three. Give each group paper and pencils or crayons to record their ideas. Have students use words or draw pictures, or both, to represent their feelings, depending on their fluency as writers.

Say, "I'm going to reread the ending of the book. I want you to imagine that you are one of the people in Molly's family. As you listen to the author's words, imagine how you would feel. Use your paper to write down your ideas and feelings."

Reread the last few pages of the book, beginning with, "At last they came to the shores of Lake Erie." Encourage students to write and discuss their ideas with the other students in their group. One way to promote discussion is to use a think, pair, share strategy, allowing students to first think through the question independently, then share with a partner, and then, finally, share with the whole class.

As students share their ideas, extend the discussion, asking how students went about imagining themselves in the characters' shoes. Did they picture themselves in the story? Was there a part of the story that was particularly vivid? If so, what made it that way? Was it easier to imagine themselves in the roles of the children or the adults? As the conversation continues, reinforce ideas that refer to visualization as a technique for understanding the content.

7. **Assessment**

One way to assess student progress in visualization is to reflect on the changes in your students' ability to empathize with the characters as the discussion progressed. Were they able to actually picture the story? Were they able to recall at least one scene in detail? To further assess students' visualization skills, choose a passage from a different source that is particularly descriptive. One such passage can be found in Faith Ringgold's *Aunt Harriet's Underground Railroad in the Sky*:

"Niagara Falls looked like a giant tea party with a billion cups of steaming hot tea being poured to a resounding applause. The steam from the falls formed a soft blanket that lifted me up, up, up above the falls and across the bridge to Canada. I could fly! I was free!"

Ask students to listen to the passage and then write about or draw the scene. It is sometimes helpful for students to be told in advance to try to create a picture of the scene in the text as it is read, and for them to close their eyes as they listen. Then, have students write about or draw how they would feel if they were a character in the story.

**Reflection and Planning**

For students who are struggling with this concept, have them visualize texts that are clear and very descriptive until they are competent at visualizing concrete scenes. Then have them progress to more abstract visualizations, by imagining themselves as characters in the text.

You may also extend the lesson by listening to a recording of the song "Follow the Drinking Gourd" or by working with the music teacher to incorporate the song into the music curriculum. There are also other stories such as *Aunt Harriet's Underground Railroad in the Sky* by Faith Ringgold, which also explores the topic of the Underground Railroad and gives...
students vivid images with its text and illustrations.
Visualizing: *Hill of Fire*
This lesson is designed to expand the skill of visualizing for primary students.

**Visualizing: *Hill of Fire***

**Grade Levels:** K - 3

**Objectives**

This lesson is designed to expand the skill of visualizing for primary students, using the book *Hill of Fire* by Thomas Lewis.

For students to be able to use visualization as a comprehension strategy, they need to be able to imagine what is described in the text. Students should already have some familiarity with the concept of visualizing, which they can gain by participating in Visualizing: *Follow the Drinking Gourd*. As students advance in their visualizing skills, they should be able to visualize not only concrete examples, but also more abstract ideas and processes, showing they understand the author's purpose.

**Materials**

- *Hill of Fire* by Thomas Lewis
- Popsicle sticks, Unifix cubes, pattern blocks, or other manipulatives
- Paper and pencils

**Procedure**

1. **Hook/Engagement**

   Tell students that you will read a story called *Hill of Fire*. Read the "Author's Note" at the end of the story, showing students where Mexico is on a map of the world. Begin by finding out how much students already know about volcanoes. Have students explain to each other what volcanoes are and how they work. Draw a picture of a volcano, and have students label the picture, using the words in the vocabulary section.

   Say, "I am going to describe a picture made up of shapes. Listen carefully to the description. If you like, you can close your eyes and try to create a picture in your mind as I talk. When I am done, you can draw the picture I've described."

   "There is a square in the middle of a page. It has a circle inside it. There is a triangle on top of the square."

   Once students have had a chance to try drawing the figure that you have described, discuss the activity. Is there more than one correct way to visualize the shapes, given the description? For instance, the description doesn't specify whether the square is large or small, whether the circle takes up the entire inside of the square, or whether the triangle is touching the square. To continue this activity, describe other shape combinations and have students first listen to the description then try to re-create the figures you describe.

2. **Vocabulary**

   - **Magma**-liquid rock deep in the earth
   - **Lava**-magma (liquid rock) that has poured through a crack in the surface of the earth because of a volcanic eruption
   - **Eruption**-lava pouring out of the earth
3. **Measurable Objectives**

Explain to your class that you want to help them become better at creating pictures in their minds based on the text they read. Explain that at the end of the lesson, you'll check to see if their ability to visualize has improved.

4. **Focused Instruction**

Explain to students that the story you are about to read is based on a true story. Ask students to think about Pablo and his father, the farmer, as they listen to the story and to try to picture, or visualize, what is happening to them as the story goes on. Begin to read the book without showing pictures, pausing at points that are particularly descriptive and lend themselves to visualizing. For instance, after reading, "The little hole became a bigger hole. There was a noise deep under the ground, as if something big had growled." Share the pictures that come into your own mind as you read the text, perhaps pausing to draw pictures. Use as many adjectives as you can to describe the hole's color, size, and depth. Describe to students how you think Pablo and his father feel as this is happening. Even though the author does not use the words, "loud," "surprised," or "scared," you might think of those words as you read the text, and share them with students.

5. **Guided Practice**

Continue reading the story, stopping to have students describe what they are visualizing.

The following sentences may be appropriate stopping places:

- White smoke came from the hole in the ground.
- There was a loud crack, and the earth opened wide.
- The farmer ran all the way to the village.
- That night no one slept. Everyone watched the sky.
- The earth was coughing. Every time it coughed, the hill of fire grew bigger.

Have students describe or draw what the pictures might look like. Encourage them to provide many details to describe the scenes. If they are having difficulty, ask questions such as, "What might that look like? How big do you think that was? Do you think they were afraid? What do people look like when they are afraid?"

6. **Independent Practice**

Finish reading the story, stopping at the following sentences to have students draw a picture of what they are visualizing as the text is read.

- When the booming stopped and the fires grew smaller, the farmer's house was gone.
- They had a great fiesta because now they were safe.

Discuss student's pictures, and how visualizing helps them to understand the story.

As an extension activity, pair students and have one student create a figure (using tangrams, blocks, or other manipulatives) and describe it to a partner, who then draws a picture based on the description. Once the drawing in completed, compare the drawing to the figure that was created. Students may discover that using a small number of pieces and very specific language makes the figure easier to describe and visualize. Repeat the activity, reversing the students' roles, and discuss the results. Did students do anything differently? Did they use what they learned the first time to make the second round go more smoothly?
7. **Assessment**

Have students describe their pictures to you, including as much detail as possible. Evaluate their visualizations to determine if they are able to create appropriate images from the texts. Volcanoes are a rich topic for visualization. Other nonfiction books on volcanoes will help students have a more complete picture of this natural phenomenon. If you choose to launch a study of volcanoes, one way to assess students' understanding with regard to visualization is to ask them to give a verbal or written description of one or more aspects of a volcano.

**Reflection and Planning**

To continue working on visualizing, point out descriptive language in texts students are reading. Pause during particularly vivid passages to help students articulate the pictures they are creating in their minds as they listen. Encourage students to use descriptive text in their own writing and to visualize the images they want to relate as part of the pre-writing process.

For students who need additional practice, you can use different texts. For students who are struggling with this concept, have them visualize texts that are clear and very descriptive until they are competent at visualizing concrete scenes. Then progress to more abstract visualizations, imagining themselves as characters in the text.
**Cause and Effect**

**What Is It?**

A cause and effect analysis is an attempt to understand why things happen as they do. People in many professions—accident investigators, scientists, historians, doctors, newspaper reporters, automobile mechanics, educators, police detectives—spend considerable effort trying to understand the causes and effects of human behavior and natural phenomena to gain better control over events and over ourselves. If we understand the causes of accidents, wars, and natural disasters, perhaps we can avoid them in the future. If we understand the consequences of our own behavior, perhaps we can modify our behavior in a way that will allow us to lead happier, safer lives.

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**Why Is It Important?**

One of the primary goals of education is to create empowered, analytic thinkers, capable of thinking through complex processes to make important decisions.

Whether students recognize cause-and-effect relationships or not, they are affected by them every day. Students experience them in their own lives, see them occur in the lives of others, read about them in both narrative and expository texts, and are asked to write about them. To be successful, students need to be able to clearly recognize these relationships so that they are able to think analytically in their personal and academic lives. Without the ability to identify these relationships, students are at risk socially and academically. They will not understand actions and consequences or be able to understand or describe phenomena at a deep level.

**How Can You Make It Happen?**

Helping students develop the ability to think and talk intelligently about causes and effects will grow naturally over time, as students take part in multiple conversations about why things happen as they do, how one thing leads to another, how a single event can have multiple causes—and multiple consequences—and how some consequences are intended and some are not. It is not a strategy that can be mastered in a few lessons. It all begins with how you structure classroom discussions.

Here are some general guidelines for introducing cause and effect into discussions:
1. Always ask why. Why did the fish in the classroom aquarium die? Why were slaves more important in the South than in the North? Why do people continue to commit crimes after being released from prison? What are the causes and effects of bullying in schools?

2. After students answer the Why questions, ask them, "How do you know? What is your evidence?" Have students find research or texts to justify their position.

3. Encourage students to consider multiple causes of events. Make lists of possible causes of events, and then try to determine which are more likely, or important, than others.

4. Encourage students to consider multiple consequences. How did World War II change life in America? What happens when we waste electricity? What are some of the likely consequences of global warming? What consequences does the behavior of a character in a story have on the lives of other characters?

5. Use graphic organizers, such as cause-and-effect chains, flow charts, and feedback loops, to help students think about complex cause-and-effect relationships.

6. Help students develop the vocabulary of cause and effect. Teach power words such as consequence, consequently, influence, and as a result. Also teach qualifiers such as partly responsible for and largely because of. Encourage students to qualify cause-and-effect statements with words such as possibly, probably, or almost certainly. Explain that whenever there is doubt (as there often is in matters of cause and effect), qualifying words actually strengthen an argument. Compare the following sentences, and ask students to consider which statement is easier to agree with.
   - The author created a happy ending in order to please the reader.
   - The author probably created a happy ending in order to please the reader.

7. Connect students' understanding of cause-and-effect relationships to their writing. Point out that writers use the language of cause and effect to inform, to persuade, and to provide their readers with an understanding of order. Help students describe cause-and-effect relationships in their writing. Encourage them to use graphic organizers to illustrate their ideas.

**How Can You Stretch Students' Thinking?**

Often the cause-and-effect relationship in a reading passage is implied and not clearly stated. Students need to make inferences about these relationships. Encourage students to use vocabulary clues in the text (so that, accordingly, therefore, and later) and their prior knowledge to determine the relationships. Begin by having students make inferences about information that is in close proximity. Direct students to make an inference based on the first sentence of a reading passage and their prior knowledge. Then have them evaluate the inference based on their reading of the rest of the passage (Johnson and Johnson, 1986). Explain that this is like building a theory from existing evidence and then testing it against additional evidence as it becomes available.

Analyzing causes and effects is just like developing a theory. It is important to provide evidence that supports the analysis and to entertain the possibility that, in many cases, there may be other equally valid explanations. Encourage students to consider that proximity of events in space or time does not necessarily imply causality. Being in the same room when a crime occurs does not necessarily make you a criminal.

Teach students that making generalizations based on cause-and-effect sequences can be applied to a number of situations. For example, people who do not take care of themselves get sick more often than people who do take care of themselves. Generalizations are important organizing ideas because they give students a broad knowledge base that they can apply in different situations. According to the authors of Classroom Instruction that Works, teachers need to provide many examples of generalizations to students. They also should support each generalization with several cause-and-effect sequences, make sure students can clearly state their own generalizations as well as ones presented to them, and discuss generalizations with students and encourage them to argue against them if they disagree (Marzano, et al. 2001).

**When Can You Use It?**
The ability to understand and discuss cause and effect relationships is central to the study of literature, science, and the social sciences.

**Reading/English**

Have students create visual maps representing cause-and-effect relationships in the books they are reading, whether narrative texts or history books.

For example, in the book *Ira Sleeps Over* by Bernard Waber, Ira makes a decision about taking his teddy bear to Reggie’s house. Have students discuss how each conversation in the book results in a new decision.

Another example is in the book *Tuck Everlasting* by Natalie Babbitt. Have students discuss the effect of Winnie wandering in the woods (meeting Jesse Tuck), and the effect of meeting Jesse (finding out about the magic water).

**Writing**

Make sure students have plenty of practice writing about increasingly complex cause-and-effect relationships. Encourage students to use graphic organizers to organize their ideas and to illustrate their writing. Encourage students to consider multiple causes and multiple consequences. Stress the importance of using appropriate qualifiers such as probably and possibly, when the true nature of cause and effect is in doubt.

**Math**

Cause and effect is most clearly relevant to mathematics in the area of probability, which provides a way of quantifying the likelihood that certain outcomes will occur given a certain triggering event such as tossing a pair of dice. Statistics is also useful in determining whether a given outcome is something other than a random occurrence. At the high school level, students can develop stochastic models (involving chance, probability, or a random variable) of real-world events, such as traffic jams, that can aid in understanding cause-and-effect relationships at a formal level.

**Social Studies**

Cause-and-effect thinking is central to all of the social sciences, including history, economics, sociology, and psychology. When teaching history, have students analyze the causes and effects of a historical event such as the Civil War. Ask students to use a graphic organizer to outline the political, social, and economic causes of the war and its effects on the United States, and then have them write up the analysis using the graphic organizer as an illustration.

**Science**

Cause and effect can be related to climate changes in science. The variations of climate and the effect on mortality rates and the human body can be studied. For example, increased humidity levels affect the body’s ability to cool itself, and decreased humidity levels contribute to dehydration and infections.
**Metaphors and Analogies**

**What Is It?**

Metaphors and analogies are comparisons between unlike things that have some particular things in common. Here are some examples: The human eye is like a camera. Love is a kind of game. Sound waves are like the circular ripples that spread from a stone dropped in water. Metaphors and analogies often begin with such phrases as, "It's just like ...", "It's the same as ...", and "Think of it as ...". Writers use metaphors and analogies to enhance and enliven descriptions, and to express thoughts and ideas more clearly and precisely. You can use the Metaphors and Analogies Graphic Organizer to better explain these concepts to your students.

**Why Is It Important?**

1. Good teachers use metaphors and analogies to make new and unfamiliar concepts more meaningful to students by connecting what they already know to what they are learning.
2. Good readers know how to use analogies and metaphors to get at the meaning of a passage.
3. When students create their own analogies for new concepts, the analogy can provide a way to assess their understanding of the new concepts.
4. Metaphors and analogies add "sparkle" to student writing.

Research supports the use of analogies in good teaching:

Recognizing and constructing analogies is one way of helping students bridge the gap between the new and the old. Traditional analogies include the eye and a camera, the heart and a pump, the brain and a computer, and the memory and a file cabinet. Self-created analogies are generally more effective than those made up by others (Gunning, 1996).

The activation of prior knowledge to help students learn new knowledge is considered a basic principle of good teaching (Glynn, 1996) and is the foundation for the effective use of analogies.

Analogies have proven to be effective learning tools for reinforcing thinking skills and conceptual understanding.

**How Can You Make It Happen?**

Introduce students to the new concept you are teaching. Select a familiar concept that has some of the same qualities of the new concept and review the familiar concept with students. Brainstorm characteristics or qualities that are similar in the old and new concept. Then brainstorm how the items are different, or where the analogy breaks down. Discuss the relationship between the objects to determine themes that demonstrate the two item's similarities. Have students write a summary the new concept and familiar concept, explaining the similarities and differences.

**How Can You Stretch Students' Thinking?**

Analogy created by teachers can be used to help students understand new concepts, but powerful understanding occurs when students create their own analogies to find relationships between familiar and new concepts. It is important for students to understand that when comparing two things, there will be aspects of the analogy that are not perfect. Analogies can sometimes lead to misconceptions. No analogy is perfect, as two essentially different items are compared. For example, the analogy between the camera and the human eye is valid in some respects, such as the way the lens works in the two mechanisms, and is invalid in other respects, such as the different ways the two mechanisms focus. When an analogy is more misleading than clarifying, we call it a false analogy. Have students challenge each others' analogies, and be on the lookout for false analogies.
When Can You Use It?

Reading/English

Analogies can be used to introduce new vocabulary or to compare situations or characters in literature. Have students create a metaphor for the character of Scrooge in *A Christmas Carol* (e.g., "Scrooge is like ... ").

Writing

Analogies and metaphors can be used to enliven ordinary language and to give maximum meaning in a minimum of words. (e.g., "Her backyard is an adventure park"). Have students create self-portraits using analogies.

Math

Use analogies and metaphors to activate prior knowledge. When introducing fractals, have students discuss the form of tree branches, and then introduce the concept of fractals. When introducing the metric system, discuss the base-10 system and use the analogy of clocks with the base-60 system.

Social Studies

Use an analogy to introduce events. Use the analogy of a fight with a family member as a way to learn and think about the Civil War.

Science

Use an analogy to introduce concepts. Compare the form of a bird to that of an airplane to introduce the principles of aerodynamics.

Use an analogy to assess understanding of concepts. Have students develop an analogy for a concept that has been taught. Students might say that migration is like a vacation, because both birds and people travel someplace warm, stay for a while, and return to where they started.

Lesson Plans

Migration Analogy

This is an intermediate science lesson using the analogy of bird migration being like a tropical vacation.

Grade Levels: 4 - 7

Objective

This lesson introduces the concept of migration to intermediate students. Students compare the analogy of bird migration being like a tropical vacation. Students will use an analogy to gain understanding of a new concept.

Key Understandings

Analogies and metaphors can make new and unfamiliar concepts more meaningful to students by connecting what they
know to what they are learning.

Procedure

In introducing the concept of migration, use an analogy that likens it to a vacation to a warm climate. Note and discuss some interesting facts about migration: More than one-third of the world’s birds migrate; migration allows birds to adapt to changes in the environment, because they go to habitats with more food and better weather for survival; migrating is instinctual and most birds migrate in groups; and because traveling is so strenuous, only the fittest birds survive, allowing the strongest birds to reproduce. Review vocabulary that you would like students to be familiar with and use in the discussion, such as: predation, nocturnal, hazards, diurnal, flyway, migration, raptors, traits, and habitat.

Review the familiar concept of vacationing. Have students discuss trips they have taken to warm climates. Encourage them to discuss the details of travel, such as method of transportation, rest stops, eating habits, and energy levels, including the return trip.

Use the graphic organizer to identify the similar features or characteristics of migration and traveling on vacation. Identify the dissimilar features or where the analogy does not apply. Record these in the graphic organizer. Some questions to ask students: What is the connection between migration and vacationing? What is important to know about a vacation? What is important to know about migration? What are some of the differences between migration and vacationing?

1. **Demonstration**

   Use the Analogies graphic organizer to organize thinking about the familiar concept and new concept. Start the discussion and complete at least half of the chart with students as a class. Here is an example of what a completed chart might look like.
2. **Sharing Ideas**

When students have completed the organizer, come together as a class to draw conclusions about the analogy and the overall similarities between the two concepts of migration and vacationing.

3. **Independent Practice**

Have students write journal entries imagining that they are preparing for and traveling to a warm climate. Have them next write a parallel journal entry imagining that they are a bird preparing for and migrating to a warm climate. Then ask students to write a summary paragraph comparing and contrasting the two entries.

4. **Assessment**
Review the new concept, migration, by either having the students write a paragraph of their understanding of the new concept or having them draw general conclusions that refer to the analogy. You may want to use a rubric to assess student writing.
Understanding Metaphors

This is an intermediate lesson plan introducing metaphors in writing.

Grade Levels: 4 - 7

Objective

In this lesson, students are introduced to using metaphors in writing and daily conversations, and discuss the meanings of various metaphors.

Procedure

Introduce metaphors and how they enliven ordinary language. Creative writers use metaphors as an efficient and economical way to use words, and also as a way to describe subjects and feelings that are complex. By writing "The sun was a diamond in the sky," the writer suggests that the sun is brilliant, shining, sparkling, and many more things that may take up more lines to describe in detail.

Write the following sentence on the board: "This room is an oven!" Ask the class the question: "Am I saying that this room is actually an oven?" Have students give reasons for their answer and discuss their interpretations as a class. Write possible meanings on the board.

Explain the importance of metaphors in our daily conversations and how authors use metaphors to aid their writing. Write these sentences to model the activity for the class: "The motorcycle was an angry, snarling animal." Explain how the sounds and the movement of a motorcycle can remind us of an angry animal. Call students’ attention to the items being compared. Have students mimic with body movements, etc. "Tom was a pig during lunch." Ask the class for the meaning of this metaphor. Call their attention to the two items being compared. Possible answers: He ate every bit of his food. He made funny noises while he ate all of his food.

Guided practice

Use this metaphors worksheet to have students find the meaning of these metaphors. Make a transparency for easier use.

Assessment

Teacher observations. Assess the completed work or homework to determine if students understand the use of metaphors.
Activating Prior Knowledge

What Is It?

Call it schema, relevant background knowledge, prior knowledge, or just plain experience, when students make connections to the text they are reading, their comprehension increases. Good readers constantly try to make sense out of what they read by seeing how it fits with what they already know. When we help students make those connections before, during, and after they read, we are teaching them a critical comprehension strategy that the best readers use almost unconsciously.

Ellin Oliver Keene and Susan Zimmerman in Mosaic of Thought (1997), have identified three main types of connections students make as they read:

- Text to self
- Text to world
- Text to text

Why Is It Important?

Explicitly teaching strategies that proficient readers use when trying to make sense out of text helps to deepen understanding and create independent readers. Activating prior knowledge, or schema, is the first of seven strategies that Keene and Zimmerman identify as key for reading comprehension success.

"Teaching children which thinking strategies are used by proficient readers and helping them use those strategies independently creates the core of teaching reading." (Keene and Zimmerman, 1997)

These strategies, identified through research based on what good readers do when they are reading, help students become metacognitive. They learn to think about their thinking as they are reading.

When students learn to make connections from their experience to the text they are currently reading, they have a foundation, or scaffolding, upon which they can place new facts, ideas, and concepts. As good readers read, they think about what they are reading and consider how it fits with what they already know. In this way, they build upon the schema that they already have developed.

When Should It Be Taught?

This comprehension strategy should be taught on an ongoing basis so that students learn independently to use it as they are reading. It should be taught explicitly and systematically over an extended period of time, moving from modeling the thinking process out loud by the teacher, to students using the strategy as a natural part of their comprehension process.

Prior knowledge should be discussed before reading the text to help set the stage for what is coming. During reading, students should be encouraged to make connections to the text from their experience and the teacher should model this process using his or her own connections. After reading, the discussion should center on how the connections helped students to better understand the text and how the text helped them to build their foundation of prior knowledge.
What Does It Look Like?

At the early stages of teaching students the strategy of making connections to their prior knowledge, the teacher models "thinking aloud." The teacher reads a text to the class and talks through his or her thinking process in order to show students how to think about their thinking as they are reading. Slowly, after students have seen and heard the teacher using the strategy, they are given the opportunity to share their experiences and thinking. Finally, students make connections to texts independently. Teachers can check in periodically to have students articulate their thinking, in order to track progress, spot difficulties, and intervene individually or conduct a mini-lesson to reteach or move students forward.

As students are activating their prior knowledge and making connections, they use graphic organizers, such as a concept map, a flow chart, or a KWL chart, to help map their thinking. Often students keep reflection or response journals where they record thoughts, feelings, insights, and questions about what they read. Students, in large and small groups, discuss and write about the connections they are making to texts. (For examples of these and other graphic organizers, click the link.)

How Can You Make It Happen?

Start showing students how to make connections to their reading systematically and explicitly. Some teachers devote a good amount of time (6-8 weeks) to study a particular comprehension strategy in-depth before moving on to the next.

Begin by carefully choosing texts that can model how a proficient reader connects the text with experience. Picture books (even older students love them!) and shorter trade books that feature memoir writing are ideal texts to start with. Check the Resources section for a short list of books that are great for making connections. Use a variety of texts when teaching, including poetry and nonfiction books with different text structures and formats.

As you read the book with the class, "think out loud," stopping at appropriate points to articulate your thinking as a model for students. First, model connections between the text and your own experiences and encourage students to think of their own experiences that connect with the story. These are "text to self" connections. It is important during modeling to continually come back to the text and not allow personal experiences to divert the group from understanding the story. As students share connections, talk about how their experience helps them to better understand the text and how the text helps them to build their store of knowledge and experience.

The next connections to model are "text to world" connections. What do they know about the world that will help them to better understand the story? If they are reading When I Was Young in the Mountains by Cynthia Rylant or Tar Beach by Faith Ringgold, have them think about what they know about life in the mountains or in the city that can help them to better understand the story. If they are reading The Story of Ruby Bridges by Robert Coles, think about the background knowledge your students have about the Civil Rights Movement or segregation that could help them make sense of what they are reading.

Finally, model connections that are "text to text." Model how a book you are currently reading reminds you of another book you read with the class. Discuss similar styles of writing, characters, themes, or how both stories describe childhood memories of two different places. How does a book like Crow Boy by Taro Yashima, the story of a boy with hidden talents who is teased by his classmates, help students to understand a book like
The Hundred Dresses by Eleanor Estes? Students can also think about what they know about authors based on books they have read by that author. They can predict what a story might be about, or if the style is similar in all of the author’s stories.

With all of these strategies for connecting text to previous knowledge, it is crucial to talk with students explicitly about how this helps them to more fully understand what they are reading. It is also important for students to understand how they are building more prior knowledge with each book read.

**How Can You Measure Success?**

Much of the assessment for this comprehension strategy will be ongoing and informal observation of student understanding through participation in class discussion and in individual reading conferences with students. As students gain experience, you can monitor their progress through their entries in a reading response or reflection journal. Selected entries, chosen to show student progress over time, can go into a student reading portfolio along with completed graphic organizers, when appropriate, for various texts that the student has read throughout the year.

**Lesson Plans**

**Prior Knowledge: The Popcorn Book**

This lesson is designed to teach primary students how to activate prior knowledge before they begin reading. The lesson teaches students how to connect text to self, using the book The Popcorn Book, by Tomie de Paola. In this lesson, students make connections to themselves, their knowledge, and their experiences and help complete a KWL chart as the book is read aloud. This lesson is the first of a set of activating prior knowledge lessons designed for primary grades.

**Grade Levels: 1 - 3**

**Objective**

This lesson is designed to teach primary students how to activate prior knowledge before they begin reading. The lesson teaches students how to connect text to self, using the book The Popcorn Book, by Tomie de Paola. In this lesson, students make connections to themselves, their knowledge, and their experiences and help complete a KWL chart as the book is read aloud. This lesson is the first of a set of activating prior knowledge lessons designed for primary grades.

**Materials**

The Popcorn Book by Tomie de Paola

KWL Chart

Chart paper

Drawing paper
Procedure

**Planning and Diagnostics**

For students to be able to use prior knowledge as a comprehension strategy, they need to be able to understand how the text and themselves are connected. As students advance in their understanding of prior knowledge, they will be able to connect the text to their world, and to other texts.

**Hook/Engagement**

Engage students to help them understand what it means to connect to a text. Tell them about a book (fiction or nonfiction) that you read recently and liked because you found a connection between yourself and the book or a character in some way. Explain your connection by thinking aloud: "I recently read __________ (name of book), and I connected to the book because _______ (identified with main character, part of plot happened in your life, etc.). For example, "I recently read Lance Armstrong: The Race of His Life, by Kristen Armstrong, and I connected to the book because reading about his fight with cancer reminded me of my grandfather's illness and how his courage inspired me."

Explain that making a text-to-self connection or "me connection" means making a connection between yourself and a character, an event, or the setting of a story you read. Ask students to use the same sentence frame to tell you about a story they read either in class or at home that they connected to personally. (If students cannot think of a story, they can connect to an appropriate television show or character.) Make sure the examples students give show how they connected to the text.

**Vocabulary**

Archaeologist: a person who studies the material remains of past human life and activities

Iroquois: an American Indian people

Algonkians: an American Indian people

Pulpy: soft and spongy

Kernel: a whole seed, "a kernel of corn"

**Measurable Objectives**

Explain to students that they will make connections to themselves as they listen to The Popcorn Book, and that they will use a KWL chart to record those connections. Students will draw a picture that connects them to the story and then tell about their picture. The picture they draw and what they say about the picture will help you know what they have learned.

**Focused Instruction**

Explain to students that good readers think about what they already know about the topic before they read. Thinking about what they already know about parts of the story and connecting to a character, the setting, or
an event helps them understand the story.

Use a KWL chart, such as the one below, and model text-to-self connections or "me connections" to The Popcorn Book to activate what information you already know about the story topic:

"The title of the book is The Popcorn Book. This book must have to do with popcorn and how to make it. Let's see, what do I know about popcorn? I know that it is white. It pops. It is a good snack to eat. It is hot at first. It is good with butter and salt. You can make it on the stove or in the microwave. Okay. Let me write everything that I know about popcorn in the chart." (Write this information in the first column. This is the column that contains the text-to-self connections.)

<table>
<thead>
<tr>
<th>Activating Prior Knowledge: Connecting Text to Self</th>
</tr>
</thead>
<tbody>
<tr>
<td>I know...</td>
</tr>
<tr>
<td>I know popcorn... is white. pops. is a good snack to eat. is hot at first. is good with butter and salt. can be made on a stove or in the microwave.</td>
</tr>
<tr>
<td>What do Native Americans have to do with popcorn?</td>
</tr>
<tr>
<td>What do caves have to do with popcorn?</td>
</tr>
</tbody>
</table>

"Now, I'm going to look at some of the pictures in the book and see if I can think of some questions I have about the story that I can listen for when I read the story. (Turn the pages and point to the pictures that help you think of questions.) What are the boys doing? How do you make popcorn? What do Native Americans have to do with popcorn? What do caves have to do with popcorn? Are there different kinds of popcorn?" (Write these questions in the second column.)

Next, think aloud a statement that sets a purpose for reading:

"I know this book is about popcorn and how to make it, and I already know some things about popcorn. Now, I can read the story and find the answers to my questions and learn something new about popcorn."

**Guided Practice**

Tell students that you would like them to help you find the answers to the questions in your chart as you read The Popcorn Book aloud. Tell them that you will stop at certain points in your reading to talk about which questions from your chart you can now answer.
Read the book aloud to students and make statements such as:

"I keep my popcorn in the cabinet. I guess I should put it in the fridge. My Mom makes popcorn the same way that Tony and Tiny do. I've made too much popcorn before, too."

Continue to make "I" connections as you read the story aloud to students and encourage them to also make personal connections to the story. Have students help you think aloud and write the answers to the questions you wrote in your KWL chart. (See answers in the third column of the chart above.) As you are reading the story to students, listen to students' "me connections." Make sure that they are connecting to the text in some way, not just repeating some of the factual information in the book. This book is a mix of both personal experience and historical information, and in this exercise, students should be making personal connections to the text and not simply repeating factual information about popcorn, Indians, and so forth.

**Independent Practice**

Take a few minutes to review the KWL chart with your students. Discuss more "me connections" students made as you were reading the story aloud to them. Then, ask them to draw a picture that shows how they connected to the story (a character, an event, a setting) in some way. Students can draw a picture that shows them making popcorn with their Mom or Dad, eating popcorn while at a movie or a fair, reading a recipe about popcorn, and so on. Advanced students might draw a picture of themselves making their favorite snack, reading a recipe about it, or writing or drawing a recipe for it. Once students finish their pictures, ask them to tell about their picture and how it shows them making a connection to The Popcorn Book.

**Assessment**

To assess whether students have learned how to make "me connections," listen to their explanations about their pictures and see whether they have connected to the text. Turn through the pages of The Popcorn Book again and see if students can point to the pictures and make "me connections." Introduce a new book to students and read the title aloud to them. Then, ask them to fill in the "I Know" column of a KWL chart and see whether they can make "me connections" to the new text.

**Reflection and Planning**

Determine which students understand how to make text-to-self connections and which students need help. For students who need more help, you may use a text they have already read and ask them to draw a picture that shows how they connected to the text. Plan to use a KWL chart for other stories you will read in class, and ask students to make "me connections" before reading the book.

**Prior Knowledge: A House is a House for Me**

This lesson is designed to teach primary students how to activate prior knowledge before they begin reading.
The lesson teaches students how to make text-to-world connections using the book A House Is a House for Me, by Mary Ann Hoberman. In this lesson, students help complete a KWL chart by making text-to-world connections before reading the book and then make new text-to-world connections after reading. This lesson is the second in a set of activating prior knowledge lessons designed for primary grades.

Grade Levels: 1 - 3

**Objective**

This lesson is designed to teach primary students how to activate prior knowledge before they begin reading. The lesson teaches students how to make text-to-world connections using the book A House Is a House for Me, by Mary Ann Hoberman. In this lesson, students help complete a KWL chart by making text-to-world connections before reading the book and then make new text-to-world connections after reading. This lesson is the second in a set of activating prior knowledge lessons designed for primary grades.

**Materials**

- A House Is a House for Me by Mary Ann Hoberman
- KWL Chart
- Chart paper
- Drawing paper

**Procedure**

**Planning and Diagnostics**

For students to be able to use prior knowledge and participate in this lesson, they need to be able to understand how the text and their world are connected. They should have completed the introductory lesson, connecting the text to themselves, and have experience making those connections.

**Hook/Engagement**

Help students make some initial text-to-world connections by activating some of their prior knowledge about houses. Draw a two-column chart on the blackboard or on a piece of chart paper. Label the first column "Houses for People" and the second column "Houses for Animals." Ask students to first talk about what a house means to them. Then, ask students to give you some examples that belong under each heading. For example, students may cite apartments, igloos, tents, huts, pueblos, and caves as homes for people. Students may cite nests, holes, cabins, deserts, cages, doghouses, and birdhouses as homes for animals.

Explain to students that the author of the book A House Is a House for Me talks about lots of different houses for things besides people and animals, but making these initial text-to-world connections will help them understand the book. Tell them that they are going to make even more text-to-world connections as they listen to this story.
**Vocabulary**

sow: an adult female pig

Cree: a member of an American Indian people of Quebec, Ontario, Manitoba, and Saskatchewan

Hopi: a member of an American Indian people of northern Arizona

**Measurable Objectives**

Explain to students that they will make connections to the world as they listen to A House Is a House for Me, and that they will use a KWL chart to record their connections. Student pairs will write and draw answers to questions they formulated about the text as well as new text-to-world connections.

**Focused Instruction**

Explain to students that good readers think about what they already know about the topic before they read. Connecting the story to something they already know about the world, for example about houses for people; animals; and things, will help them better understand the story.

Use a KWL chart, such as the one below, and model text-to-world connections. Read the title, A House Is a House for Me, aloud to students and show them the cover of the book. Ask them to name some of the people, animals, and things that they see on the cover, and then talk about what kinds of houses these people, animals, and things might live in. Then, take a picture walk through some of the pages of the book that show animals, people, and things in "houses." Guide students to understand that this book shows different types of houses for people, animals, and things. It shows houses for things in a way that students might not initially think about. Help students to activate their prior knowledge and make some text-to-world connections by asking them to think of some general things that they know about houses—for any person, animal, or thing. Model several initial text-to-world connections about houses to help students:

"This book ties people, animals, and things together by showing that they all have houses. When I think about what a house is, I think that it must be comfortable for the person or animal in it. A house also protects whoever or whatever lives or stays inside of it."

Write this information in the first column. Ask students to volunteer some other things they know about houses, and then write their ideas in the first column. Encourage students to be general enough so that they don't begin listing a house for each specific person, animal, or thing.

Next, model several questions that you have about houses now that you have begun to think about what you already know:

"I know that this book is about houses, and I know some important things about houses. But, I would like to know how nonliving things can really have houses. I would also like to know about the title of the book. What kind of house is for me?"

Write these questions in the second column, and then have students think about other things they want to...
Activating Prior Knowledge: Connecting Text to World

<table>
<thead>
<tr>
<th>I know...</th>
<th>I want to know...</th>
<th>I learned...</th>
</tr>
</thead>
<tbody>
<tr>
<td>I know houses... are comfortable. protect who or what is inside.</td>
<td>Do nonliving things really have houses? What kind of houses do they have? What does the title of the book mean? What is a house for a ___?</td>
<td>In a way, nonliving things do have houses. For example, a plane lives in a hangar and a cookie lives in a cookie jar. People can live in all types of houses like a tree house and a tepee. Every living and nonliving thing has a house.</td>
</tr>
</tbody>
</table>

Guided Practice

Tell students that as you read A House Is a House for Me aloud, they will think about the questions they asked and listen for the answers. Model some text-to-world connections as you read; for example, talk about your knowledge of houses for marine life, or how you have learned to make new text-to-world connections when thinking about a teapot as a house for some tea or a sandwich as a house for some ham. Point out how reading this book has helped you think of what a house is in a different way.

This book helps students think about a house in a slightly different way than they did in the "Engagement" activity. Have students write or draw answers to:

A ________ is a house for me.

Students can draw a picture of where they live, or they can be more creative with their drawing and draw a picture of themselves inside a tent on a camping trip or in a tree house, and so on. Once students are finished with this activity, ask them to share their answers and to make a text-to-world connection to explain their answers. As students are giving their answers, ask them to show you the pages and point to the pictures that helped them answer their question.

Independent Practice

Ask students to write and draw an answer to this sentence.

A ________ is a house for ________.

Students should write and draw about one person, animal, or thing from the story. Encourage students to share by explaining their drawings.
Assessment "Let's talk about what you've done."

To assess whether students have learned how to make text-to-world connections, listen to their explanations of the drawings they did in the "Independent Practice" activity. Then, write this sentence again:
A _______ is a house for ________.

First, ask students to complete the sentence when you give them half of the answer. For example, you may write "castle" and students should tell you "king." Or, you may write "a kennel" and students should tell you "a dog."

Then, tell them to complete the sentence with some person, animal, or thing that was not in the book. Have them write and draw about it. Once students are finished, ask them to explain their sentence and picture. Listen to assess whether students have successfully made a text-to-world connection.

Reflection and Planning

Determine which students understand how to make text-to-world connections and which students need help. For students who need more help, talk about a story you have already read with students and help them to make text-to-world connections with that story. Once they have mastered this, then have them use a KWL chart to make text-to-world connections and activate their prior knowledge for a new book.

Prior Knowledge: The Three Little Pigs

This lesson is designed to expand primary students' skills in activating prior knowledge before they begin reading. The lesson teaches how to connect text to text, using the book, The Three Little Pigs by James Marshall. In this lesson, students make connections to another event, setting, or character from another text that reminds them of the story they are reading. Students help complete a comparison chart and create their own text. This lesson is the last of a set of activating prior knowledge lessons designed for primary grades.

Grade Levels: 1 - 3

Objective

This lesson is designed to expand primary students' skills in activating prior knowledge before they begin reading. The lesson teaches how to connect text to text, using the book, The Three Little Pigs by James Marshall. In this lesson, students make connections to another event, setting, or character from another text that reminds them of the story they are reading. Students help complete a comparison chart and create their own text. This lesson is the last of a set of activating prior knowledge lessons designed for primary grades.

Materials
The Three Little Pigs by James Marshall

Comparison chart

Chart paper

Drawing paper

Procedure

**Planning and Diagnostics**

For students to be able to use prior knowledge and participate in this lesson, they need to be able to understand how this text and other texts can be connected. They should have completed the previous two lessons, connecting the text to themselves and to the world, and have experience making those connections.

**Hook/Engagement**

Guide students to activate their prior knowledge about this story and prepare them to make some text-to-text connections by drawing this three-column chart (without answers) on the blackboard:

<table>
<thead>
<tr>
<th>Characters</th>
<th>Setting</th>
<th>Events</th>
</tr>
</thead>
<tbody>
<tr>
<td>Mom pig</td>
<td>Outside</td>
<td>Wolf eats pigs in straw and stick house.</td>
</tr>
<tr>
<td>Three pigs</td>
<td>Inside straw, stick, and brick houses</td>
<td>Pig in brick house tricks wolf.</td>
</tr>
<tr>
<td>A wolf</td>
<td></td>
<td>Wolf is eaten.</td>
</tr>
</tbody>
</table>

Ask students to think about a version of The Three Little Pigs story that they know and have read before. Ask volunteers to tell you the characters in the story. Then, ask them to describe the setting of the story. Finally, have them briefly tell the events in the story that they remember. (See sample answers in chart above.) At this point, students may only remember very general details of the story, but as you read James Marshall's version of the story to them, they will likely remember more details about a previous version they read or heard. Once students have activated their prior knowledge about this version of The Three Little Pigs, explain that they are now going to read another version of the same story.

Vocabulary "Here are some words you should know."

Sow-an adult female pig

Gobble-to eat greedily

**Measurable Objectives**

Explain to students that they are going to make text-to-text connections by thinking about a version of The Three Little Pigs story they know and comparing it to the James Marshall's version that you are going to read aloud to them. They will complete a comparison chart that compares and contrasts the two stories, draw a
picture that tells how the two stories are the same and different, and then "write" their own story.

**Focused Instruction**

Explain that the author of this The Three Little Pigs has included many of the details that they remember from the version of the story they have already read or heard, but he's also included some new details as well. Tell them that they are going to make text-to-text connections by comparing the two stories.

Explain that text-to-text connections are how one story is alike or reminds them of another story in some way. For example, two stories may have the same setting—a mountain, a forest, or a jungle. Making a text-to-text connection means connecting an event, character, or setting in two different texts.

Draw a comparison chart. Activate students' prior knowledge about this story by briefly reviewing the "Events" column of the chart they completed in the "Hook/Engagement" activity. Tell students that you are going to read this story aloud, stopping at certain points, and having them make text-to-text connections. Read the first page of The Three Little Pigs and then stop and model a text-to-text connection.

"This story tells that the mother pig sent her children out to seek their fortune. The version that I read before tells that the mother pig sent her children out of her house because she could not fit them in her house any longer."

Write this information in the comparison chart. Continue reading the story aloud, stopping at certain points to let students give you information.

Suggested stopping points include:

After the wolf gobbles up the first pig who built his house of straw

After the wolf gobbles up the second pig who built his house of sticks

After the wolf tries to blow down the third pig's house of bricks

The end of the story, when the third pig gobbles up the wolf

Discuss students' comparisons between James Marshall's version of the story and the version of the story they know. Listen to make sure that they are making text-to-text comparisons in each example that they give. Note that some students may remember different details about each version of the story. For example, some students might comment on the difference in illustrations or that the wolf looked meaner in the version they read.

Comparison chart:

New Story: Mother pig sends children to find fortune; Mother pig doesn't warn children about wolf

Old Story: Mother pig sends children out because her house is too small; Mother pig warns children about wolf
Same: Children pigs make houses out of straws, sticks, and bricks; wolf eats the pig who makes house of straw and house of sticks; third pig is clever and tricks the wolf.

**Guided Practice**

Ask students to pick out one event, setting, or character to compare in the two stories. Tell them that they can take an example from the chart, or they can think back to the chart they filled out in the "Hook/Engagement." Ask students to draw a line down the middle of their paper and draw one picture from the new story on one side and one picture from the old story on the other side. Allow students to be as creative as possible. Sketch two pictures on the blackboard or on a piece of chart paper once students have finished their drawings. Then, model a text-to-text connection for students, such as:

"These pictures show one way that I remember how the two stories are the same. In the new story, the mean wolf blows down the first pig's house that is made of straw. In the old story, the mean wolf does the same thing."

Ask students to share their drawings and to follow your model as they tell about their drawing and make a text-to-text connection. Once students finish this activity, ask them which version of The Three Little Pigs they prefer and have them explain why.

**Independent Practice**

Challenge students to make their own text-to-text connections by rewriting one part of The Three Little Pigs story. Group students and have each group talk about one way that they are going to change The Three Little Pigs story. They can choose to change the characters, setting, or event. For example, one group may decide to change the wolf into a tiger.

For a shared writing activity, ask students to write or draw the part of the James Marshall's story that they changed. For example, groups might draw three little hippos and then three little pigs. Ask groups to "read" the part of the new story that they changed and to make a new text-to-text connection. Have them talk about how students who read their new story would understand it better if they had already activated their prior knowledge about James Marshall's The Three Little Pigs.

**Assessment**

To assess whether students have learned how to make text-to-text connections, listen to their shared reading and writing activities from the "Independent Practice" activities. Be sure that they correctly make text-to-text connections by asking them to identify the ways that their "books" are the same as James Marshall's The Three Little Pigs story and the ways their "books" are different.

To further assess students' understanding of activating prior knowledge by making text-to-text connections, ask them to think of a book that they have already read that is similar in some way to The Three Little Pigs. For example, they may know of another book that has a pig as a character or a wolf (Little Red Riding Hood) as a character. Or, they may know another book that has a villain who is mean to the main characters. The text-to-text connections can be fairly general as long as they are clear. Ask students to write or draw about the connection and then explain. Ask them to tell you how knowing about this story helped them activate their
prior knowledge and prepare them to read The Three Little Pigs.

**Reflection and Planning**

Determine which students understand how to activate prior knowledge by making text-to-text connections and which students need help. For students who need more help, talk about two other stories that you have read aloud to them in class and model some text-to-text connections. Continue to have students practice activating their prior knowledge by making text-to-text connections with new stories that you read to them.
Running Records

What is it?

A running record is a method of assessing reading that can be done quickly and frequently. It is an individually conducted formative assessment, which is ongoing and curriculum based. It provides a graphic representation of a student's oral reading, identifying patterns of effective and ineffective strategy use. This method was developed by Marie Clay, the originator of Reading Recovery, and is similar to miscue analysis, developed by Kenneth Goodman.

Through a running record, teachers can obtain:

- Information about a student's use of reading strategies
- Information about a student's self-monitoring
- An accuracy rate
- An error rate
- A self-correction rate

Running records can be used to:

- Document reading progress over time
- Help teachers decide what students need to learn
- Match students to appropriate books

Running records are different from informal reading inventories in that running records do not use a specified text. Teachers don't need to photocopy reading passages before students are assessed. This makes the running record not only a little more spontaneous but also a little more challenging.

Why is it important?

Running records help teachers measure students' progress, plan for future instruction, provide a way for students to understand their progress, and communicate progress to parents and the school community.

Assessments should measure what teachers teach and what students learn. Such assessments help teachers to discover what is working and what is needed in the teaching-learning interactions.

Farr also describes assessment information as helpful only when it is used to help children better understand their own literacy development.

Expert teachers use knowledge about their students — their backgrounds, strengths, and weaknesses — to create lessons that connect new subject matter to students' experiences.

When should it be taught?

Running records are meant to be ongoing assessments and should be administered early in the year — and repeated often throughout the year — to monitor reading progress. These assessments are valuable because they not only give the teacher an opportunity to learn more about the needs and strengths of individual students but also provide time to interact with individual students. In addition, the results of these assessments are invaluable when communicating with parents about individual students.
As helpful as these diagnostic assessments can be, unless a teacher is fortunate enough to have a full-time instructional aide in the classroom, it is often challenging to find time to fit these mini-tests into an already jam-packed schedule. Here are a few ideas for squeezing these assessments into a busy classroom:

1. **Sneak in a few minutes during silent reading.**

   Ideally, you are already reading alongside your students during this time rather than using it to catch up on other paperwork. While it is not recommended that all of the time allocated for silent reading be used for assessing students, it might be possible to steal a few minutes to complete one or two assessments before and after school while still allowing time to model silent reading for your students.

2. **Use before and after school.**

   There always seem to be those one or two students who arrive at school 10 minutes early or stay a few minutes after dismissal. These few minutes could be used to complete a diagnostic or two.

3. **Become a center.**

   If your classroom uses centers during reading workshop or mathematics instruction, you can fit in a few individualized assessments during this time. Again, it is probably unwise to use the entire center time to complete assessments, but even 15 minutes can be useful.

4. **Work with a partner.**

   Some teachers find it very helpful to work with a partner to facilitate the assessment process. One teacher supervises both classes for a short period of time, perhaps 45 minutes, while the other teacher pulls students out individually to conduct assessments. The key to making this plan work is for students to have engaging tasks to work on in the large group.

Ideally, school administrators will help reorganize schedules to facilitate the assessment process, but it never hurts to have some ideas on completing these assessments on your own. If planned for in advance, these diagnostics will be opportunities that you and your students look forward to participating in.

**What Does It Look Like?**

The process of recording responses during a running record is explained in detail in the next section. Use the following example of a blank running record form:

Blank Running Records Form

**How Can You Make It Happen?**

To take a running record, choose a student who is reading and gather paper and pencils for recording. As the student reads, record miscues. Ask the student to retell the passage to check for comprehension. Then analyze the responses, and use the information to decide on future instruction.
**Preparation**

During silent reading time or small-group reading time, sit beside a student and explain that you want the student to read a part of his or her book to you. Be sure to tell the student that you will be writing while he or she is reading, and that it doesn't mean a mistake has been made. Position the recording form in a way that student won't be distracted by what you are writing. Since you may do this frequently during the year, make a note of the book or pages the student is reading, as the passages should be new each time a running record is taken. For older students, who tend to read quickly, it may be helpful to copy the pages the student is reading and record notes on the copy.

**Recording**

Record all correct responses with a checkmark. Use a symbol to mark each substitution, insertion, omission, and self-correction, along with words students don't know or ask for help pronouncing.

Hesitations or repetitions may not affect the understanding of the story, but they can provide information about a student's reading strategies, so it is helpful to note them. If you think a student is losing meaning, you may say, "Try that again," and make a note of the prompt. Practice using these symbols prior to actual assessments, as that may help you keep up with students who read quickly.

After the student reads the passage, check comprehension by asking him or her to retell the story or answer questions that are both literal and inferential. Take notes on what the student learned and understood.

**Scoring**

Once you have noted self-corrections and the words read correctly and incorrectly, look through the running record to tally the number of errors. Here is the standard way to score each error:

- Substitutions, insertions, omissions, and words the student didn't know are scored as errors.
- Self-corrections are not scored as an error if the correct response was given.
- If a line of text was omitted, each word in the line is scored as an error.
- If a student repeatedly made an error on a proper noun, score it as one error.
- "Try That Again" (TTA) is counted as one error.
- Told words (T) and Appeals (A) are each scored as one error.
- Repetitions (R) are not scored as an error.

**Cueing Systems**

After the running record is scored, look closely at the errors to see if they are errors in meaning, structure, or visual cues. Try to determine which cues the student is using for each miscue and self-correction. Kenneth Goodman developed three basic cueing systems.

- **Meaning/semantic**: Readers use meaning to predict the message of text. Reinforce this cueing system by asking, "Does it make sense?"
- **Structure/syntax**: Readers use grammar and knowledge of how language goes together to identify words. Readers who use this cueing system would choose a noun to replace a noun, instead of choosing a verb to replace a noun, because it would sound right to them. Reinforce this cueing system by asking, "Does it sound right?"
• **Visual/graphophonic:** Readers use letter-sound relationships to figure out words by looking at the letters and using the sounds they make. Reinforce this cueing system by asking, "Does it look right?"

Students may have a pattern to the way they read. They may rely heavily on one cueing system, or not use another at all. If students need a reading strategy strengthened, consider using mini lessons, small group, or individual instruction, all of which can teach and review cueing systems.

_Finding an Accuracy Rate, Error Rate, and Self-Correction Rate_

Now that the running record is scored, the student's accuracy, error, and self-correction rates can be found.

To find the **accuracy rate**, subtract the number of errors from the number of words, divide by the number of words, and multiply by 100. This will tell if the text is appropriate for the student. Text that has an accuracy rate over 95% can be read by the student independently. An accuracy rate between 90 and 95% shows the student can read the text with some guidance and instruction. If the accuracy rate is below 90%, the student is likely to be frustrated and not be able to gain meaning from the text.

Independent Reading Level: more than 95%

Instructional Reading Level: 90-95%

Frustration Level: below 90%

To find the **error rate**, divide the number of words in the passage by the number of errors.

Independent Reading Level: 1:200-1:25

Instructional Reading Level: 1:10-1:20

Frustration Level: 1:3-1:9

To find the **self-correction rate**, add the number of errors and self-corrections together and divide by the number of self-corrections. A ratio of 1:5 indicates one self-correction to every five errors and indicates that the student needs strategies for self-monitoring or self-correcting. Self-correcting is important, because it, along with comprehension checking, is a strategy that good readers use.

Excellent: 1:1-1:2

Good: 1:3-1:5

Needs strategies to self-correct: 1:5 or more

_How Can You Measure Success?_

Student improvement in reading, due to information gained during running records, is the best measure of success. In conducting running records throughout the year, teachers will be able to see progress over time, intervene with instruction when necessary, and communicate progress to parents.
Literacy Centers

What Is It?

Literacy centers are an exciting, self-motivational way to enhance, develop, or extend learning within a classroom. At literacy centers, students work alone or interact with one another using instructional materials to explore and expand their learning (Diller, 2003). As students are engaged in meaningful literacy tasks at centers, the teacher is able to provide reading instruction to small groups of students without interruption. Smaller group size provides a greater opportunity for teachers to provide instructional scaffolds and engage the learner (Pressley, 1998). In addition, small-group instruction allows for a more effective type of strategic coaching. Strategic coaching appears to be one of the key elements that distinguish high-achieving classrooms from those with moderate or low performances (Taylor, Pearson, Clark, & Walpole, 1999).

Why Is It Important?

Research shows that to increase students' intrinsic motivation and keep their attention, teachers must provide choices and make learning relevant, personal, and engaging (Jensen, 1998). Literacy centers capitalize on different learning styles, providing opportunities for multisensory learning that combines auditory, visual, and tactile elements into a learning task. Research on multiple intelligences indicates that effective teachers structure activities in a style that engages most or all of the intelligences. These types of activities excite students about learning and provide opportunities for reinforcement of skills and concepts in a variety of ways (Gardner, 1983). Activating multiple intelligences facilitates a deeper understanding of material.

How Can You Make It Happen?

Literacy center activities are opportunities for students to practice and extend the standards they are learning during instructional time-skills and standards that are critical to advancing students' knowledge about literacy. Centers are not used to introduce new skills or for activities unrelated to core instruction, rather, they help students become independent with the literacy skills they have already learned.

Students will be successful, independent learners if literacy center tasks are developmentally appropriate and if clear expectations are set. Effective literacy center tasks are scaffolded for students and provide models of exemplary work. Communicating the expected outcomes of the tasks and developing a system of accountability will increase the accuracy and completeness of student work.

When selecting materials for literacy centers, include familiar materials used previously during large- and small-group instruction. Modeling and guided practice will guarantee students understand the procedures for using the materials.

<table>
<thead>
<tr>
<th>Literacy Center Activity</th>
<th>Procedure for Using Materials</th>
</tr>
</thead>
<tbody>
<tr>
<td>Students use dry-erase boards and markers to list the words they build at the letter center.</td>
<td>Model how to:</td>
</tr>
<tr>
<td></td>
<td>1. Replace the caps tightly on the markers.</td>
</tr>
<tr>
<td></td>
<td>2. Erase the board using a tissue.</td>
</tr>
<tr>
<td></td>
<td>3. Throw the tissue away.</td>
</tr>
<tr>
<td></td>
<td>4. Stack the dry-erase boards in a neat pile on the shelf.</td>
</tr>
</tbody>
</table>
Remember, most children need to be taught to be independent. If students are not adhering to classroom guidelines during center time, you need to intervene. First, identify an area of focus based on an observed need, such as how to use a browsing box or tape recorder. Explain and model the procedure for the students. Allow opportunities for shared and guided practice through role playing. Provide corrective feedback during this phase to ensure clarity of expectations. As students return to working at centers independently, regularly monitor their progress (Opitz, 1994).

Grouping Options

- Teacher Working with Small Group
- Letter Center
- Big Book Center
- Writing Center
- Overhead Projector Center
- Listening Center

How can you Stretch Students' Thinking?

One of the greatest challenges in managing an elementary classroom is to occupy the time of students who are away from the teacher with meaningful literacy activities. For a teacher to work with a small group of children, the other students in the class must be engaged in meaningful learning. Opitz and Ford (2001) concluded that, "Clearly, the power of the instruction that takes place away from the teacher must rival the power of the instruction that takes place with the teacher."

During 90 minutes of small group instruction, a teacher may work with three reading groups for 30 minutes each. In this scenario, each child will spend approximately 60 minutes away from the teacher. How can you best engage students in literacy activities during this time? Students not working in a small group with an adult should be engaged in independent tasks that are directly related to small-group or whole-group instruction, or working at literacy centers. It is essential that the work the students are asked to do be meaningful and also allow them to expand their learning.

Literacy centers are defined by developmentally-appropriate academic standards. The activities are designed to reinforce the objectives that are being taught during the school day. For example, if a skill for sentence structure is taught during the reading and writing block then it should be reinforced during center time.

If implemented appropriately, literacy centers can increase students' intrinsic motivation and keep their attention by providing choices, making learning relevant and personal, and making learning engaging (emotional, energetic, physical).

When can you use it?

- **Reading**: Reading centers can be created to fit just about any topic. Generally, a center is focused on independent, peer, or shared reading, or it is connected to skill activities taught prior to the center time. Some classrooms include centers that focus on reading the walls; reading books, magazines, or posters that go along with topic; or are connected to a listening center. The centers may include a pocket chart, an overhead projector, a word wall, vocabulary review, or working with Microsoft Word. Skill centers may include activities that use graphic organizers, posters, flashcards, phonemic-awareness letter tiles, or other manipulatives.

- **Writing**: Centers addressing this area should include writing for pleasure, to share information, or to convey meaning. Types of tasks used in the writing center include fill in the blanks; story starters; short-answer response, graphic organizers, or poetry. Students may use writing centers to create books, cards, stories, poems, recipes, lists, newspapers, charts, maps, or directions. A writing center can be used in virtually any content area.

- **Math**: Ideas for enhancing math centers mainly call for the use of manipulatives. Some topics that are easily reinforced during center time are data collecting and analysis; sequencing of items by size/number or by time
elapsed; learning to tell time; counting money or other manipulatives; taking measurements; or learning one-to-one correspondence.

- **Social Studies:** Centers addressing social studies themes are natural extensions of units. Literature activities, role-playing, and drama are great extensions to reinforce themes. Other ideas to enhance social studies units include WebQuests, reading or creating maps and globes, studying transportation models, solving puzzles, and playing any type of money games to reinforce economic standards.

- **Science:** Use literacy centers as a natural extension of a science unit. Be sure that the activities involve observing, hypothesizing, or experimenting with the subject of study. Students should be encouraged to ask "What if?" questions on a regular basis. Vocabulary or word study is also a natural inclusion in a science study area. Also, using a hand lens to investigate is always a favorite with children.
Teaching Strategies for Language Arts
Useful Instructional Strategies for Literature-Based Instruction

There are many different strategies that research has shown are effective in literature-based instruction (Cooper, 1993). These include scaffolding of instruction, modeling, cooperative learning, student choices, self-initiated reading and writing, using different modes of reading, activation of prior knowledge, and student responses to literature.

**Scaffolded Instruction**

Scaffolded instruction is a concept that has grown out of research on how individuals learn (Collins, Brown, & Newman, 1986; Vygotsky, 1978). This concept is based on the idea that at the beginning of learning, students need a great deal of support; gradually, this support is taken away to allow students to try their independence. This is what Pearson (1985) called the gradual release of responsibility. If students are unable to achieve independence, the teacher brings back the support system to help students experience success until they are able to achieve independence (Cooper, 1993).

The concept of support in scaffolded instruction is much broader than the modeling and teaching of strategies and skills; this is only one part of the scaffolding process. Providing support takes place in a number of ways – the way in which the selections are organized in a theme, the amount of prior knowledge activation that is provided, the way in which the literature is read by the students, and the types of responses students are encouraged to make.

**Modeling**

Modeling has been shown to be a vital part of helping students learn the process of constructing meaning and of helping them learn the various strategies and skills involved in this process (Bandura, 1986). Modeling takes place first through the literature itself (Walmsley & Walp, 1990) and the way it is organized in thematic units. Modeling of specific strategies and skills is also provided by the teacher for those students who need it. This is done by using literature that has been read as models to show the use of strategies and skills (Walmsley & Walp, 1990). These lessons are known as mini-lessons and they may be formal or informal (Cooper, 1993). Modeling by the teacher is also done through reading aloud (Anderson, Hiebert, Scott, & Wilkinson, 1985), through demonstrating response activities and discussions (Martinez & Roser, 1991), and through shared writing (Cooper, 1993). Students also provide modeling for each other through cooperative learning.

**Cooperative Learning**

Cooperative learning is also a very effective instructional strategy that works well in literature-based instruction (Slavin, 1987). Students learn to read, write, and think by having meaningful engagements with more experienced individuals (Wells, 1990). Many times these individuals may be their peers.

**Having Choices**

Having choices in learning to read and write helps students meet their own individual needs (Johnston & Allington, 1991). By giving students options to choose from in what they read, how they read, and how they respond to a piece of literature, we allow them to actively construct their own meanings (Martinez & Roser, 1991).
**Independent Reading and Writing**

Self-initiated or independent reading and writing are also important instructional strategies to use in literature-based instruction. Children and young adults learn to read and write by having meaningful, authentic reading and writing experiences and by getting support from more experienced individuals. In order for students to become expert readers and writers, they must have time to practice and apply what they are learning - reading and writing. Therefore, it is essential that the literacy-centered classroom provide time for students to read independently in self-selected books and to engage in self-initiated writing.

**The Effects of Independent Reading on Reading Achievement**

**Builds Fluency**

Independent reading builds fluency. There is substantial evidence that unless students can accurately and effortlessly deal with the word-identification demands of reading, difficulties will result in comprehension and overall reading achievement (LaBerge & Samuels, 1974). There is also evidence that unless children read substantial amounts of print, their reading will remain laborious and limited in effectiveness (Allington, 1984; Stanovich, 1991). Finally, evidence exists which shows that when students do read substantial amounts of text, their reading performance improves (Bridge, Winograd, & Haley, 1983; Dowhower, 1987; Herman, 1985).

**Increases Vocabulary**

Independent reading leads to increased vocabulary development. One of the best-established relationships in the field of reading is the very significant relationship between vocabulary development and achievement in reading (Baumann & Kameenui, 1991; Nagy, 1988). There is also evidence that shows that independent reading is probably the major source of vocabulary acquisition beyond the beginning stages of learning to read (Nagy, Anderson, & Herman, 1987; Nagy, Herman, & Anderson, 1985). This same research shows that while the probability of acquiring the meaning of any specific word simply through reading it in the context in which it appears in independent reading materials is not high, students who read widely can learn the meanings of thousands of new words each year.

**Builds Background**

Independent reading builds background knowledge, or schema. Another extremely well-established research finding is that students' reading ability is dramatically influenced by the amount of interrelated information (schema) they have about the topic about which they are reading (Anderson & Pearson, 1984; Ausubel & Robinson, 1969; Bartlett, 1932). By reading widely, students are exposed to diverse topics and information which they can then use in future reading.

**Modes of Reading**

The term *modes of reading* refers to the different ways literature may be read -- aloud by the teacher, shared, guided by the teacher, cooperatively, or independently (Cooper, 1993). By changing the modes of reading used for different students, we are able to scaffold instruction and provide different levels of support for students in order to make them successful in reading a piece of literature (Cooper, 1993; Cullinan, 1992; Tunnell & Jacobs, 1989).
Prior Knowledge Activation

Activating prior knowledge is another instructional strategy that is important in literature-based instruction (Cooper, 1993). Many different strategies can be used in activating prior knowledge; most of these strategies help students become independent in activating their own prior knowledge. Research on schema theory and prior knowledge has clearly shown that students construct meaning by using their prior knowledge to interact with the text (Anderson & Pearson, 1984). A thematic organization in which themes are carefully developed with related pieces of literature also supports the activation and development of prior knowledge; by reading several related selections, students build on their prior knowledge from previous selections as they read the next selection.

Responses to Literature

Responses to literature are also important to literature-based instruction (Martinez & Roser, 1991). By encouraging and allowing students to respond to literature, we promote the active construction of meaning.
Strategies for Language Arts (reading, decoding, writing)
Instructional Strategies for All Learners with Difficulties with Mechanics of Writing/Drawing

No Tech (Mechanics of Writing/Drawing)

• Make accommodations for writing through the following strategies:
• Allow more time to complete assignments
• Reduce quantity of final product
• Explore different forms of writing – for example, don’t restrict writing to cursive
• Model writing first – teacher/peer/aide writes the word to show student how to form letters
• Use “fill-in-the-blank” answer format
• Modify worksheets – simplify; make templates for student to complete
• Use multiple choice answer format
• Support spelling skills through use of word searches and crossword puzzles
• Warm-up exercises – for hands/arms prior to writing

Low Tech (Mechanics of Writing/Drawing)

• Word walls – to reinforce frequently used words and topic/story vocabulary; create on blackboard, whiteboard, or cards posted on walls; words may be grouped together by category and color-coded
• Word rings – another way to reinforce topic/story vocabulary by putting text, drawn/cut-out/scanned pictures/drawings, story characters, picture communication symbols, etc. on oaktag cards; then create rings with the cards using binder rings, shower curtain rings, pipe cleaners or yarn
• Spelling journals
• Handwriting instruction books/guides, e.g., Beginning Connected, Cursive Writing, Calvert School Store, http://home.calvertschool.org/hs/schoolstore/enrichment/writing_grammar.htm
• “Writing” letters in sand, finger paints, salt, beans, etc. – to practice letter formation, provides kinesthetic feedback
• Tactile letters, e.g., made with sandpaper, puff paints, glitter, glue, etc. – to trace; for practice in letter formation and for kinesthetic feedback
• Enhance lines to make them tactile – puff paints, glue, hot glue
• Variety of tactile writing surfaces – e.g. sandpaper, screen, etc.
• Magnetic alphabet set – sticks to any magnetic surface, e.g., cookie sheet
• Magnetic alphabet board – for use with magnetic letters/numbers/words
• Magnetic printer paper – to create magnetized letters, words, graphics, etc. (office supply)
• Scrabble or other letter tiles – for writing, spelling
• Letter/number representations – made out of clay, paints, collages; for tactile and visual reinforcement; make a clay alphabet/numbers; have students make their own
• Dot-to-dot letters – letters written in dots for student to complete
• Pencil grips of many types – stabilizes student’s grip on pen or pencil; commercially made or make your own with a piece of foam or non-slip material, e.g., Rug Lock (office supply, grocery)
• Adapted pens/pencils – Dr. Grip – good for adults too (office supply), EvoPen – small, oval, fits in palm, triangular pencils, Squiggle Wiggle Writer – triangular, vibrating, battery-operated; 4 color cartridges
• Nightwriter lighted pen – battery-operated; has light at the tip to support visual tracking while writing
• Vary writing implements – markers, paints, fat crayons/pencils, grease pencils; experiment with what works best for the student
• Drawing/illustrating – crayons, markers, finger paints, paints, Chunky brushes (big handles) – for painting (art stores)
• Shift position of paper – the standard positioning may not work for all students
• Enhanced line paper – commercial raised line paper or adapt your own paper by printing lines in a color, then laminating the paper and gluing over the lines to enhance them, e.g., Right-Line Paper – Wide Rule of STOP-GO red/green
• White board or Contact Brand white Memoboard paper or small chalkboard – write and erase surface for students to communicate quick messages with wipe-off markers/chalk and erasers (office/educational/art supply)
• Erasable crayons on dry erase board for more drag – crayon grip gives more control (educational supply)
• Plastic writing guides – keeps pen/pencil within a limited rectangular space Stencils/templates, tracing paper – to serve as guides for practice
• Highlighters for tracing – student can trace directly over black line model
• Rubber stamps & stamp pad – for letters/numbers/name
• Finger grip ruler – keeps fingers out of the way while drawing a line (office supply, educational supply)
• Highlighter markers or tapes, colored dots, correction tape – to “take notes” in text by highlighting important points or to indicate margins or start/end points on the writing paper (office supply)
• Magic Rub Erasers – easier to use than regular erasers; don’t tear paper
• Correction/cover-up tapes – to correct mistakes in writing if erasing is a problem (office supply)
• Dycem or other non skid pads/rolls, e.g., Rug Lock or Contact Brand Grip Liner – use to hold objects in place on table/wheelchair, e.g., slantboard, clipboard with writing paper, Dycem (available at grocery/variety stores)
• Clipboard to hold paper or tape paper to desk – to hold writing paper steady (office supply)
• Prewritten words/phrases on labels/cards/paper – for answering questions or other writing tasks
• Peer/aide takes notes for student – use carbon paper, NCR paper
Instructional Strategies for All Learners with Difficulties with Reading/Decoding Access

No Tech (Reading Decoding Access)

- Teach students to read strategically – e.g., review title/chapter headings; locate main ideas, etc.
- Reduce amount to be read
- Adjust allotted time for assignment
- Enhance meaning of reading with gestures, exaggerated facial expressions and intonation during group reading
- Choral reading or singing of words/text – music, rhythm and rhyme are memory enhancers
- Peer tutor – or adult, to support or read to student
- Finger tap for syllable counting – kinesthetic and auditory reinforcement
- Discuss what is depicted in the drawings – how it relates to the text; location of specific vocabulary within the illustrations
- Extensive reading preview – vocabulary development, story line, background information, etc.
- Present several versions of the same story
- Use student interests, e.g., sports, games, as reading material
- Locate high interest/low reading level materials at library, etc. – to facilitate fluency in reading
- Modify homework – to better address student’s grade level
- Poetry for Young People, various titles, e.g., William Shakespeare, Robert Frost (Scholastic) – text with graphics to support shared reading experiences

Low Tech (Reading Decoding Access)

- Word dice made from milk cartons – for sight word development, vocabulary, synonyms, etc.
- Label items/spaces around the classroom
- Use letter stamps to make reading/writing fun
- Highlight syllables – to facilitate decoding
- Highlight target vocabulary words from a larger field of text – removable transparent highlighter tape, highlighters, etc.
- Post-its – to cover (delete) sounds
- Word walls – to reinforce frequently used words and topic/story vocabulary; create on blackboard, whiteboard, or cards posted on walls; words may be grouped together by category and color-coded
- Word Rings – another way to reinforce frequently used words and topic/story vocabulary by putting text, drawn/cut-out/scanned pictures/drawings, story characters, Picture Communication symbols, etc. on oaktag cards; then create rings with the cards using binder rings, shower curtain rings, pipe cleaners or yarn.
- Puppets, finger puppets – with names which represent/reinforce consonant sounds
- Use American Sign Language or create a kinesthetic sign – for reinforcement of letter names/sounds
- Create big oversized props for letters p, b & d – students march around with the letters, saying the names of the letters or an appropriate theme for reinforcement
- Use “word windows” – to make words by mixing sounds with word families
- Reinforce letter names/sounds through tactile enhancement – e.g., students form letters in sand; teacher creates sandpaper letters, raised letters with glue/glitter, etc.
- Word searches & crossword puzzles
- Magnifying glass, word windows, mini-flashlight – for visual tracking of words/letters
- Letter tiles, Scrabble tiles, magnetic letters – to form words/sentences
- Magnetic word sets – to create sentences, poems, etc.
- Magnetic printer paper – to create magnetized letters, words, graphics, etc. (office supply)
- Segment components of stories/words – so they can be physically manipulated (stickies, index cards, sentence strips, etc.), e.g., sequencing parts of stories, manipulating word families, etc.
- Provide adaptive surfaces for reading materials (slant boards, easels, non-slip padding)
- Modify worksheets – simplify format; reduce amount of text; reword in simplified language
• Enlarge print materials – on photocopier
• Word searches and crossword puzzles – (www.Puzzlemaker.com)
• Colored acetate filters laid over text (www.irlen.com) – can make a tremendous difference for students who have Scotopic Sensitivity Syndrome (SSS – a sensitivity to light which affects depth perception); especially helpful for students with Autism/Asperger’s Syndrome, e.g. Transparency Pockets (office supply stores) or filter kit from See It Right which includes multi-colored sets & instructions (See It Right); special colored glasses – may be necessary for some students with severe SSS
• Color code word targets to match answer location – e.g., put yellow arrow sticky in section of text where answer will be found
• Graphic Organizers – to preview/review story narrative, vocabulary, characterization, etc.; e.g., concept maps, Venn Diagrams, story boards, sequence grids, & webs (webs are effective for brainstorming ideas individually or in groups by choosing a topic placed in a circle in middle of page; free associate quickly; list all responses without judgment; related ideas branch out from the topic and can later be grouped into clusters; pictures/symbols can also be used as templates, e.g., spider, tree, flower, etc.)
• Enhance/adapt/modify books:
  ~ Use objects and actions to enhance meaning of text, specific vocabulary – toys or other objects and role playing can be used to provide cues to meanings of words
  ~ Cut apart and remake books, which have graphics but no text – for student to “tell” the story from the pictures
  ~ Make props – cut graphics out of one copy of a book, put Velcro on back of graphics/pictures and Velcro on the pages of a second copy of the book, the book becomes interactive, e.g., students can match characters/objects to the picture in the book, choose the correct picture when asked by teacher, do interactive worksheets, etc.
  ~ Rewrite text in simplified form and paste over original text associated with graphic – to allow student to read independently
  ~ Cut & paste Picture Communication Symbols – place over text so student “reads” via the symbols or place under text to facilitate reading of text
  ~ Use clear drawings/photos – which correspond to text or relate to content
  ~ Enhance text with definitions and explanations of text – to enhance understanding of content
  ~ Rewrite text for older students at lower grade levels – begin simply with a sentence or two to summarize paragraphs; increase difficulty by summarizing pages into one or two paragraphs, etc.
• Colored pens for note-taking – to differentiate vocabulary, types of information, sections etc. or to highlight after the fact

Mid tech (Reading Decoding Access)

• Mini flashlight – to support visual tracking while reading (electronics/office supply, department stores)
• Tape record text – for students to hear/review story content or to read along with text
• Books on tape – to preview content/sequence of story/text (library, audiotape purchase or rental stores, Recordings for the Blind and Dyslexic)
• Video taped versions of stories – to motivate, make story come alive, and to preview/review story content
• Card reader/recorder – device which speaks aloud text written on a card when card is run through the device; provides auditory feedback to support vocabulary/math skills.
• Hand-held talking dictionary/speller – e.g., Franklin Homework Wiz & Speaking Homework Wiz, dictionary/thesaurus; spell check; create personal word list; words appear on small screen; target words, definitions, & synonyms can be pronounced aloud if speaking version; offers practice in cursive and print handwriting; arithmetic tutor & calculator; Speaking Language Master, Special Edition a more sophisticated device which can be customized for different learning disabilities and has adjustable speech speed; ideal for blind users; an extra large screen is provided for visually impaired students (these and other versions available from Franklin Electronic Publishers)
• Songs – teach students original or other songs, then use overhead device with song lyrics on the overlays; students read as a group; students take turns tracking the words with a pointer
Examples of Adaptations, Modifications and Use of Assistive Technologies for students who are struggling with Language Arts activities

No Tech/Light Tech

- To assist with turning the pages while reading, use page fluffers (made with small pieces of foam, glue dots) page turners and page extenders (made with Emory boards or tongue depressors attached to the sides of the pages)
- Enlarge the text of any written materials
- Highlight words of written materials to emphasize important words, concepts, vocabulary
- While reading use an index card with a cut out window to assist with tracking for easier reading
- Use plastic page protectors for easier turning of pages in books
- Use slant boards, wedges, or easels for easier viewing of materials
- Laminate pages of books or any paper materials for easier turning
- Use a 3 ring binder for page turning – also gives a hard surface for slanting
- Use visual aids (ex. pictures) to help stimulate ideas for discussion or for project
- Peer read materials to student
- Secure books and other reading materials to student’s desk with clamps, bungee cords, tape, or Velcro
- Use adapted writing tools for any writing assignments (i.e. slant boards, pencil grips, pencils on splints, wrist supporters, arm stabilizers)
- For easier writing, use letter stamps
- Use word magnets to develop sentences, phrases, or titles
- Use banks of communication symbols or words to assist with sentence development, answering questions, asking questions, discussion with peers
- Use small post-it notes to mark paragraphs for reading – then use corresponding stickers on squares on overlay or augmentative communication device with pre-recorded reading of the paragraph
- Use colored strips of plastic (such as colored overhead sheets) and cut into strips to assist with tracking
- Use mnemonic strategies to assist with memorization of important facts
- Provide multiple practice opportunities such as oral reading, role playing

Mid Tech/High Tech

- Enable student to record his/her thoughts on a tape recorder and write them down while listening to the audiotape
- Provide voice output communication aids (VOCA) for students with little or no verbal communication system
- Provide a computer for writing
- Student can provide a presentation by putting his/her pictures/notes on adapted slide projector; student can display slides by using a switch
- Have materials available on filmstrips for students who have difficulty reading
- Have reading materials available on CD Rom for students with difficulty reading
- Provide an alternate keyboard access for computers – use storybook software
- Reproduce reading materials and reduce the size to fit on augmentative communication device or alternate keyboard
- Use multimedia software such as Hyperstudio, IntelliPics, or Imagination Express to author own ballads, poems, or stories – these can be read on screen with and without voice output
- Download other stories, ballads, poems from the Internet, then upload them into a talking word processor
- Use a screen reader to help with reading
- Use supplemental overlays using “go to” features or linking (Dynamyte) or levels (Voice-in-a-box)
- Use word prediction software for writing assignments
- Create overlays with phrases and/or words for to answer comprehension questions, ask questions, or for peer test review sessions
- Create “revision” overlays that allow students to participate in peer revisions for group projects
- Place the mouse pointer on page turning arrow on the computer screen
Secure the mouse where the student can click to turn the pages
Use a switch adapted mouse
Use a mouse with the ball removed

Create overlays that included the phrases and words needed for story frames, frame sentences, and other types of modeled writing

Resources on the Internet

Web English Teacher - Web English Teacher presents the best of online English/Language Arts teaching resources: lesson plans, WebQuests, videos, biography, e-texts, criticism, jokes, puzzles, and classroom activities. [http://www.webenglishteacher.com](http://www.webenglishteacher.com)

Teachers First Literature - [http://www.teachersfirst.com/cnt-lit.htm](http://www.teachersfirst.com/cnt-lit.htm)

Teachers First Writing - [http://www.teachersfirst.com/cnt-writ.htm](http://www.teachersfirst.com/cnt-writ.htm)

Graphic Organizers - Learn how to create a variety of graphic organizers. Also you can download and print a variety of organizers already created [http://www.graphic.org/goindex.html](http://www.graphic.org/goindex.html)

Organizers - Another great site with methods for utilizing graphic organizers in your classroom. [http://www.sdcoe.k12.ca.us/score/actbank/sorganiz.htm](http://www.sdcoe.k12.ca.us/score/actbank/sorganiz.htm)

Spark Notes - [http://www.sparknotes.com](http://www.sparknotes.com)


Freeware and Shareware

Read Please – [http://www.readplease.com](http://www.readplease.com)
DIFFERENTIATED INSTRUCTIONAL STRATEGIES
History/Social Studies

**Students Who Have Difficulty Related to Organization, Memory, Comprehension, Attention, Reading and Writing**

*Instructional strategies for all learners, including those with cognitive and physical disabilities who have difficulties with:*

- Inattention/distractibility
- Organization
- Following directions
- Memory/recall
- Reading decoding/access
- Understanding/comprehension
- Mechanics of writing/drawing

**Problems with Inattention/Distractibility:**

*Teach students how to:*

- Use class and individual schedules.
- Check off tasks as they are completed.
- Set goals for how much of a task they can complete in an allotted time.
- Verbalize while working.
- Use self-monitoring techniques, such as SLANT (sit up, lean forward, ask questions, nod your head, track the teacher) to help them remember the needed behaviors.

*Before, during, and following instruction:*

- Give students advance notice (a physical cue, special word) that you will be saying or showing key information.
- Break assignments down into shorter segments.
- Alternate short work periods with teacher-controlled breaks - have this student be your official pencil sharpener, note-runner.
- Vary presentation of a task.
- Use physical, visual, or auditory signals/cues to redirect student to stay on task.
- Provide copies of work that is on the blackboard or textbook.
- Use color cues such as neon-colored highlighters to direct student attention to important information, key words, and directions.
- Use games to reinforce concepts.
- Allow additional time to complete assignments/tests.
- Limit the number of problems that students copy and solve problems. Highlight the number of problems you want the student to complete.
- Use a digital, silent kitchen timer to help a student who is slow to complete work.
- Assign a peer tutor. Surround student with appropriate role models.
- Introduce only one concept at a time and provide scaffolding within your instruction.
- Reteach concepts frequently by varying the instructional approach.
Provide a physical environment that is:
• Free from distractions and clutter. Have the student remove all but the material with which he is working from his desk.
• Seat student in area free from distractions such as open doors or air conditioners.
• Use study carrel.
• Use proximity seating.

Provide work materials that are:
• Try not to copy on both sides of the paper.
• Use frequent indentations, double spacing, and boxes around key words to provide visual clues.
• Block extraneous information on pages to limit distractions.
• Present material on colored paper.
• Provide "windows" cut from paper or cardboard to expose only one segment at a time.

Problems with Organization

Teach students routines and procedures:
• Goal-setting skills.
• Note-taking skill to identify and highlight key information.
• Decision making/prioritizing skills.
• Time-management skills to help them estimate how long it will take to complete assignments.

Within the environment:
• Provide a time weekly for organizing desk and notebooks.
• Use assignment books and calendars.
• Have students "check" unneeded books and notebooks at the door. They can pick up their items as they exit class.
• Attach things that often get misplaced (pencils) to students' desks with Velcro.
• Check that homework assignments are written down daily.
• Check homework daily.
• Send daily/weekly progress reports home.
• Color code notebooks and school book covers.

Before, during, and following instruction:
• Provide page numbers where answers can be found.
• Provide boxes for students to write in answers.
• Provide advanced organizers or outlines of the content.
• Use slot outlines.
• Color-coding to identify vocabulary, main ideas, and details.
• Use a variety of teacher demonstrations & modeling, guided, independent practice, and frequent review opportunities.
• Provide a copy of assignments for home.
• Use checklists and mnemonics to help students remember the expected behaviors.
• Avoid cluttered/crowded worksheets.
• Allow student to use a computer to complete assignments.
• Assign a peer buddy to assist with organization.
• Create backwards timelines for larger projects.
• Introduce only one concept at a time and provide scaffolding within your instruction.
• Reteach concepts frequently by varying the instructional approach.
Problems with Following Directions

Teach the student to:
• Verbalize written directions. By doing this, you will detect early errors or misunderstandings.
• To repeat or re-explain directions.
• Look at the person who is speaking.
• Write down each step of a problem and check off as they complete it.

Before, during and following instruction:
• Face the child and speak slowly and distinctly.
• Check frequently that the student is following directions.
• Model or demonstrate each step. Have students check off each step as it is completed.
• Present the key points of a lecture at the beginning of your talk, then summarize.
• Divide longer orally assigned tasks into shorter ones.
• Very gradually help the student learn to take orally presented notes.
• Provide example of completed item.
• Give the student extra time to respond to oral questions.
• Provide only one portion of the assignment at a time.
• Provide an outline of your lectures; use graphs and tables to reinforce concepts.
• Provide practice in noticing, describing, and comparing details.
• Provide visual displays such as - flowcharts, webs, pictorials, pre-reading questions, and keyword note-taking organizers frequently to help students listen and follow directions.
• Use a buddy system to clarify directions.
• Use cooperative learning activities.
• Use mnemonic aids to signal steps.
• Introduce only one concept at a time and provide scaffolding within your instruction.
• Reteach concepts frequently by varying the instructional approach.

Problems with Memory/Recall

Before, during and following instruction:
• Provide the student with a written out schedule of classroom routines and timelines.
• Chunk pieces of information together. (For example have students learn the number facts in sets of three).
• Provide a balance of visual and auditory stimuli in your instruction.
• Provide multiple opportunities for practice in different formats.
  o Use flashcards for individual or group review.
  o Use songs, rhymes, or rhythms to help remember information.
  o Use acronyms to remember words or phrases.
  o Use mnemonics like "Please excuse my dear Aunt Sally" (order of operations) to remember sequenced steps.
  o Play memory games.
• Use semantic maps and diagrams to help students remember the connections between concepts.
• Introduce only one concept at a time and provide scaffolding within your instruction.
• Reteach concepts frequently by varying the instructional approach.
Problems with Reading/Decoding Access

Before reading:
• Teach students to read strategically – e.g., review title/chapter headings; locate main ideas, etc.
• Reduce amount to be read
• Adjust allotted time for assignment
• Present several versions of the same story
• Locate high interest/low reading level materials at library, etc. – to facilitate fluency in reading
• Enhance/adapt/modify books:
  o Enlarge print materials – on photocopier
  o Rewrite text in simplified form and paste over original text associated with graphic – to allow student to read independently
  o Use objects and actions to enhance meaning of text, specific vocabulary – toys or other objects and role playing can be used to provide cues to meanings of words.
  o Cut apart and remake books, which have graphics but no text – for student to “tell” the story from the pictures.
  o Make props – cut graphics out of one copy of a book, put Velcro on back of graphics/pictures and Velcro on the pages of a second copy of the book, the book becomes interactive, e.g., students can match characters/objects to the picture in the book, choose the correct picture when asked by teacher, do interactive worksheets, etc.
  o Use clear drawings/photos – which correspond to text or relate to content
  o Cut & paste Picture Communication Symbols – place over text so student “reads” via the symbols or place under text to facilitate reading of text

• Extensive reading preview – vocabulary development, story line, background information, etc.
• Label items/spaces around the classroom
• Provide adaptive surfaces for reading materials (slant boards, easels, non-slip padding)
• Have needed books on CD-ROM, videotaped, or audio taped if possible
• Have computer generated text available if possible

During reading:
• Enhance meaning of reading with gestures, exaggerated facial expressions and intonation during group reading
• Use choral reading or singing of words/text – music, rhythm and rhyme are memory enhancers
• Peer tutor – or adult, to support or read to student
• Discuss what is depicted in the drawings – how it relates to the text; location of specific vocabulary within the illustrations
• Highlight target vocabulary words from a larger field of text – removable transparent highlighter tape, highlighters, etc.
• Use a magnifying glass, word windows, mini-flashlight – for visual tracking of words/letters
• Segment components of stories/words – so they can be physically manipulated (stickies, index cards, sentence strips, etc.), e.g., sequencing parts of stories, manipulating word families, etc.
• Colored acetate filters laid over text – can make a tremendous difference for students who have Scotopic Sensitivity Syndrome (SSS – a sensitivity to light which affects depth perception); especially helpful for students with Autism/Asperger’s Syndrome, e.g. Transparency Pockets (office supply stores) or filter kit from See It Right which includes multi-colored sets & instructions (See It Right); special colored glasses – may be necessary for some students with severe SSS
• Color code word targets to match answer location – e.g., put yellow arrow sticky in section of text where answer will be found
• Colored pens for note-taking – to differentiate vocabulary, types of information, sections etc. or to highlight after the fact
• Graphic Organizers – to preview/review story narrative, vocabulary, characterization, etc.; e.g., concept maps, Venn Diagrams, story boards, sequence grids, & webs (webs are effective for brainstorming ideas individually or in groups by
choosing a topic placed in a circle in middle of page; free associate quickly; list all responses without judgment; related ideas branch out from the topic and can later be grouped into clusters; pictures/symbols can also be used as templates, e.g., spider, tree, flower, etc.)

• Have books on tape or in digital format for students to hear/review story content or to read along with text.
• Video taped versions of stories — to motivate, make story come alive, and to preview/review story content
• Hand-held talking dictionary/speller — e.g., Franklin Homework Wiz & Speaking Homework Wiz, dictionary/thesaurus; spell check; create personal word list; words appear on small screen; target words, definitions, & synonyms can be pronounced aloud if speaking version; offers practice in cursive and print handwriting; arithmetic tutor & calculator

Following reading:
• Songs — teach students original or other songs, then use overhead device with song lyrics on the overlays; students read as a group; students take turns tracking the words with a pointer
• Word walls — to reinforce frequently used words and topic/story vocabulary; create on blackboard, whiteboard, or cards posted on walls; words may be grouped together by category and color-coded
• Word dice made from milk cartons — for sight word development, vocabulary, synonyms, etc.
• Word searches & crossword puzzles
• Letter tiles, Scrabble tiles, magnetic letters — to form words/sentences
• Magnetic word sets — to create sentences, poems, etc.
• Modify worksheets — simplify format; reduce amount of text; reword in simplified language

Problems with Understanding/Comprehension

Teach the students:
• The meaning of key vocabulary words.
• How the textbook is organized and the format for each page or section.
• How to verbalize as they complete or work through problems.

Before, during, and following instruction:
• Teach in small chunks so students get lots of practice with one step at a time.
• Model and teach metacognitive strategies (Model and verbalize procedure, guide students through verbalization of problem computation, monitor student verbalizations as they complete procedure, periodic reviews provided).
• Provide an example of a correctly solved problem at the beginning of the lesson.
• Provide visual cues to help students who may have difficulty visualizing shapes, dimensions and sizes.
• Provide learning aids such as calculators to help students focus on conceptual understanding.
• Provide many practice opportunities and include problem solving, reasoning, and real-life application to help with transfer of information.
• Use cooperative learning techniques such as "jigsaw" or "think-pair-share".
• Use taped textbooks.
• Introduce only one concept at a time and provide scaffolding within your instruction.
• Reteach concepts frequently by varying the instructional approach.
Problems with the Mechanics of Writing/Drawing

Make accommodations for writing through the following strategies:
• Allow more time to complete assignments
• Reduce quantity of final product
• Explore different forms of writing – for example, don’t restrict writing to cursive

Consider using an adapted writing surface:
• Enhanced line paper – commercial raised line paper or adapt your own paper by printing lines in a color, then laminating the paper and gluing over the lines to enhance.
• Variety of tactile writing surfaces – e.g. sandpaper, screen, etc.
• White board or small chalkboard

Consider using adapted writing tools:
• Pencil grips stabilize a student’s grip on pen or pencil. These can be commercially made or make your own with a piece of foam or non-slip material.
• Use adapted pens/pencils such as triangular pencils, Squiggle Wiggle Writer, triangular shaped, vibrating or the Nightwriter lighted pen.
• Experiment with a variety of writing implements by trying markers, paints, fat crayons/pencils, grease pencils.
• Use rubber stamps & stamp pad – for letters/numbers/name.
• Use magnetic alphabet letter sets – sticks to any magnetic surface, e.g., cookie sheet
• Scrabble or other letter tiles – for writing, spelling
• Highlighter markers or tapes, colored dots, correction tape – to “take notes” in text by highlighting important points or to indicate margins or start/end points on the writing paper (office supply)
• Use computers with touch screens or switch access if available

For positioning try:
• Shifting the position of paper – the standard positioning may not work for all students
• Using a clipboard to hold paper or tape paper to desk – to hold writing paper steady
• Using a three ring binder or slant board.
• Use adaptive equipment for posture: booster seats, arm rests, phone books, etc.

For longer assignments, taking notes, or completing worksheets try using:
• Prewritten words/phrases on labels/cards/paper
• A peer/aide takes notes for student – use carbon paper, NCR paper
• “fill-in-the-blank” answer format.
• Modified worksheets by making templates for student to complete
• Use multiple choice answer format
• Word walls – to reinforce frequently used words and topic/story vocabulary; create on blackboard, whiteboard, or cards posted on walls; words may be grouped together by category and color-coded
• Correction/cover-up tapes – to correct mistakes in writing if erasing is a problem (office supply)
HEARING IMPAIRMENT

-DEAF

-HARD OF HEARING
Deaf and Hard of Hearing

Team members working with students who are deaf or hard of hearing need to carefully consider each student’s unique needs and learning style, as well as the demands of the task. Strategies are offered to provide a starting point for thinking about possible adaptations. It is important to remember that all team members should have input into decisions regarding instructional strategies.

Possible effects of hearing loss on skill development in History

Children who are deaf or hard of hearing can learn about history in the same sequence and manner as their hearing peers. However, various factors may prevent children who are deaf or hard of hearing from successfully constructing historical knowledge, including the following:

• They may lack general vocabulary and the specific vocabulary needed to discuss the concepts of time, past, present, and future. Hearing children are exposed to language from birth and have an understanding of everyday language. It is more difficult for children who are deaf or hard of hearing to acquire language and learning from their environment incidentally (from overhearing conversations of others in their environment, on TV, on the radio). Without this incidental learning, a child who is deaf may not develop even beginning concepts of time, such as “last week,” “two decades ago,” or “in the twentieth century” without being formally taught them.

• Communication with others may be difficult. If the child and others in the environment cannot communicate with each other effectively, they may not have had the benefit of engaging in discussions regarding current events and concepts important to history such as “independence,” “freedom of religion,” and “exploration and discovery.” Problem solving is especially difficult for children who are deaf, as a sound language base is necessary for putting observations into words or making predictions. Without communication skills, the child can be isolated in the learning environment and unable to participate in group activities and discovery (Ray, 2001).

• Cognitive development may be delayed. Research shows that children who are deaf or hard of hearing have normal intellectual potential (Meadow, 1980). However, for normal cognitive development to occur, a child must be introduced to diverse experiences and exposed to a rich language base (Ray, 2001). This does not always occur in the home and/or in the educational setting. Time concepts are abstract, and difficult to understand without experience and language.

Instructional and Environmental Strategies
- Ways to help students who are deaf or hard of hearing succeed in History

The following strategies are designed to promote access to History content based on the Standards of Learning for students who are deaf or hard of hearing. It is important to remember that each child has unique needs and that decisions regarding instructional strategies should be based upon current and accurate information about the child’s sensory functioning and on team input.

• Be sure that there is someone for students to interact with in the learning environment who can effectively provide not only the vocabulary to label objects but also a language model for expressing concepts and ideas, using the child’s mode of communication.

• Partner with parents. Maintain ongoing communication between the home and teachers so that vocabulary and concepts related with History are reflected and reinforced in as many different situations as possible. Make families aware of the limitless opportunities in the home for exploring and discussing current events and historical concepts during daily routines, and make sure that the parents are able to communicate effectively in the child’s chosen mode.

• Provide an enriched learning environment that promotes a wide range of meaningful experiences with opportunities for reading about and discussion of historic events, past and present.

• Use multimedia approaches for visual representation of course content. Overhead projectors or PowerPoint presentations are preferable to blackboards, as the teacher does not need to turn his or her back to the students. This is especially important for students who are relying on speechreading, signing, cuing, and/or use of residual hearing for
receptive communication.

- Use more than one mode of presentation for time concepts and historic events. These may include manipulatives (puppets, action figures), verbal (role playing, debates), pictorial (time lines), and symbolic modes (graphic organizers). Encourage students to translate between sign language, and English, and to make connections between all modes presented. Students can also use pictures, drawing sets, and visualizing or pantomiming of action to move from the concrete to more abstract representations.
- When using visuals, allow time for students to view the board, overhead, or objects, then to watch explanation/instruction given by the teacher or interpreter, and only then, allow students to offer responses. A hearing person can view visuals and listen at the same time. Children who are deaf or hard of hearing and rely on visual communication through sign language, cued speech, or speechreading must process information sequentially rather than simultaneously.
- Pre-teach vocabulary for coming History lessons in context. Collaboration with the speech/language pathologist in this effort can be beneficial. Remember, many children who are deaf or hard of hearing do not learn words incidentally.
- For students who sign, ensure that all involved are consistent in the signs being used. Use conceptually based signs and avoid inventing new signs for new vocabulary.
- Relate events in history with students’ personal experiences through a dialogic process.
- Emphasize the role of deaf individuals in various events in history.
- Encourage students to process information at a deeper level through questioning.
Intensive Interventions for Students Struggling in Reading and Mathematics

Also available is a FREE self-paced online 4-module course based on this document. To access the online course, click http://rmceducatorsacademy.com/index.php to visit RMC Educator’s Academy. If you are a new user, you can create a free account for access to other online courses as well.
INSTRUCTIONAL STRATEGIES AND CLASSROOM RESOURCES

MATH

SCIENCE
Classification

What Is It?

Classification involves grouping items into one or more categories based on certain distinguishing characteristics. The categories are thoughtfully labeled so that the labels become descriptors for the members of the category.

Why Is It Important?

Classification demonstrates understanding of the relationships among things and helps to clarify concepts. For these reasons, classification is a central activity in all of the science. The category names "bundle" information, providing a means of improved communication and organization; for example, the term conifer efficiently denotes the group of all trees with needles and cones.

In the book Classroom Instruction that Works, the authors cite research that the ability to identify similarities and differences, which is at the heart of classification, is basic to human thought (Marzano, Pickering, and Pollock, 2001).

How Can You Make It Happen?

Classification lessons can begin with a large set of items to be classified. Students discuss the similarities and differences of the items, decide how they will be organized, and place them into groups. They discuss the distinguishing features of each category, and review the items to be sure each is in the correct category. Discussions can include the questions: Are there items that don't fit? Is there a more useful way to classify these items? How can the categories be improved?

To provide more structure in younger grades, students can be given the items and categories. Once the students have mastered classification, give them the items and have them determine the categories to complete the classifying activity. Review the categories that were chosen and discuss how meaningful and useful they are.

When students have an understanding of classifying items into groups, ask them to identify the features that distinguish one category from another and ask them how they decide if something fits into a particular category. Students should be able to defend their classification systems and to identify items that don't fit and explain their reasoning.

Classification can also be used to identify an unknown object by looking at its characteristics and then using a dichotomous key, which is a tool consisting of a series of questions about the features of an item to help identify the item. This is most often used in science to identify items in nature such as shells, rocks, or fish. Players of "20 Questions" are familiar with the use of such keys.
How Can You Stretch Students' Thinking?

Classification is often used when sorting items into groups. This basic classification activity helps students demonstrate understanding of the features of a group and why a particular item should be placed in a group.

Many items have easily identifiable features and categories. Students' thinking can be stretched by discussing items that cannot be placed neatly into categories. How would they classify a movie that has action, drama, and romance? In which area of a video store would that movie belong?

Discuss how categories can sometimes be blurred, and address the importance of choosing the appropriate categories when classifying items. Make sure students realize that items can be forced into categories in which they don't belong if the categories are not appropriate, or if there aren't a sufficient number of categories.

Some items are classified based on a personal point of view. For example, if a company were designing a Web site, they might classify items under departments, as the company is organized. However, the customer might expect to find items classified instead by product categories.

Another way of helping students understand categories more completely is to introduce the concept of a continuum. Discuss how rubrics or Olympic gymnastics scores are given. The product or performance will fall somewhere on a continuum from poor to great. A performance that falls into the category of "3" could range from a low 3 to a high 3, but still belongs in the category of "3."

Another type of classification includes things that combine the features of two or more categories, called a hybrid. In the example of placing people in racial categories, Tiger Woods does not neatly fit into one category, and a hybrid category would be more appropriate.

When Can You Use It?

Reading/English

Use classification to look at features of a variety of written materials. Have students group the books in the classroom library into useful categories.

Writing

Classification is useful in defining terms and expanding vocabulary. Have students classify the words in spelling lists or vocabulary lists, and then have them provide reasons for the categories.

Math

Use classification in geometry. Have students classify shapes using different features, such as size, dimensions, or number of sides.

Social Studies

Use classifying to organize new understandings and to explain how point of view can determine the method of classifying items. Have students classify the methods of transportation during the Industrial Revolution. Ask students to categorize the important people involved in World War II.
**Science**

Classifying can be used to assess student understanding of concepts. Have students describe three clouds and the categories in which they belong. Invite students to take the role of a museum curator and decide where in the museum a group of items belongs and why.

**Physical Education**

Sports and exercise can be classified. Have students determine whether bowling would qualify as an Olympic sport and in which category it would belong. Ask students to classify sports by their health benefits (e.g., cardiovascular, strength training, and so on.).
Comparison

What Is It?

Comparison involves looking at two or more things or ideas and considering their similarities and differences. In many classrooms, teachers use Venn diagrams to help students organize their thoughts when making simple comparisons. The similar characteristics of the two things or ideas is written in the overlapping area of the diagram. The unique characteristics are written in the outer areas of the diagram.

A comparison chart is in some ways a more useful graphic organizer than a Venn diagram, enabling students to label and compare similar features. Comparison charts allow students to analyze similarities and differences by focusing on specific attributes, helping them to organize their thinking. For example, a student might incorrectly compare a coyote and wolf by saying, "A coyote can live in Canada, and wolves hunt in packs." Using a comparison chart will help students to compare using features or attributes that are similar. A sample comparison chart, comparing wolves and coyotes, is pictured below.

<table>
<thead>
<tr>
<th>Feature</th>
<th>Coyote</th>
<th>Wolf</th>
</tr>
</thead>
<tbody>
<tr>
<td>Size</td>
<td>18 inches tall, maximum height</td>
<td>30 inches tall, on average</td>
</tr>
<tr>
<td>Prey</td>
<td>Small animals</td>
<td>Coyote, deer, beaver</td>
</tr>
<tr>
<td>Animal Classification</td>
<td>Cadidae, Canis latrans</td>
<td>Candidae, Canis lupus</td>
</tr>
</tbody>
</table>

Why Is It Important?

- Comparing is a basic skill in thinking about and understanding topics and concepts.
- Comparison is a foundation skill that leads to higher-level skills such as classification, concept definition, metaphor, and analogy.

Comparison is one method of identifying similarities and differences. In their book, *Classroom Instruction that Works*, Marzano, Pickering, and Pollock draw four generalizations from the research in this area:

1. Presenting students with explicit guidance in identifying similarities and differences enhances students' understanding of and ability to use knowledge.
2. Asking students to identify similarities and differences independently enhances their understanding of and ability to use knowledge.
3. Representing similarities and differences in graphic or symbolic form enhances students' understanding of and ability to use knowledge.
4. Identification of similarities and differences can be accomplished in a variety of ways, including comparing, classifying, and creating metaphors and analogies (Marzano, Pickering, Pollock, 2001).

How Can You Make It Happen?

When making comparisons, give students a graphic tool such as a Venn diagram or comparison chart to help them organize and record their thoughts. Model the use of the graphic organizer with the whole class prior to asking students...
to use it independently. For example, choose two characters in the same story to compare. Display an empty comparison chart on the overhead or board. With students, brainstorm key characteristics of the two different characters and record the characteristics in the appropriate areas of the chart. Students can then compare two other characters independently or in a small group and record their thoughts in their own comparison chart.

Another example is to have students list the characteristics of two or more things, recording the similarities and differences between each. For example, a comparison chart on three-dimensional geometric shapes could be used to organize the shapes by key features, such as the number of sides, edges, and vertices.

After students complete a graphic organizer, guide them toward the next step to deepen understanding. "What do we do with this information?" and "How does this help us to understand X?" are key questions that teachers need to encourage students to ask.

Have students take the information recorded in the graphic organizer and summarize or draw conclusions from it in writing. If students are comparing two animals in a comparison chart, for example, have them write a paragraph summarizing the similarities and differences and drawing conclusions based on their comparison.

**How Can You Stretch Students' Thinking?**

The following are some questions for students to consider when making comparisons:

- How are two or more things or ideas the same?
- How are they different?
- Are the similarities of X and Y more important than their differences?
- Do we learn something about X when we compare it to Y?
- What is more difficult to understand about X when we compare it to Y?
- Might a different comparison give us a different perspective?

**When Can You Use It?**

**Reading/English**

Compare characters from the same book or from different books. Explore the similarities and differences between two authors' writing styles. Compare various works of one author during an author study.

**Writing**

Compare two items or concepts using a comparison chart. Write a paragraph summarizing the similarities and differences and drawing conclusions based on the comparison.

**Math**

Sort shapes or pattern blocks, focusing on certain features, such as color and number of sides. Compare and organize three-dimensional figures, such as cones, cylinders, pyramids, and cubes. Comparisons can be made regarding shape of sides, number of sides, vertices, and edges.
Social Studies

Compare two different types of government, such as communism and democracy. Organize research notes on a country, comparing key features of the country to that of the United States. Choose two great figures from history and compare them. For primary students, compare the classroom community to their family.

Science

Compare two mammals, or explore the similarities and differences between mammals and reptiles. Analyze the similarities and differences between the states of matter: gas, liquid, and solid. Compare two or more biomes, such as forest, tundra, grassland, ocean, and desert.
Problem Solving: Guess and Check

What Is It?

"Guess and Check" is a problem-solving strategy that students can use to solve mathematical problems by guessing the answer and then checking that the guess fits the conditions of the problem. For example, the following problem would be best solved using guess and check:

Of 25 rounds at the regional spelling contest, the Mighty Brains tied 3 rounds and won 2 more than they lost.

How many rounds did the Mighty Brains win?

Why Is It Important?

All research mathematicians use guess and check, and it is one of the most powerful methods of solving differential equations, which are equations involving an unknown function and its derivatives. A mathematician's guess is called a "conjecture" and looking back to check the answer and prove that it is valid, is called a "proof." The main difference between problem solving in the classroom and mathematical research is that in school, there is usually a known solution to the problem. In research the solution is often unknown, so checking solutions is a critical part of the process.

How Can You Make It Happen?

Introduce a problem to students that will require them to make and then check their guess to solve the problem. For example, the problem:

Ben knows 100 baseball players by name. Ten are Red Sox. The rest are Blue Jays and Diamondbacks. He knows the names of twice as many Blue Jays as Diamondbacks. How many Blue Jays does he know by name?

When students use the strategy of guess and check, they should keep a record of what they have done. It might be helpful to have them use a chart or table.

Understand the Problem

Demonstrate that the first step is understanding the problem. This involves finding the key pieces of information needed to find the answer. This may require reading the problem several times, and/or students putting the problem into their own words.

For example, "I know there are twice as many Blue Jays as Diamondbacks. There are 10 Red Sox. The number of Blue Jays and Diamondbacks should equal 90."

Choose a Strategy

Use the "Guess and Check" strategy. Guess and check is often one of the first strategies that students learn when solving problems. This is a flexible strategy that is often used as a starting point when solving a problem, and can be used as a safety net, when no other strategy is immediately obvious.

Solve the Problem

Now, solve the problem. You may want to set up a table to record the guesses.

<table>
<thead>
<tr>
<th>Guess Number</th>
<th>Blue Jays</th>
<th>Diamondbacks</th>
<th>Red Sox</th>
<th>Total</th>
</tr>
</thead>
<tbody>
<tr>
<td>First Guess</td>
<td>10</td>
<td>20</td>
<td>10</td>
<td>40</td>
</tr>
</tbody>
</table>
Guess a greater number of Blue Jays.

<table>
<thead>
<tr>
<th>Guess Number</th>
<th>Blue Jays</th>
<th>Diamondbacks</th>
<th>Red Sox</th>
<th>Total</th>
</tr>
</thead>
<tbody>
<tr>
<td>First Guess</td>
<td>10</td>
<td>20</td>
<td>10</td>
<td>40</td>
</tr>
<tr>
<td>Second Guess</td>
<td>20</td>
<td>40</td>
<td>10</td>
<td>70</td>
</tr>
</tbody>
</table>

Now guess a greater number of Blue Jays.

<table>
<thead>
<tr>
<th>Guess Number</th>
<th>Blue Jays</th>
<th>Diamondbacks</th>
<th>Red Sox</th>
<th>Total</th>
</tr>
</thead>
<tbody>
<tr>
<td>First Guess</td>
<td>10</td>
<td>20</td>
<td>10</td>
<td>40</td>
</tr>
<tr>
<td>Second Guess</td>
<td>20</td>
<td>40</td>
<td>10</td>
<td>70</td>
</tr>
<tr>
<td>Third Guess</td>
<td>40</td>
<td>80</td>
<td>10</td>
<td>130</td>
</tr>
</tbody>
</table>

Now guess a number lesser than 40 and greater than 20.

<table>
<thead>
<tr>
<th>Guess Number</th>
<th>Blue Jays</th>
<th>Diamondbacks</th>
<th>Red Sox</th>
<th>Total</th>
</tr>
</thead>
<tbody>
<tr>
<td>First Guess</td>
<td>10</td>
<td>20</td>
<td>10</td>
<td>40</td>
</tr>
<tr>
<td>Second Guess</td>
<td>20</td>
<td>40</td>
<td>10</td>
<td>70</td>
</tr>
<tr>
<td>Third Guess</td>
<td>40</td>
<td>80</td>
<td>10</td>
<td>130</td>
</tr>
<tr>
<td>Fourth Guess</td>
<td>30</td>
<td>60</td>
<td>10</td>
<td>100</td>
</tr>
</tbody>
</table>

That is the answer.

Check

Read the problem again to be sure the question was answered.
Yes, I found the number of Blue Jays.

Check the math to be sure it is correct.
30 doubled is 60. 30 + 60 + 10 = 100

Determine if the best strategy was chosen for this problem, or if there was another way to solve the problem.
Guess and check was a good way to solve this problem.

Explain

The last step is explaining how the student found the answer. Demonstrate how to write a paragraph describing the steps and how decisions were made throughout the process. Have students justify their answers.

Guided Practice
Have students try solving this problem using the strategy of Guess and Check.

Of 25 rounds at the regional spelling contest, the Mighty Brains tied 3 rounds and won 2 more than they lost. How many rounds did the Mighty Brains win?

Have students work in pairs, groups, or individually to solve this problem. They should be able to tell or write about how they found the answer and justify their reasoning.

**How Can You Stretch Students' Thinking?**

Guess and check can be made more sophisticated by improving each guess based on the last guess. Encourage students to analyze their guesses to determine what the next guess should be. Students can use patterns in the problem or in their guesses to determine the correct guess.

Students may not want to use any other strategy once they have learned guess and check, because it is so easy to use. When children are completely stuck, guessing and checking provides a useful place to start, but may not be the most efficient strategy. As problems get more difficult, other strategies become more important and more effective, but by starting with guess and check, the students may find a more efficient strategy that leads to a solution.
Problem Solving: Make a Table

What Is It?

Make a Table is a problem-solving strategy that students can use to solve mathematical word problems by writing the information in a more organized format. Here is an example of a problem that can be solved by making a table:

Juanita checked a book out of the library, and it is now 7 days overdue. If a book is 1 day overdue, the fine is 10”, 2 days overdue, 20”, 3 days overdue, 30”, and so on. How much is her fine?

Why Is It Important?

This problem-solving strategy allows students to discover relationships and patterns among data. It encourages students to organize information in a logical way and to look critically at the data to find patterns and develop a solution.

How Can You Make It Happen?

Introduce a problem to students that will require them to make a table to solve the problem. For example:

How many hours will a car traveling at 65 miles per hour take to catch up with a car traveling at 55 miles per hour if the slower car starts one hour before the faster car?

1. Understand the Problem

Demonstrate that the first step is understanding the problem. This involves identifying the key pieces of information needed to find the answer. This may require students to read the problem several times or put the problem into their own words.

In this problem, students need to understand that there is a slower car going 55 miles per hour and a faster car going 65 miles per hour. The slower car starts one hour before the faster car. Students need to find how many hours it will take the faster car to catch up to the slower car.

2. Choose a Strategy

Because there are three sets of data to organize, you should use the Make a Table strategy. Generally, if there is data associated with a certain category, it can be organized easily by making a table. This strategy also overlaps with the Find a Pattern strategy because it is often easier to find a pattern when the data is organized in a table.

3. Solve the Problem

Make a table to organize the data. For this example, create a row for the slower car, a row for the faster car, and a column for each hour. Find the distance traveled during each hour by looking at the distances listed in each column. The distance of the faster car was more than the distance of the slower car in hour seven. The faster car traveled six hours to catch up to the slower car.

<table>
<thead>
<tr>
<th>Hour</th>
<th>1</th>
<th>2</th>
<th>3</th>
<th>4</th>
<th>5</th>
<th>6</th>
<th>7</th>
</tr>
</thead>
<tbody>
<tr>
<td>Slower Car</td>
<td>55</td>
<td>110</td>
<td>165</td>
<td>220</td>
<td>275</td>
<td>330</td>
<td>385</td>
</tr>
<tr>
<td>Faster Car</td>
<td>0</td>
<td>65</td>
<td>130</td>
<td>195</td>
<td>260</td>
<td>325</td>
<td>390</td>
</tr>
</tbody>
</table>

4. Check

Read the problem again to be sure the question was answered.
Did you find the number of hours it took for the faster car to catch up? Yes, it took 6 hours.

Check the math to be sure it is correct.

\[
\begin{align*}
55 \times 2 &= 110, \\
55 \times 3 &= 165, \\
55 \times 4 &= 220, \\
55 \times 5 &= 275, \\
55 \times 6 &= 330, \\
55 \times 7 &= 385 \\
65 \times 2 &= 130, \\
65 \times 3 &= 195, \\
65 \times 4 &= 260, \\
65 \times 5 &= 325, \\
65 \times 6 &= 390
\end{align*}
\]

Determine if the best strategy was chosen for this problem or if there was another way to solve the problem.

Making a table is a good way to solve this problem.

5. **Explain**

   The last step is explaining how you found the answer. Demonstrate how to write a paragraph describing the steps you took and how you made decisions throughout the process.

   I set up a table for the miles each car had gone during each hour. I kept adding columns until the faster car caught up to the slower car. At the end of the seventh hour, the faster car had gone 390 miles, which is more than the distance traveled by the slower car, 385 miles. Because the faster car didn't start traveling in the first hour, it traveled for six hours.

6. **Guided Practice**

   Have students try solving the following problem using the strategy Make a Table.

   The printer in the media center can print 1 page every 30 seconds. The printer in the office can print 4 pages every 30 seconds. If both printers are printing, how many pages will the office printer have printed by the time the media center printer prints 5 pages?

   Have students work in pairs, groups, or individually to solve this problem. They should be able to tell or write about how they found the answer and justify their reasoning.

**How Can You Stretch Students' Thinking?**

This strategy can be stretched when combined with other strategies such as looking for patterns or drawing a picture. By combining this strategy with others, students can analyze the data that is given to find more complex relationships.
Problem Solving: Eliminating Possibilities

What Is It?

Eliminating Possibilities is a strategy in which students remove possible answers until the correct answer remains. Here's an example of a problem that can be solved by Eliminating Possibilities:

The product of an unknown number multiplied by four is less than 35. The unknown number is divisible by four. What two numbers could the unknown number be?

The answer can be found by eliminating the numbers that do not meet the rules and choosing the numbers (four and eight) that remain.

Why Is It Important?

This is a problem-solving strategy that can be used in basic math problems or to help solve logic problems. Eliminating possibilities helps students organize information and evaluate which pieces of information they will use, eliminating the information that does not fit. It encourages students to consider all options and narrow the possibilities to reasonable choices.

How Can You Make It Happen?

Introduce a problem to students that will require them to eliminate possibilities in order to solve the problem. For example:

In the game of football, a team can score either a touchdown for six points or field goal for three points. If a team only scores touchdowns or field goals but does not get any extra points (no points for an extra kick) what scores cannot be achieved if the team scored under 30 points?

1. Understand the Problem

   Demonstrate that the first step is understanding the problem. This involves identifying the key pieces of information needed to find the answer. This may require students to read the problem several times or put the problem into their own words.

   In this problem, students understand that there is a finite set of possible answers. Students will have to find all of the possible answers and then narrow down the list according to the criteria in the problem.

   The score can be 1 through 29.
   The score must be a multiple of 3 or 6.

2. Choose a Strategy

   The strategy of eliminating possibilities can be used in situations where there is a set of possible answers and a set of criteria the answer must meet.
3. **Solve the Problem**

First, list the numbers 1 through 29, because the problem states that the score was less than 30.

1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18 19 20 21 22 23 24 25 26 27 28 29

Next, eliminate answers that are not possible solutions. Work through each criteria to find the solution.

Any multiple of six would be a possible score of the game. If the team only scored touchdowns, they could score 6, 12, 18, 24 and so on. Therefore, all multiples of six should be eliminated.

1 2 3 4 5 * 7 8 9 10 11 * 13 14 15 16 17 * 19 20 21 22 23 * 25 26 27 28 29

Any multiple of three would be a possible score of the game. If a team scored only field goals, they could score 3, 6, 9, and so on. Therefore, all multiples of three should be eliminated.

1 2 * 4 5 * 7 8 * 10 11 * 13 14 * 16 17 * 19 20 * 22 23 * 25 26 * 28 29

The answer to the problem is that the following scores could not be the score of the game:

1, 2, 4, 5, 7, 8, 10, 11, 13, 14, 16, 17, 19, 20, 22, 23, 25, 26, 28, 29

4. **Check**

Read the problem again to be sure the question was answered.

The scores that would not be possible in this game are listed.

Check the math to be sure it is correct.

Look through the answers you have eliminated and those that are remaining to make sure you have applied all the criteria in the problem.

Determine if the best strategy was chosen for this problem or if there was another way to solve the problem.

Eliminating possibilities was a good strategy to use for this problem.

5. **Explain**

The last step is explaining how you found the answer. Because this strategy involves logic, it is important for students to talk or write about their thinking. Demonstrate how to write a paragraph describing the steps you took and how you made decisions throughout the process.

First, I listed the possible scores. Then I started to eliminate scores that were not possible. I found the multiples of six and crossed them out. Then I found the multiples of three and crossed them out. I was left with all of the possible scores.
6. **Guided Practice**

Have students try solving the following problem using the strategy of eliminating possibilities.

Find the numbers between 10 and 30 that are divisible by 4.

Have students work in pairs, in groups, or individually to solve this problem. They should be able to tell or write about how they found the answer and justify their reasoning.

**How Can You Stretch Students' Thinking?**

Math problems can be simple, with few criteria needed to solve them, or they can be multidimensional, requiring charts or tables to organize students' thinking and to record possibilities as they are eliminated.

This is an example of a problem that can be solved using logical thinking and eliminating possibilities.

Tom, Tanya, and Josh live on Main Street. Two of them live on the right side of the street. The other one is across the street. One house is painted red, another has a circular driveway, and a third house is made of brick. The brick house is on the left side of the street. Tom has a pickup truck, which is parked in his circular driveway. Tanya lives across the street from Tom. Which house does Josh live in?

You could make a chart like the one below to help organize the eliminated possibilities because the question is multidimensional.

<table>
<thead>
<tr>
<th></th>
<th>Josh</th>
<th>Tanya</th>
<th>Tom</th>
</tr>
</thead>
<tbody>
<tr>
<td>Painted Red</td>
<td>Yes</td>
<td>x</td>
<td>x</td>
</tr>
<tr>
<td>Circular driveway</td>
<td>x</td>
<td>x</td>
<td>Yes</td>
</tr>
<tr>
<td>Brick House</td>
<td>x</td>
<td>Yes</td>
<td>x</td>
</tr>
</tbody>
</table>
Problem Solving: Use a Formula

What Is It?

Using a Formula is a problem-solving strategy that students can use to find answers to math problems involving geometry, percents, measurement, or algebra. To solve these problems, students must choose the appropriate formula and substitute data in the correct places of a formula. The following problem would be best solved using a formula:

If it is 46 degrees Celsius, how many degrees Fahrenheit is it?

Students can use the formula $F = 1.8C + 32$ to find the solution.

Why Is It Important?

Using a Formula is a problem-solving strategy that can be used for problems that involve converting units or measuring geometric objects. Also, real-world problems such as tipping in a restaurant, finding the price of a sale item, and buying enough paint for a room all involve using formulas.

How Can You Make It Happen?

Introduce a problem to students that requires them to use a formula to solve the problem. For example:

A rectangle has an area of 40 square meters. If the perimeter of the rectangle is 26 meters, what are the length and the width of the rectangle?

1. **Understand the Problem**

   Demonstrate that the first step to solving the problem is understanding it. This involves identifying the key pieces of information needed to find the answer. This may require students to read the problem several times or put the problem into their own words. Here are a few formulas that students can use to solve this problem:

   - $A = L \times W$
   - $40 = L \times W$
   - $2L + 2W = P$
   - $2W + 2L = 26$

   (Note: $L$ and $W$ can be interchanged in this problem.)

2. **Choose a Strategy**

   The strategy of Using a Formula can be used in situations where measurements are required to find the solution.
3. **Solve the Problem**

\[
A = L \times W
\]
\[
40 = L \times W
\]

I know 40 is a product of 2 and 20, 4 and 10, or 5 and 8.

\[
2W + 2L = P
\]
\[
2W + 2L = 26
\]

I looked at the possible answers that would fit the formula for the area of the rectangle. Then I put the numbers into the formula for the perimeter. The numbers 5 and 8 are the two numbers that work for both formulas.

4. **Check**

Read the problem again to be sure the question was answered.

I found the length and width of the rectangle, 5 meters and 8 meters.

Check the math to be sure it is correct.

\[
A = L \times W
\]
\[
40 = L \times W
\]
\[
40 = 8 \times 5
\]
\[
P = 2L + 2W
\]
\[
26 = 2L + 2W
\]
\[
26 + 2(8) + 2(5)
\]

Determine if the best strategy was chosen for this problem, or if there was another way to solve the problem.

Using a formula was a good strategy to use for this problem.

5. **Explain**

The last step is explaining how you found the answer. Demonstrate how to write a paragraph describing the steps taken and how decisions were made throughout the process.

Students should explain their answer and the process they went through to solve it. It is important for students to talk or write about their thinking.

I knew the formula for area and perimeter, so I wrote down the formulas.

\[
A = L \times W
\]
\[
P = 2L + 2W
\]

I added the information I knew, which was the area and perimeter of this rectangle.

\[
40 = L \times W
\]
26 = 2L + 2W

Then I wrote down the numbers that could be the length and width if the area is 40 square meters. I know 40 is a product of 2 and 20, 4 and 10, or 5 and 8.

I took those possible numbers and used them with the formula for perimeter. The numbers that did not also fit into this formula, I eliminated. I eliminated 2 and 20 as well as 4 and 10, since those numbers did not work in the perimeter formula.

I was left with the numbers 8 and 5. Since they are interchangeable in this problem, I assigned the width as 5 meters and the length as 8 meters.

6. **Guided Practice**

Have students try to solve the following problem using the strategy of Using a Formula.

In an isosceles triangle, the unequal side measures half the length of one of the two equal sides. What is the perimeter if the length of the unequal side is 5 cm? What is the length of the sides if the perimeter is 80 cm?

Have students work in pairs, in groups, or individually to solve this problem. They should be able to tell or write about how they found the answer and justify their reasoning.

**How Can You Stretch Students' Thinking?**

Math problems requiring formulas can be simple, with few criteria needed to solve them, or they can be multidimensional, requiring charts or tables to organize students’ thinking. Including more than one formula in a problem, or having multiple correct answers to a problem will help stretch this strategy.
Problem Solving: Find a Pattern

What Is It?

Finding a Pattern is a strategy in which students look for patterns in the data in order to solve the problem. Students look for items or numbers that are repeated, or a series of events that repeat. The following problem can be solved by finding a pattern:

There are 1000 lockers in a high school with 1000 students. The first student opens all 1000 lockers; next, the second student closes lockers 2, 4, 6, 8, 10, and so on up to locker 1000; the third student changes the state (opens lockers that are closed, closes lockers that are open) of lockers 3, 6, 9, 12, 15, and so on; the fourth student changes the state of lockers 4, 8, 12, 16, and so on. This continues until every student has had a turn. How many lockers will be open at the end?

Answer:

One thing we can do is to let the first 10 students do their open/shut thing with the lockers. The students who come after them are not going to touch lockers 1-10, so we can see which ones in that first batch are still open and try to guess the pattern.

When we do that, we find that lockers 1, 4, and 9 are open and the others are closed. Now, that isn't much to go on, so maybe you could let the next 10 students do their thing. Then the first 20 lockers are through being touched, and we find that lockers 1, 4, 9, and 16 are the only ones in the first 20 that are still open. So what is the pattern?

Let's take any old locker, like 48 for example. It gets its state altered once for every student whose number in line is an exact divisor of 48. Here is a chart of what I mean:

<table>
<thead>
<tr>
<th>this Student</th>
<th>leaves locker 48</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>open</td>
</tr>
<tr>
<td>2</td>
<td>shut</td>
</tr>
<tr>
<td>3</td>
<td>open</td>
</tr>
<tr>
<td>4</td>
<td>shut</td>
</tr>
<tr>
<td>6</td>
<td>open</td>
</tr>
<tr>
<td>8</td>
<td>shut</td>
</tr>
<tr>
<td>12</td>
<td>open</td>
</tr>
<tr>
<td>16</td>
<td>shut</td>
</tr>
<tr>
<td>24</td>
<td>open</td>
</tr>
<tr>
<td>48</td>
<td>shut</td>
</tr>
</tbody>
</table>

Notice that 48 has an even number (ten) of divisors, namely 1, 2, 3, 4, 6, 8, 12, 16, 24, 48. So the locker goes open-shut-open-shut ... and ends up shut. Any locker number that has an even number of divisors will end up shut.

Which numbers have an odd number of divisors? That's the answer to this problem. Just to help you along, here are the locker numbers up to 100 that are left open:

1, 4, 9, 16, 25, 36, 49, 64, 81, 100.
See if you can describe these numbers in a different way from "having an odd number of divisors." Think about multiplying numbers together. When you understand how to describe them, you will see that 31 of the 1000 lockers are still open (without having to work it all out!).

**Why Is It Important?**

Patterns are often introduced to students without the context of a word problem as in the following example: "Find a pattern in this sequence, explain how it works, and use that pattern to predict the next four numbers. 7, 10, 13, 16, 19, __, __, __, __."

Younger students often discover and continue using patterns that employ geometric shapes. For example, yellow circle, red square, green triangle, yellow circle, red square, green triangle, and so on.

Discovering patterns can help students learn multiplication facts when they notice that 4 x 7 is the same as 7 x 4, and that all numbers in the 10s column end with a zero.

The Find a Pattern strategy can be used to solve many math problems and can be used in combination with many other strategies, including make a table, make a list, or simplify the problem.

**How Can You Make It Happen?**

Introduce a problem to students that requires them to find the pattern in order to solve the problem. For example:

If you build a four-sided pyramid using basketballs and don't count the bottom as a side, how many balls will there be in a pyramid that has six layers?

Using cooperative learning groups to find solutions to problems helps students verbalize their thinking, brainstorm ideas, discuss options, and justify their positions. After finding a solution, each group can present it to the class, explaining how they reached their solution and why they think it is correct. Or, students can explain their solutions in writing, and the teacher can display the solutions. Then students can circulate around the room to read each group's solution.

1. **Understand the Problem**

   Demonstrate that the first step to solving a problem is understanding it. This involves identifying the key pieces of information needed to find the answer. This may require students to read the problem several times or put the problem into their own words.

   Sometimes you can solve a problem just by recognizing a pattern, but more often you must extend the pattern to find the solution. Making a number table can help you see patterns more clearly.

   In this problem, students understand:

   The top layer will have one basketball. I need to find how many balls there will be in each layer of a pyramid, from the first to the sixth. I need to find how many basketballs will be in the entire pyramid.

2. **Choose a Strategy**
To use this strategy successfully, you need to be sure the pattern will really continue. Have students give reasons why they think the pattern is predictable and not based on probability. Problems that are solved most easily by finding a pattern include those that ask students to extend a sequence of numbers or to make a prediction based on data. In this problem, students may also choose to make a table or draw a picture to organize and represent their thinking.

Find a Pattern is an appropriate strategy to use to solve the problem. This is a pattern that is predictable and will continue.

3. **Solve the Problem**

Start with the top layer, or one basketball. Determine how many balls must be under that ball to make the next layer of a pyramid. Use manipulatives if needed. Students can use manipulatives of any kind, from coins to cubes to golf balls. Students can also draw pictures to help them solve the problem.

You may want to have groups use different manipulatives and then compare their solutions to determine whether the type of manipulative affected the solution. If students are younger, start with three layers and discuss their answers to this simpler problem. Then move on to more layers as students gain understanding of how to solve the problem.

<table>
<thead>
<tr>
<th>Layer</th>
<th>Balls Added</th>
<th>Balls in This Layer</th>
</tr>
</thead>
<tbody>
<tr>
<td>1 (top)</td>
<td>1</td>
<td>1</td>
</tr>
<tr>
<td>2</td>
<td>3</td>
<td>4 (1 + 3 = 4)</td>
</tr>
<tr>
<td>3</td>
<td>5</td>
<td>9 (4 + 5 = 9)</td>
</tr>
<tr>
<td>4</td>
<td>7</td>
<td>16 (9 + 7 = 16)</td>
</tr>
<tr>
<td>5</td>
<td>9</td>
<td>25 (16 + 9 = 25)</td>
</tr>
<tr>
<td>6</td>
<td>11</td>
<td>36 (25 + 11 = 36)</td>
</tr>
</tbody>
</table>

If it helps to visualize the pyramid, use manipulatives to create the third layer. Record the number and look for a pattern. The second layer adds 3 basketballs and the next adds 5 basketballs. Each time you add a new layer, the number of basketballs needed to create that layer increases by 2.

1. 1
2. 1 + 3 = 4
3. 4 + 5 = 9

Continue until six layers are recorded. Once a pattern is found, students might not need to use manipulatives.

4. 9 + 7 = 16
5. 16 + 9 = 25
6. \( 25 + 11 = 36 \)

Then add the basketballs used to make all six layers. The answer is 91 balls. Look at the list to see if there is another pattern. The number of balls used in each level is the square of the layer number. So the 10th layer would have \( 10 \times 10 = 100 \) balls.

4. **Check**

Read the problem again to be sure the question was answered.

Yes, I found the total number of basketballs in the six-layer pyramid.

Check the math to be sure it is correct.

\[ 1 + 4 + 9 + 16 + 25 + 36 = 91 \]

Determine if the best strategy was chosen for this problem, or if there was another way to solve the problem.

Finding a pattern was a good way to solve this problem because the pattern was predictable.

5. **Explain**

Students should explain their answer and the process they went through to find it. It is important for students to talk or write about their thinking. Demonstrate how to write a paragraph describing the steps students took and how they made decisions throughout the process.

First, I started with the first layer. I used blocks to make the pyramid and made a list of the number of blocks that I used. Then I created a table to record the number of balls in each layer.

<table>
<thead>
<tr>
<th>Layer (top)</th>
<th>Balls Added</th>
<th>Balls in This Layer</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>1</td>
<td>1</td>
</tr>
<tr>
<td>2</td>
<td>3</td>
<td>4 ( (1 + 3 = 4) )</td>
</tr>
<tr>
<td>3</td>
<td>5</td>
<td>9 ( (4 + 5 = 9) )</td>
</tr>
<tr>
<td>4</td>
<td>7</td>
<td>16 ( (9 + 7 = 16) )</td>
</tr>
<tr>
<td>5</td>
<td>9</td>
<td>25 ( (16 + 9 = 25) )</td>
</tr>
<tr>
<td>6</td>
<td>11</td>
<td>36 ( (25 + 11 = 36) )</td>
</tr>
</tbody>
</table>
I made four layers and then saw a pattern. I saw that for each layer, the number of balls used was the number of the layer multiplied by itself. I finished the pattern without the blocks, by multiplying the number of balls that would be in layers 5 and 6.

Then I added up all of the balls in each layer.
\[1 + 4 + 9 + 16 + 25 + 36 = 91\]

I got a total of 91 basketballs.

6. **Guided Practice**

Have students solve the following problem using the strategy of Find a Pattern.

A woman is trying to cut down the number of cans of soda she drinks each week. She makes a plan so that in several weeks she will be drinking only one can of soda. If she starts with 25 cans the first week, 21 cans the second week, 17 cans the third week, 13 cans the fourth week, and continues this pattern, how many weeks will it take her to reach her goal?

Have students work in pairs, in groups, or individually to solve this problem. They should be able to tell or write about how they found the answer and justify their reasoning.

**How Can You Stretch This Strategy?**

Math problems can be simple, with few criteria needed to solve them, or they can be multidimensional, requiring charts or tables to organize students' thinking and to record patterns. In using patterns, it is important for students to find out if the pattern will continue predictably. Have students determine if there is a reason for the pattern to continue, and be sure students use logic when finding patterns to solve problems.

- For example, if it rains on Sunday, snows on Monday, rains on Tuesday, and snows on Wednesday, will it rain on Thursday?
- Another example: If Lauren won the first and third game of chess, and Walter won the second and fourth game, who will win the fifth game?
- Another example: If a plant grew 13 centimeters in the first week and 10 centimeters in the second week, how many centimeters will it grow in the third week?

Because these are questions of probability or nature, be sure students understand why patterns can't be used to find these answers.
Problem Solving: Draw a Picture

What Is It?

The draw a picture strategy is a problem-solving technique in which students make a visual representation of the problem. For example, the following problem could be solved by drawing a picture:

A frog is at the bottom of a 10-meter well. Each day he climbs up 3 meters. Each night he slides down 1 meter. On what day will he reach the top of the well and escape?

Why Is It Important?

Drawing a diagram or other type of visual representation is often a good starting point for solving all kinds of word problems. It is an intermediate step between language-as-text and the symbolic language of mathematics. By representing units of measurement and other objects visually, students can begin to think about the problem mathematically. Pictures and diagrams are also good ways of describing solutions to problems; therefore they are an important part of mathematical communication.

How Can You Make It Happen?

Encourage students to draw pictures of problems at the very beginning of their mathematical education. Promote and reinforce the strategy at all subsequent stages. Most students will naturally draw pictures if given the slightest encouragement.

Introduce a problem to students that will require them to draw a picture to solve. For example:
Marah is putting up a tent for a family reunion. The tent is 16 feet by 5 feet. Each 4-foot section of tent needs a post except the sides that are 5 feet. How many posts will she need?

Demonstrate that the first step to solving the problem is understanding it. This involves finding the key pieces of information needed to figure out the answer. This may require students reading the problem several times or putting the problem into their own words.

16 feet by 5 feet
1 post every 4 feet, including 1 at each corner
No posts on the short sides

1. **Choose a Strategy**

   Most often, students use the draw a picture strategy to solve problems involving space or organization, but it can be applied to almost all math problems. Also students use this strategy when working with new concepts such as equivalent fractions or the basic operations of multiplication and division.

2. **Solve the Problem**

   Students understand that there are posts every 4 feet. In the second sample problem, students are asked to organize data spatially to determine the number of posts Marah will need. They can draw a picture or a diagram to find the answer.

   ![Diagram of a tent with posts marked every 4 feet]

   I drew a rectangle where each long side is 16 feet, and there is 1 post every 4 feet. I drew a circle for each post. I remembered to draw a post at each end. There are 10 posts total.

3. **Check Your Answer**

   Ask students to read the problem again to be sure they answered the question.

   I found that there are 10 posts.
Students should check their math to be sure it is correct.

16 divided by 4 is 4. There are 4 sections of 4 feet on each long side. There is a post on each end, so 4 + 1 = 5. There are 2 sides to the tent, and 5 x 2 = 10.

Discuss with students whether draw a picture was the best strategy for this problem. Was there a better way to solve it?

Drawing a picture was a good strategy to use for this problem because students might forget to count the posts on each corner unless they see them.

4. **Explain How You Found the Answer**

Students should explain their answer and the process they went through to solve the problem. It is important for students to talk or write about their thinking. There may be more than one way to represent a problem visually, and asking students to explain their picture helps to understand their thinking process and identify errors.

My answer is 10 fence posts. First, I tried to solve this by multiplying. I took 16 and divided by 4 to find the number of posts on each side. I got 4 posts on each side. Then I doubled it to get 8 posts total. I checked the problem and realized that there are posts on each corner, so I drew a picture so that I could see it and be sure the answer was correct.

I drew a rectangle to show the tent. Each long side is 16 feet, and there is 1 post every 4 feet, so I divided 16 by 4 to find out that there are 4 sections of 4 feet each. I drew a circle for each post, and wrote the number in the space between each post. I remembered to draw a post at each end. I counted the posts and found out that there are 10 posts total.

5. **Guided Practice**

Have students try to solve the following problem using the draw a picture strategy.

Tai wants to frame a 3 x 5 picture surrounded by 2 inches of mat. How large will her frame need to be?

Have students work in pairs, groups, or individually to solve this problem. They should be able to tell or write about how they found the answer as well as be able to justify their reasoning.

**How Can You Stretch Students' Thinking?**

Some students are visual learners and work well when problems are illustrated or easy to see. Encourage students to draw pictures or diagrams for problems they find difficult. Encourage students to label all parts of their drawings. Students should understand that their drawings do not need to be perfect. Rather, their drawings need only represent the problem accurately and clearly show their thought processes.
Problem Solving: Simplify the Problem

What Is It?

Simplifying a mathematics problem is a strategy that often is used along with other problem-solving strategies. When a problem is too complex to solve in one step, it often helps to divide it into simpler problems and solve each one separately. Creating a simpler problem from a more complex one may involve rewording the problem; using smaller, simpler numbers; or using a more familiar scenario to understand the problem and find the solution. For example, consider the problem:

A soccer team won 24 of 36 games in the first season. If the team had the same ratio of wins to games in the second season, and they won 16 games, how many games did they play in the second season?

The answer can be found by simplifying the ratio of 24:36 to 2:3, and then cross-multiplying to find the total number of games in the second season, 24 games.

Why Is It Important?

This is a problem-solving strategy that can be used with difficult concepts such as manipulating ratios or fractions. If a problem is confusing, the numbers can be rounded, or simpler numbers can be used to help make a plan to solve it.

How Can You Make It Happen?

Introduce a problem to students that is complex and might be easier to solve if it were simplified. For example:

On your way to visit a friend, you leave your house at 2:45 P.M. and travel 1 3/4 miles to the train, 12 1/2 miles on the train, and 3/4 mile to your friend's house from the train station. If you get there at 4:15 P.M., how many miles per hour did you travel?

1. Understand the Problem

Demonstrate that the first step is understanding the problem. This involves identifying the key pieces of information needed to find the answer. Students may need to read the problem several times and/or put the problem into their own words.

   I know I left at a certain time, arrived at a certain time, and traveled a certain distance. I need to find how many miles per hour I traveled.

2. Choose a Strategy

   For this problem, it might be helpful for students to use simpler numbers to learn the steps they need to follow to solve it. Have students change the problem to:

   I left the house 1:00, traveled 12 miles, and arrived at 4:00. How many miles per hour did I travel?
3. **Solve the Problem**

First, have students solve the problem using the simpler numbers.

I left the house 1:00, traveled 12 miles, and arrived at 4:00. How many miles per hour did I travel?
I traveled 12 miles.
It took 3 hours.
To find the miles per hour, I divide 12 by 3 to get 4 miles per hour.

Next, have them write down the steps they used to solve the problem.

1. Find the distance traveled.
2. Find the time spent.
3. Divide to find the miles per hour.

Then, have them use the actual numbers from the problem and follow the same steps.

- Find the distance traveled.
  \[1 \frac{3}{4} + 12 \frac{1}{2} + \frac{3}{4} = 15 \text{ miles}\]
- Find the time spent.
  The time from 2:45 to 4:15 is 1 hour and 30 minutes, or \(1 \frac{1}{2}\) hours.
- Divide to find the miles per hour.
  \[15 \text{ divided by } 1 \frac{1}{2} = 10 \text{ miles per hour}\]

4. **Check Your Answer**

Students should read the problem again to be sure the question was answered.

Yes, I found the miles per hour.

Then, they should check the math to be sure it is correct.

\[1 \frac{3}{4} + 12 \frac{1}{2} + \frac{3}{4} = 15 \text{ miles}\]
\[2:45 \text{ to } 4:15 \text{ is } 1 \text{ hour and } 30 \text{ minutes}\]
\[15 \text{ divided by } 1 \frac{1}{2} = 10 \text{ miles per hour}\]

Students should determine if they chose the best strategy for this problem or if there was a better way to solve it.

Simplifying this problem was a good strategy.

5. **Explain**

Students should explain their answer and the process they went through to reach it. Because this strategy involves logic, it is important for students to talk or write about their thinking.

On your way to visit a friend, you leave your house at 2:45 P.M. and travel \(1 \frac{3}{4}\) miles to the train, \(12 \frac{1}{2}\) miles on the train, and \(\frac{3}{4}\) mile to your friend's house from the train station. If you get there at 4:15 P.M., how many miles per hour did you travel?
This was a confusing problem, so I simplified the numbers and solved the simpler problem to figure out the steps. The simpler numbers I used were:

You left the house 1:00, traveled 12 miles, and arrived at 4:00. How many miles per hour did you travel?

Then I figured out the answer. I traveled 12 miles, and it took 3 hours. To find my miles per hour, I divided 12 by 3 to get 4 miles per hour.

I wrote down the steps to solving the problem:

- Find the distance traveled.
- Find the time spent.
- Divide to find the miles per hour.

Then I used the real numbers from the actual problem to find the solution.

- Find the distance traveled.
  1 3/4 + 12 1/2 + 3/4 = 15 miles
- Find the time spent.
  From 2:45 to 4:15 is 1 hour and 30 minutes, or 1 1/2 hours.
- Divide to find the miles per hour.
  15 divided by 1 1/2 = 10 miles per hour

I checked my calculations, and my answer is 10 miles per hour.

6. **Guided Practice**

Have students try solving one of the following problems by simplifying it.

- A new movie theater sells 6,783 tickets in the first year, 5,697 tickets in the second year, and in its third year, sells 634 fewer tickets than in its second year. How many tickets are sold in 3 years?

  or

- A tiger eats 730.29 pounds of meat in 10 weeks and 4 1/2 cans of meat in a month. How much food does he eat in a year?

Have students work in pairs, in groups, or individually to solve this problem. They should be able to tell or write about how they found the answer and justify their reasoning.

**How Can You Stretch Students' Thinking?**

Math problems can be simplified in a variety of ways. Modeling and working through many different problems will help students become flexible and creative in their problem-solving strategies. Students should work through problems by simplifying the numbers, rewording the problem, or by using a more familiar scenario. Have students find other ways to simplify problems. Record these strategies on a chart in the classroom, adding new strategies as students find them.
Problem Solving: Choose the Operation

What Is It?

The process of "choosing the operation" involves deciding which mathematical operation (addition, subtraction, multiplication, or division) or combination of operations will be useful in solving a word problem. For example, one way to solve the following problem is to think of it as a problem of subtraction, e.g.:

If there are eighteen students, and six students are not here today, how many are present?

18 - 6 = ?

In comparison, the following problem can be thought of as a problem solved by addition.

If there are twelve students in class today and six students are absent, how many are there in all?

12 + 6 = ?

Why Is It Important?

Choosing mathematical operations is an important part of the larger process of translating English sentences into mathematical expressions. Success depends upon two things:

(a) the ability to understand the literal meaning of the sentence

(b) the ability to express this meaning mathematically

Students who cannot understand the literal meaning of the sentence will not be able to express it mathematically, even if they have the necessary mathematical skills. (Imagine trying to solve a word problem in a language you don't know, such as Arabic.)

Even if students can understand the literal meaning of the sentence, they will not be able to solve the problem unless they can also express this meaning mathematically. In other words, successful solutions to word problems involve both reading skills and mathematical skills. In particular, choosing an operation involves, in part, identifying language clues that suggest mathematical interpretations. Consider the following examples.

If there are eighteen students, and six students are not here today, how many are present?

If there are twelve students in class today and six students are absent, how many are there in all?

The phrase "not here" conveys the concept of taking away—or subtraction. Alternatively, the phrase "in all" may signal a problem solved by addition.

Instead of teaching how to solve word problems as a separate concept, teachers should embed problems in the mathematics-content curriculum. When teachers integrate problem solving into the context of mathematical situations, students recognize the usefulness of strategies (NCTM, 2000).
Teachers must make certain that problem solving is not reserved for older students or those who have "got the basics." Young students can engage in substantive problem solving and in doing so develop basic skills, higher-order-thinking skills, and problem-solving strategies (Trafton and Hartman 1997).

**How Can You Make It Happen?**

Choosing the operation is a difficult skill for some students, especially those struggling with reading. There is no single solution. A combination of strategies will work best.

1. **Identify Key Words**

   It may help to work with students to identify certain words that are commonly associated with mathematical operations. For example, the following phrases or words often suggest which operations to use. Consider displaying a table such as this in your classroom and add words and phrases as you find them in word problems.

<table>
<thead>
<tr>
<th>Addition</th>
<th>Subtraction</th>
<th>Multiplication</th>
<th>Division</th>
</tr>
</thead>
<tbody>
<tr>
<td>in all</td>
<td>fewer</td>
<td>total</td>
<td>how many each</td>
</tr>
<tr>
<td>total</td>
<td>left</td>
<td>in all groups</td>
<td>how many groups divided equally</td>
</tr>
<tr>
<td>sum</td>
<td>how much change</td>
<td>area</td>
<td></td>
</tr>
<tr>
<td>both combined</td>
<td>how many more</td>
<td>times</td>
<td></td>
</tr>
<tr>
<td>altogether</td>
<td>how much more</td>
<td>rate</td>
<td></td>
</tr>
<tr>
<td>how many</td>
<td>less difference</td>
<td>twice</td>
<td></td>
</tr>
<tr>
<td>perimeter</td>
<td>minus remains</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

   It may also help to have students take turns thinking out loud as they work through word problems. For example, consider the following problem.

   Juanita took twenty dollars to the mall. She bought a headband for three dollars and a bracelet for seven dollars. How much did she have left?

   A student might think aloud (or write) something like this:

   First I added three plus seven dollars because it said "three dollars and seven dollars" so I knew that meant to **add**. So, that was ten dollars. Then I **subtracted** ten dollars from twenty dollars because it said "How much did she have LEFT" so I knew that meant to subtract.

2. **Get to the Bottom of the Problem**

   While the "key word" approach may provide hints, many problems do not provide overt clues. For example, to understand the following problem, one must understand the meaning of the words absent and present. There is no substitute for understanding the vocabulary of a word problem and what it means. This involves finding the important pieces of information, and may require students reading the problem several times, and/or students putting the problem into their own words.
3. **Draw a Picture**

Drawing a picture or diagram is often a good intermediate step in translating a word problem into a mathematical expression. For example, consider the following word problem.

If there are eighteen students, and six students are not here today, how many are present?

This problem may be represented graphically using a picture. You could draw eighteen children in a row, then cross out six of them.

Or a table such as this:

```
  present  present  present  present  present  present
  present  present  absent    absent    absent    absent
  present  present  absent    absent    absent    absent
```

Once presented in this way, the problem may be more easily seen as a problem of subtraction, because we are clearly "taking away" some parts from the whole. Consider having student create their own standard visual representations for problems involving addition, subtraction, multiplication, and division—then have them practice choosing from among their representations given particular word problems.

4. **Unnecessary Information**

It is important to encourage students to read an entire problem before starting to solve it—deciding which information is important and which information is not needed. One method is to have them practice with problems that have too much information, such as:

Emma rode her bike the same distance as Michael. It is 12 miles from Emma's house to school, 4 miles to the library, and 1 mile to the playground. If Michael and Emma rode a total of 26 miles, how many miles did Emma ride?

Can students find 13 miles as an answer? Discuss the incorrect answer they might have found if they didn't focus on the important information. Have students create their own word problems that contain too much information, and challenge each other to solve them.

5. **Missing Information**

In some problems, information needs to be found before the problem can be solved. Sometimes students may need to find the number of feet in a yard, the number of days in the month of January, the number of minutes in an hour, or the number of ounces in a pound, before they can solve the problem. For example:

Serena buys milk every school day for lunch. How many containers of milk does she buy in a week?

I know there are 7 days in a week. There are 5 school days in a week. If she buys one container every school day, she will buy 5 containers in a week.
6. **Multiple Operations**

Some problems have multiple steps involving multiple operations. Model how to solve these problems, thinking aloud to make your thoughts visible. Have students read the problems carefully and think aloud or take notes to record their thinking. For example:

Olivia has 6 baseball cards. Owen has 2 more cards than Olivia. Oscar has twice as many cards as Owen. How many baseball cards do they have in all?

You might think aloud saying something such as:

"The problem says "how many in all," so I probably have to add. First I have to find how many cards each person has. I know Olivia has 6 cards. I'll write that down.

Olivia, 6 cards

Two more cards would be 6 + 2 = 8, so Owen has 8 cards.

Owen, 8 cards

"Twice as many" means 2 times the number. So, 8 times 2. Or I could add 8 two times. 8 + 8 = 16.

Oscar, 16 cards

Now I have to find the number of cards in all, so I'll add the cards together.

6 + 8 + 16 = 30 cards

7. **Number Sentences**

Some students may find it easier to translate word problems directly into number sentences, for example:

**Word Problem**

Katie pays with a $10.00 bill and receives $2.57 in change. How much did she spend?

**Number Sentence**

Money Katie paid with - cost of what she bought = change

Fill in the sentence with numbers and then find the missing amount to solve the number sentence.

$10.00 - cost of what she bought = $2.57
To find how much change, I need to subtract.
$10.00 - $2.57 = $7.43

8. **Check Your Answer**

Read the problem again to be sure the question was answered.
Katie pays with a $10.00 bill and receives $2.57 in change. How much did she spend?
I found how much she spent, so I answered the question.

Check the math to be sure it is correct.

$10.00 - $2.57 = $7.43, and $7.43 + $2.57 = $10.00

Determine if the best strategy was chosen for this problem, or if there was a better way to solve the problem.

I used the correct information and subtracted to find the change. I chose the correct operation to find the answer.

9. **Explain the Answer**

Students should be able to explain their answer and the process they went through to solve a problem using words first, and then learn to use conventional mathematical symbols or their own forms of representations to convey their thinking. It is important for students to talk or write about their thinking. Give students frequent opportunities to explain their problem-solving strategies and solutions and to seek general methods that apply to many problems.

10. **Guided Practice**

Have students try solving the following problem, choosing the correct operation and focusing on important information.

There are 6 turkey sandwiches and 24 cans of soda. Each sandwich costs $5.85, and is cut in half. If 3 people eat 3 halves each, how many sandwiches will be left?

Have students work in pairs, groups, or individually to solve this problem. They should be able to tell or write about how they found the answer and justify their reasoning.

**How Can You Stretch This Strategy?**

Math problems can be simple, with few criteria needed to solve them, or they can be complex, requiring several steps to find the answer. As students become proficient in solving word problems, increase the difficulty of the problems you present to extend students' thinking and challenge their problem-solving skills. For example, consider these problems:

- "Manuel has fourteen books. He gets three books for his birthday. How many books does he have now?"
- "Manuel has fourteen books and loses two books, then gives away three books. How many books does he have left?"
- "Manuel is buying two books. If one book costs $14.95 and another costs $4.50, how much change will he get back if he pays with $30.00?"
Lesson Plan: Comparative Subtraction

Grade Levels: K - 3

Objective

The concept of comparative subtraction (comparing two quantities and determining the difference) is a little more difficult to grasp than take-away subtraction and should be practiced separately. In this lesson students compare one number with another using manipulative, write number sentences to show the comparisons, and then relate the number sentences to story problems.

Materials

For each pair of students:

- two-sided counters or counters of two different colors
- pair of ten frames
- 1-6 number cube
- 5-10 number cube

Procedure

Draw two blank ten frames side by side on the chalkboard. Ask, "Which number is greater, 5 or 8?" When 8 is identified as the greater number ask, "How much greater is 8 than 5?" Model how to find the answer using these steps:

1. Draw 5 circles in the first ten frame.
2. Draw 5 circles in the second ten frame.
3. Draw 3 different-color circles (or draw a different shape) in the second frame as you count on from 5 to 8 ("six, seven, eight").

Ask students to compare the frames and find how many more counters are used to show 8 than are used to show 5. When it has been determined that 8 is 3 more than 5, show how to write the number sentence 8 - 5 = 3 to represent it. Compare two or three other pairs of numbers following the same steps.

Next, have students work in pairs. Each student in a pair rolls a number cube. If both students roll the same number, students roll again. From the two numbers rolled, have them determine which is the lesser number and which is the greater number. Have the partner who rolled the lesser number represent it, using same-color counters, on one ten frame. Have the partner who rolled the greater number represent it on the other frame by first representing the lesser number with the same-color counter as on the first frame, then counting on from it to the greater number using the second-color counters. Each student should then record the corresponding number sentence on his or her own paper. Have students repeat the steps until they have recorded ten number sentences.

Invite each student to write one of the number sentences he or she recorded on the chalkboard. Discuss the comparison shown in each number sentence by asking questions such as, "How much greater is..." and "How many more counters do you need to show..."

Make up simple comparative-subtraction word problems for the number sentences shown on the chalkboard, such as, "Dina is 8 years old. Her brother Daniel is 5 years old. How much older is Dina than Daniel?" and "Terrel has 3 stickers."
Marta has 6 stickers. How many more stickers does Marta have than Terrel?" Have students identify the number sentence that represents the problem.

Lesson Plan: Odd and Even Numbers

Grade Levels: K - 3

Objective

In this lesson, the concept of odd and even numbers is explored using manipulatives. A hundreds chart is used to show the alternating pattern of odd and even numbers, and students are asked to extend the pattern to identify additional odd and even numbers. Students will identify odd and even numbers and patterns in number sequences.

Materials

Provide each student with:

- 2 copies of a hundreds chart
- 50 counters
- 2 green crayons

Procedure

Show students how to tell whether a number from 1 to 6 is even or odd using counters. Explain that if the number of counters can be arranged so each counter is paired with another, the number is even. Further explain that if there is an unpaired counter, or a counter is left over, then the number is odd. Model this process for students, and then have them use counters to find which numbers are odd or even. Have students use the green crayon to color the squares with the numbers they identify as even on their hundreds charts. Ask students to continue to use this method to find all the even numbers up to 20, recording them on the charts using a green crayon.

Ask students to describe patterns they see on their charts, and elicit that every other number is green, or even. Have students use their green crayons to continue the pattern on the charts up to the number 50. Ask students to circle one even number and one odd number between 20 and 50 on their charts. Then ask students to have their partner use counters to verify their choices. Encourage students to arrange the counters in groups of 10. Discuss their findings.

Extension:

Discuss how the chart has alternating stripes, or columns, and ask students what is the same in each green-colored column (the digit in the ones place in each number) and what is different (the digit in the tens place). Elicit that the digit in the ones place in each even number is 0, 2, 4, 6, or 8. Write several numbers between 50 and 100 on the chalkboard, and ask students to identify whether each is odd or even.
Metaphors and Analogies

What Is It?

Metaphors and analogies are comparisons between unlike things that have some particular things in common. Here are some examples: The human eye is like a camera. Love is a kind of game. Sound waves are like the circular ripples that spread from a stone dropped in water. Metaphors and analogies often begin with such phrases as, "It's just like ...", "It's the same as ...", and "Think of it as ...". Writers use metaphors and analogies to enhance and enliven descriptions, and to express thoughts and ideas more clearly and precisely. You can use the Metaphors and Analogies Graphic Organizer to better explain these concepts to your students.

Why Is It Important?

1. Good teachers use metaphors and analogies to make new and unfamiliar concepts more meaningful to students by connecting what they already know to what they are learning.
2. Good readers know how to use analogies and metaphors to get at the meaning of a passage.
3. When students create their own analogies for new concepts, the analogy can provide a way to assess their understanding of the new concepts.
4. Metaphors and analogies add "sparkle" to student writing.

Research supports the use of analogies in good teaching:

Recognizing and constructing analogies is one way of helping students bridge the gap between the new and the old. Traditional analogies include the eye and a camera, the heart and a pump, the brain and a computer, and the memory and a file cabinet. Self-created analogies are generally more effective than those made up by others (Gunning, 1996).

The activation of prior knowledge to help students learn new knowledge is considered a basic principle of good teaching (Glynn, 1996) and is the foundation for the effective use of analogies. **see at the end of this section**

Analogies have proven to be effective learning tools for reinforcing thinking skills and conceptual understanding (Alvermann & Phelps, 1998).

How Can You Make It Happen?

Introduce students to the new concept you are teaching. Select a familiar concept that has some of the same qualities of the new concept and review the familiar concept with students. Brainstorm characteristics or qualities that are similar in the old and new concept. Then brainstorm how the items are different, or where the analogy breaks down. Discuss the relationship between the objects to determine themes that demonstrate the two items' similarities. Have students write a summary the new concept and familiar concept, explaining the similarities and differences.

How Can You Stretch Students' Thinking?

Analogies created by teachers can be used to help students understand new concepts, but powerful understanding occurs when students create their own analogies to find relationships between familiar and new concepts. It is important for students to understand that when comparing two things, there will be aspects of the analogy that are not perfect. Analogies can sometimes lead to misconceptions. No analogy is perfect, as two essentially different items are compared. For example, the analogy between the camera and the human eye is valid in some respects, such as the way the lens works in the two mechanisms, and is invalid in other respects, such as the different ways the two mechanisms
focus. When an analogy is more misleading than clarifying, we call it a false analogy. Have students challenge each others' analogies, and be on the lookout for false analogies.

**When Can You Use It?**

**Reading/English**

Analogies can be used to introduce new vocabulary or to compare situations or characters in literature. Have students create a metaphor for the character of Scrooge in *A Christmas Carol* (e.g., "Scrooge is like ... ").

**Writing**

Analogies and metaphors can be used to enliven ordinary language and to give maximum meaning in a minimum of words. (e.g., "Her backyard is an adventure park"). Have students create self-portraits using analogies.

**Math**

Use analogies and metaphors to activate prior knowledge. When introducing fractals, have students discuss the form of tree branches, and then introduce the concept of fractals. When introducing the metric system, discuss the base-10 system and use the analogy of clocks with the base-60 system.

**Social Studies**

Use an analogy to introduce events. Use the analogy of a fight with a family member as a way to learn and think about the Civil War.

**Science**

Use an analogy to introduce concepts. Compare the form of a bird to that of an airplane to introduce the principles of aerodynamics.

Use an analogy to assess understanding of concepts. Have students develop an analogy for a concept that has been taught. Students might say that migration is like a vacation, because both birds and people travel someplace warm, stay for a while, and return to where they started.
Lesson Plan: Migration Analogy

This is an intermediate science lesson using the analogy of bird migration being like a tropical vacation.

Grade Levels: 4 - 7

Objective

This lesson introduces the concept of migration to intermediate students. Students compare the analogy of bird migration being like a tropical vacation. Students will use an analogy to gain understanding of a new concept.

Key Understandings

Analogies and metaphors can make new and unfamiliar concepts more meaningful to students by connecting what they know to what they are learning.

Procedure

In introducing the concept of migration, use an analogy that likens it to a vacation to a warm climate. Note and discuss some interesting facts about migration: More than one-third of the world’s birds migrate; migration allows birds to adapt to changes in the environment, because they go to habitats with more food and better weather for survival; migrating is instinctual and most birds migrate in groups; and because traveling is so strenuous, only the fittest birds survive, allowing the strongest birds to reproduce. Review vocabulary that you would like students to be familiar with and use in the discussion, such as: predation, nocturnal, hazards, diurnal, flyway, migration, raptors, traits, and habitat.

Review the familiar concept of vacationing. Have students discuss trips they have taken to warm climates. Encourage them to discuss the details of travel, such as method of transportation, rest stops, eating habits, and energy levels, including the return trip.

Use the graphic organizer to identify the similar features or characteristics of migration and traveling on vacation. Identify the dissimilar features or where the analogy does not apply. Record these in the graphic organizer. Some questions to ask students: What is the connection between migration and vacationing? What is important to know about a vacation? What is important to know about migration? What are some of the differences between migration and vacationing?

1. Demonstration

Use the Analogies graphic organizer to organize thinking about the familiar concept and new concept. Start the discussion and complete at least half of the chart with students as a class. Here is an example of what a completed chart might look like.
2. **Sharing Ideas**

When students have completed the organizer, come together as a class to draw conclusions about the analogy and the overall similarities between the two concepts of migration and vacationing.

3. **Independent Practice**

Have students write journal entries imagining that they are preparing for and traveling to a warm climate. Have them next write a parallel journal entry imagining that they are a bird preparing for and migrating to a warm climate. Then ask students to write a summary paragraph comparing and contrasting the two entries.

4. **Assessment**
Review the new concept, migration, by either having the students write a paragraph of their understanding of the new concept or having them draw general conclusions that refer to the analogy. You may want to use a rubric to assess student writing.

**Understanding Metaphors**
This is an intermediate lesson plan introducing metaphors in writing.
Theory and Evidence

What Is It?

The terms theory and evidence go hand in hand. A theory is a formal explanation of the relationship among a set of observations. The observations provide evidence for the theory. Pieces of evidence support a theory in the way that legs support a table or columns support the roof of a building.

Scientists develop theories to explain natural phenomena. The Big Bang Theory is a well-known theory about the origin of the universe. It states that the universe originated billions of years ago in an explosion from a single point of nearly infinite energy density. The observation that the known universe appears to be expanding away from a central point is used as one piece of evidence supporting this theory.

Theory making is a process. A hypothesis is a sort of immature theory that has little or no supporting evidence. Once sufficient evidence has been collected to confirm the hypothesis, it becomes a theory. Once a theory becomes sufficiently grounded in evidence, it can become a fact. In the time of Galileo, the notion that the Earth and other planets revolve around the sun was a controversial theory. Today, because of supporting evidence, it is accepted as a fact.

One good test of a theory is whether or not it can be used to make reliable predictions. Using theories about orbital mechanics and the force of gravity, astronomers were able to predict the existence of the planet Pluto before it was actually observed by Clyde Tombaugh in 1930. The accuracy of this prediction helped confirm the prevailing theory about the behavior of objects in the solar system.

A valid theory cannot be proposed without evidence. A good example of how intricately theory and evidence are intertwined is to consider proposing a theory, such as the Big Bang, without evidence. Without the evidence that supports claims about the age and origins of matter, the theory is no more valid than any other. Without evidence, a theory has no credibility and is really no more than an opinion.

<table>
<thead>
<tr>
<th>Facts and Observations</th>
<th>Interpretations and Questions</th>
</tr>
</thead>
<tbody>
<tr>
<td>There isn't any water on the floor or around the base of the tank.</td>
<td>It can't be a leak. If it was, we'd see water on the floor. Maybe the fish are drinking the water?</td>
</tr>
<tr>
<td>We got another tank of the same size without any fish. We measured the water level every day. The water level went down the same amount in that tank too—about three centimeters each day.</td>
<td>It can't be the fish drinking the water, because the water level went down in the tank that didn't have any fish. Also, even if the fish drink the water, the level shouldn't go down because the water is still in the tank, in the fish.</td>
</tr>
<tr>
<td>We put a cover on the tank and the water level didn't go down.</td>
<td>It must be that the water is getting out into the air in the tank when the cover isn't on.</td>
</tr>
<tr>
<td>We saw some water drops on the underneath of the cover.</td>
<td>The water must have gone through the air to get to the bottom of the cover.</td>
</tr>
<tr>
<td>We can't see any water in the air.</td>
<td>The water in the air must be invisible.</td>
</tr>
</tbody>
</table>
Theory

The water level in the tank goes down because the water goes up into the air where it is invisible. Our evidence is that the water must be going into the air because the tank is not leaking and the fish are not drinking it. We know the fish are not drinking it because we measured the water in a tank without any fish and the water level in that tank went down too. Also, we checked for leaks, so it was not leaking out. When we put a cover on the tank, we measured that the water level did not go down. We saw some drops of water on the underneath of the cover, so we think it went through the air but the cover stopped it. That's our theory. Our teacher says this is "evaporation."

Why Is It Important?

A good working understanding of the relationship between theory and evidence is fundamental to critical thinking. Scientists are not the only ones who develop theories. Theory making and theory testing are fundamental activities that all people undertake.

The following are some reasons why it is important for students to have opportunities to generate, test, and defend theories of their own:

- Success in all of the major academic disciplines, including mathematics, the sciences, social sciences, and many of the humanities, depends in large part on a student's ability to develop theoretical understanding of subject matter. Knowledge of facts and rote procedures is only the beginning.
- The ability to analyze and interpret quantitative data, and to develop evidence-based theories based on data, is an increasingly important skill in the workplace.
- The ability to work back and forth between theory and evidence is a fundamental skill of citizenship in a democratic society. The workings of our democratic institutions, including our legal system, free press, and democratic elections, all depend on this skill.

How Can You Make It Happen?

There is no recipe for teaching students about the relationship between theory and evidence. It is not something that can be taught on any given day, as theories are born out of observations and the questions about these observations. Theory making and theory testing are interdisciplinary processes that should never be taught independently of content. Students should be actively engaged in the exploration of content by treating subject matter facts as evidence.

Theories must be based on evidence, and so a classroom culture that encourages and supports careful observation, active wondering, measurement, and data collection on a regular basis is crucial in encouraging students to develop theories of their own. Perhaps most importantly, theories must be open to dispute; therefore, a culture of thoughtful discourse, and skepticism, is required.

Developing a theory often starts with an observation of an interesting phenomenon. For example, a child notices that the level of water in the fish tank has gone down. Why? Did someone remove the water? Did the fish drink it? Does the tank have a leak?

Students collect facts through careful observation and then develop a theory. They test their theory by collecting additional evidence. If the tank leaks, there should be water on the floor or around the base. Is there any? Does the water level go down in a tank of the same size without any fish? What about the rate at which the level goes down?
Does it go down at the same rate every day? Where could the water possibly go if the level goes down and there's no leak and the fish didn't drink it? Could it go into the air? Is there a way to test that theory?

Further observations may help support or confirm these theories. If the evidence supports the theory, students then can determine whether they have gathered a sufficient amount of evidence. If the evidence does not support the theory, students develop a new theory based on the new evidence. An investigation like this can go on for several days, even weeks. In time you may want to formalize the process of theory making for students, possibly in the form of a flow chart.

**How Can You Stretch Students' Thinking?**

Eventually, it is important for students to learn that competing theories can be developed using the same evidence. One way to do this is to give the class the same set of evidence and ask groups to come up with competing theories. Each theory is equally valid as long as it adequately explains the available evidence. However, this does not mean that each theory is equally useful. One theory might better predict, or account for, additional evidence.

**When Can You Use It?**

**Reading/English**

A central part of reading involves developing a theory about the author's intended purpose and then continually checking the theory against evidence in the text itself. Good readers develop theories about motivations of characters in books, about the meaning of a poem, and about an author's underlying beliefs or intended effect on readers. In conversations about books, teachers should encourage students to give their interpretation of what they have read, justify that interpretation based on specific evidence from the text, and consider alternative interpretations suggested by other students. All readers can be encouraged to engage in this kind of conversation, from kindergarten through high school and beyond, from *Goodnight Moon* to *Hamlet*.

**Writing**

A central part of writing, especially expository writing, involves justifying statements of opinion with evidence. A good book review states a theory about the book, backed by evidence from the text itself. Students should be taught that it is not enough to simply write about their opinions, as their opinions are interesting only to the extent that they are supported by evidence. Tell students, "I am interested in reading what you think, but I am even more interested in reading why you think it." The best writers give the evidence, review alternative interpretations, and then explain why one interpretation is more believable than another, given the weight of the evidence.

**Math**

Mathematics is often taught as a body of facts and standard procedures to be memorized and practiced. Real mathematics is an investigative science. In mathematics, theories are called theorems, and a body of evidence is called a proof, but the relationship between the two is essentially the same. Students do not need to be taught theorems (often part of high school geometry) to begin developing and testing theories using mathematics. For example, when students are asked to estimate the number of candies in a jar, they are being asked for a theory. This is an opportunity to have students provide evidence to support their theories and to help them understand the difference between assumptions and estimations.

Many mathematical problems lend themselves to creating theories through observation and detection of patterns. For example, students are often asked to complete a series of numbers or find the area of an object that has an irregular shape. A good answer is important, but it can be less important than a good answer that has a good explanation.
Social Studies

History, economics, sociology, psychology, and all the other social sciences are rich with theory and evidence. Facts are often not as interesting or important as the interpretations of these facts. It should be expected that interpretations will be evidence-based and open to challenge when disconfirming evidence is provided. Students of all ages should be provided with plenty of opportunities to observe their culture, collect data, construct theories about the data, and check theories against further evidence. A local cemetery is a rich source of data about the community and the people who have lived in it, certain to generate a host of theories. Family histories are another source of theory-provoking data, as is one's language, supermarkets, the houses surrounding a school, or the school itself. The key is insisting on careful observation, careful collection of evidence, and careful thinking.

Science

The science classroom can and ought to be a lively forum for the generation and testing of theories of all kinds. Science teachers can make lab work (and field work) the central learning activity. Students can study and record the growth of plants, the behavior of live animals, and the interactions of plants and animals in natural habitats. They can record changes in the weather, study the composition of soil, classify shells, and dissect plants and insects. In all of these activities, however, it is not enough simply to observe and record. Students should always be asked to explain their interpretation of the data, and to justify their theories about what the data means, referencing specific evidence. In other words, explaining not just what, but why and how.

LESSON PLAN - EXAMPLE - Is the Magic 8-Ball Really Magic?
Is the Magic 8-Ball Really Magic?

Grade Levels: 4 - 12

Objectives

Students are asked to develop a theory about how a Magic 8-Ball works without taking the 8-ball apart. The activity requires careful collection of data and the generation of a theoretical model that will explain how the mechanism of the toy works. This is a simple project that you can use for a number of purposes.

- It's a good introduction to a study of polyhedrons and the modeling of geometric shapes. The best solutions to this problem will involve the construction of an actual physical model of the toy's central component, which turns out to be a regular polyhedron. This can be done by folding paper in a certain way.
- It can be used to teach probability. For example, ask students to find out the probability of the ball giving a "positive" answer.
- This lesson simulates a scientific experiment and gives students practice with collaborative theory building. It gives a context in which to discuss the scientific method.

Procedure

1. Organize Students in Groups

Divide students into groups of two or three, with one Magic 8-Ball for each group. If desired, assign each student a role. Students can take turns assuming these roles during the course of the experiment:

   o Research director: Helps the group decide what data to collect and how to collect it.
   o Research technician: Performs the actual experiments to produce the data.
   o Data recorder: Keeps track of the data.

2. Present the Problem

Pass out the Magic 8-Balls. Explain to students that they are being asked to come up with a theory about how the toy works. Is it really magic, or is there some other explanation? Explain that they must construct their theories around evidence, which they can collect by carefully observing the behavior of the toy. Tell them you're not sure yourself how it works.

Tell students to record their observations and interpretations in the appropriate columns of their notebooks (left column for observations, right column for interpretations and questions). Explain that they will have one hour (or as much time you want to allow) to collect evidence, develop a theory, and present a draft report of their theory. The report should describe the evidence they have collected and how they have used this evidence to construct a theory. Suggest that the report should include drawings, tables, and other means of explaining their findings.

At the end of the period (or the next time the class meets), ask students to explain their theories to the class.

3. Assessment

Ask students to write a final draft of the report as homework. You can give them the writing prompts
and rubric in advance to clarify expectations.

Follow Up

1. As explained above, this is a good introduction to the study of polyhedrons. The number of faces on polyhedrons increases in a regular series, beginning with a cube, which has four faces. Students can be asked to investigate this series and perhaps try building some of the larger ones. You could have a competition to see which team can build the largest regular polyhedron.

2. At the high school level, students may want to try writing a Magic 8-Ball computer simulation. This can be a simple text-based simulation or a more complicated one with animation.

3. With younger children, you may want to explore the nature of floating objects.
Geometry

What Is It?

Geometry is the study of two- and three-dimensional figures. It includes defining the different figures, as well as describing their location and movement in space. In the primary and intermediate grades, this study includes activities such as identifying, comparing, classifying, and building plane and solid figures; specifying the location of figures on coordinate grids; exploring congruency and similarity; checking for symmetry; and investigating the effects of slides, flips, and turns on figures.

Why Is It Important?

Geometry helps us understand and describe the world around us. Geometric concepts are used in architecture, engineering, astronomy, art, navigation, sports, furniture design, toy making, road building-the list goes on and on.

Children are engaged in geometric thinking when they choose the shortest path to the playground, pack food and drink containers into their lunch boxes, and grapple with how to maximize the number of cutouts from a sheet of construction paper.

How Can You Make It Happen?

It is very important that a hands-on approach is taken in learning geometry. Students should be given many opportunities to identify examples of points, lines, angles, and planes in the world around them. Students should participate in many activities where they make, take apart, and manipulate both plane and solid figures.

Students can compare and classify figures using pattern blocks, paper cutouts, and real-world items such as chalk, boxes, and balls; check for congruency by placing one figure on top of another; identify symmetry by using mirrors and folding paper figures; slide, flip, and turn paper cutouts to explore the results of these transformations; and fold and tape nets to create their corresponding solid figures. These kinds of kinesthetic experiences are necessary for students to progress to the visualization and abstract thinking skills required of them as they continue the study of geometry in the higher grades.

The vocabulary used to describe students' experiences in geometry should become more and more precise as students move through the grades so they have the vocabulary necessary to convey their thinking clearly-what may be called "square corners" in the primary grades becomes "right angles" in intermediate grades; likewise, "turning the figure halfway around" becomes "rotating the figure 180 degrees."

How Can You Stretch Students' Thinking?

For students to internalize accurately what plane and solid figures are, they need to be shown examples as well as non-examples of the figures. Understanding what a triangle is and is not, a student can then identify triangles in different orientations, whether they are represented "sitting" on a side, balanced on a "point" or vertex, or rotated to be positioned somewhere in between. As students understand the essential attributes of figures, they can begin to understand relationships among figures: a square is a special kind of rectangle and a special kind of rhombus; and each of these-square, rectangle, and rhombus-is a quadrilateral.
**When can you use it?**

**Reading/English**

For primary grades, identify geometric shapes in picture books. Have students point out which objects and animals are drawn using simple geometric shapes, and identify shapes the artist uses to illustrate the story. Find examples of objects that are composite figures (made up of two or more different shapes) and list all the shapes used in each figure.

For intermediate grades, discuss shapes with students. Discuss how the shape of books makes them easy to stack, line up on shelves, and pack into boxes. Have students propose other shapes for books and brainstorm how library equipment such as shelves, carts, copy machines, and book-drop boxes might have to be designed differently to accommodate these differently shaped books.

**Writing**

For primary grades, have students describe plane figures such as circles, squares, and triangles. Encourage them to draw examples and non-examples of each. Students can create riddles and have other students guess the object that is described.

For intermediate grades, have students keep geometry journals in which they define concepts, such as parallel, quadrilateral, and slide image, as they study them.

**Math**

Geometry can be used throughout mathematics lessons. Try Designing a Quilt Pattern, Tessellations, or Geometry, Color, and Piet Mondrian.
Lesson Plan: Designing a Quilt Pattern

Grade Levels: 8 - 12

Introduction

People have used quilts for at least a few thousand years. The ancient Russians, Chinese, and Indians of Central America wore quilted clothing for warmth. When the Crusaders returned to Europe, they brought home the idea of quilted fabrics, which they learned from the Saracens who wore quilted shirts. The Europeans soon adapted quilts for undergarments and sleepwear. When the Dutch and English colonists settled the New World, they were kept warm during winter nights by the quilts they laid across their beds. Today, quilt making is as much an art as it is a craft. The elaborate patterns that quilts exhibit inspire both admiration and fascination. Although your students won't actually make quilts for this project, they will have the opportunity to design original quilt patterns.

Objective

- Working individually, students will create and color a one-patch quilt design based upon the regular hexagon. A one-patch quilt is made by using only one geometric shape that is repeated throughout. The hexagon is a good choice because it can be "cut" in a variety of ways including isosceles trapezoids, rhombi, isosceles triangles, equilateral triangles, and kites.
- Students will choose a design, draw the pattern on the included worksheet, and color it to highlight the quilt design.

Suggested Time Allowance

One to two class periods, possibly with some time needed outside of class.

Math Skills to Highlight

- Recognizing the properties of regular polygons, particularly the regular hexagon
- Recognizing the properties of an equilateral triangle
- Measuring angles
- Finding the sum of the measures of interior angles of triangles and quadrilaterals
- Identifying lines and/or points of symmetry
- Identifying congruent figures

Materials

- Student Guide 42-1
- Student Guide 42-2
- Student Guide 42-3
- Rulers, protractors, crayons, felt-tipped pens, colored pencils, markers
- A real quilt or pictures of quilts

If you have a quilt, bringing it to class to show your students is an excellent way to generate interest in this project. If you can't bring in a quilt, try to obtain books about quilts from your library. These books will have plenty of pictures of quilts that you can share with your students.
Procedures

1. Begin the project by explaining that each student will create a one-patch quilt design based on a regular hexagon. After completing their designs, students will color them to enhance their quilt patterns.

2. When you show pictures of quilts, ask students to identify some of the figures they recognize on them, and point out how they are pieced together to achieve an overall effect.

3. Distribute copies of Student Guide 42-1. Review it with your students, and emphasize the need for careful measuring and use of congruent figures.

4. Hand out Data Sheet 42-2, "Creating a One-Patch Quilt Design," and discuss the suggestions and shapes.

5. Remind students that they may use only one shape because they are designing a one-patch quilt.

6. Hand out to each student at least two copies of Worksheet 42-3, "Quilt Design." Have extra copies ready for students who wish to try various patterns or who make mistakes with their designs. Mention that the worksheet has a border that is not part of the design, and suggest that students use the dots for guidelines. The designs will stretch beyond the border, but students should continue to draw as much as they can in order to fill the worksheet.

7. Explain that the use of color can enhance their designs. Note that the selection of colors may enhance or detract from their designs. Particular colors can make some shapes stand out while others may make some shapes difficult to see.

8. Once the designs are finished, ask students to measure the angles and test a conjecture about the sum of the measures of the interior angles of a polygon. You may wish to introduce the formula \((n - 2)180\) where \(n\) stands for the number of sides.

9. Depending on the abilities of your students, you may wish to discuss congruent figures and the properties of regular polygons. Another aspect of this project is the important role of symmetry. Symmetry with respect to a point or a line may also be introduced or reinforced.

10. Display the quilt designs on the bulletin board.

Extension Activities

- Invite a quilter to the class with examples of her/his work. Have her/him explain quilting to your students.
Tessellations

Grade Levels: 3 - 6

INTRODUCTION
The connections between art and math are strong and frequent, yet few students are aware of them. This geometry lesson is integrated with history and art to engage even the most math resistant of your students and to enlighten everyone about M. C. Escher's work in tessellations.

SUGGESTED TIME ALLOWANCE
40 minutes

OBJECTIVES
Students will:

- follow precise, multi-step directions.
- have the opportunity to go beyond the immediate lesson and apply artistic creativity, or learn more about M. C. Escher, his art, or the contributions he made to mathematics.
- be able to understand and define the following terms: tessellation, polygon, angle, plane, vertex, and adjacent.
- create a concrete model of a tessellation.

MATERIALS
- Scissors, tape, 11" x 14" paper, crayons, black fine-tip pen
- Worksheets: Creating Tessellations

PROCEDURES
1. Introduce key vocabulary words: tessellation, polygon, angle, plane, vertex and adjacent. Ask students to tell you what they know about the word tessellation. Discuss the three basic attributes of tessellations:

   - First, they are repeated patterns. Ask students to find examples of repeated patterns in the room. Generate a list of the words one could use to describe these patterns. Tell students that while those are repeated patterns, only some are tessellations because tessellations are a very specific kind of pattern.
   - Second, tessellations do not have gaps or overlaps. If students have pointed to a pattern in the room that has a gap or an overlap in it, point out that it does not fit the definition of a tessellation.
   - Third, tessellations can continue on a plane forever. Define plane (use a concrete example in the room) and show students how the pattern could continue on that plane if it were to go on beyond the confines of the building (e.g., it could continue as a pattern on the ceiling without any gaps or overlaps even if the ceiling were to continue forever, far beyond the walls of your school).

2. Provide students with the Shapes worksheet within the Tessellations packet, which has a copy of a square, a rectangle, a rhombus, and a hexagon on it. (These were chosen because each tessellates.) Using the Student Directions worksheet, demonstrate how to transform a shape into something that will also tessellate.

ASSESSMENT
- Note how the students follow multi-step directions as well as how they cut and trace (manual dexterity).
- To assess an understanding of the vocabulary, create a quiz, or ask them to perform another project that requires an understanding of the terms. (For example, ask them to tell you who is adjacent to them or ask them
to label the top right vertex of a shape you provide.)

- Have your students teach another class how to tessellate.

EXTENSION ACTIVITIES

- Younger students can discover for themselves what shapes tessellate using pattern blocks and lots of space. They will notice that only some, not all, can make a pattern that would fit all three of the criteria.
- Encourage students to experiment to see if they can discover other ways to make shapes tessellate.
- Teach students about the history of tessellations and show examples. If you can have students point out the three features of tessellations, it will help to make their understanding more concrete and it will also review the definition. Tessellations have been used all around the world for many years. The earliest tessellations we can find come from Islamic art circa 3000 BC. There are examples from medieval European art as well (e.g., stained glass patterns).
- Use Web resources to extend the lesson:
  - Enter your class in one of several online tessellation contests.
  - Look at American folk art that uses tessellations (such as quilts).
  - Tessellations were popularized by M. C. Escher.
  - Research M. C. Escher, Penrose, and other "Recreational mathematicians."
Lesson Plan: Geometry, Color, and Piet Mondrian

Grade Levels: 2 - 5

Objectives

- Students will reproduce the art of Piet Mondrian.
- Students will use rulers to create geometrical shapes.
- Students will review their understanding of primary colors.

Materials

- White paper
- Red, yellow and blue paints, markers, or crayons
- Black marker
- Ruler
- Pencil
- Paintbrush (optional)
- Water (optional)
- Containers (optional)

Procedures

1. Give students background on Piet Mondrian and the painting style he invented. See the following paragraph.

Piet Mondrian was a Dutch painter who was born in 1872. At one time, Mondrian painted realistic landscapes, but as he painted more and more, his style began to change. He started to create abstract images. How did he come to paint this way? The more Mondrian looked at trees, buildings, and vases, the more he saw their basic shapes and colors. You can try this too. Just squint your eyes while you are looking at something and all the details will start to disappear. You will see only shapes and color, no real objects. This is what Mondrian did. Eventually, Mondrian's style consisted of geometric shapes and primary colors. After all, every shape can be created from the basic geometric shapes and every color can be created from the primaries -- red, yellow, and blue.

2. Students should divide their papers up by drawing four horizontal lines from one end of the paper to the other.
3. Next, draw three vertical lines and again, make sure the lines go from one end of the paper to the other.
4. When the lines have been drawn, use a black marker to darken them up.
5. Make some lines thick and some lines thin.
6. Students should choose just a few spaces on their papers to fill in with the primary colors -- red, yellow, and blue.
7. Encourage students to leave some white space.
8. Have students sign their work and use the art for a wall display.

### Social Studies

In primary grades, have students study maps of their neighborhood or town and use the coordinates given in the indices to locate streets and familiar landmarks.

In intermediate grades, have students read about different careers, such as firefighting and architecture, and discuss how the job-related skills may or may not include geometry.

### Science

In primary grades, discuss wheels. Brainstorm a list of items that have wheels and discuss how aspects of students’ lives, such as how they get to school and what they do for recreation, would be different if the wheel had not yet been invented.

In intermediate grades, have students identify shapes found in the world around us. Discuss reasons for objects having a particular shape and size. For example, a manhole cover is round so that it can't fall into the manhole, as a rectangular cover could; a bubble, like a balloon, assumes the shape that has the least surface area for the volume of gas or liquid it contains, and that shape, for any given volume, is a sphere.
**Number Sense**

**What Is It?**

Number sense involves understanding numbers; knowing how to write and represent numbers in different ways; recognizing the quantity represented by numerals and other number forms; and discovering how a number relates to another number or group of numbers. Number sense develops gradually and varies as a result of exploring numbers, visualizing them in a variety of contexts, and relating to them in different ways.

In the primary and intermediate grades, number sense includes skills such as counting; representing numbers with manipulatives and models; understanding place value in the context of our base 10 number system; writing and recognizing numbers in different forms such as expanded, word, and standard; and expressing a number different ways—5 is "4 + 1" as well as "7 - 2," and 100 is 10 tens as well as 1 hundred. Number sense also includes the ability to compare and order numbers—whole numbers, fractions, decimals, and integers—and the ability to identify a number by an attribute—such as odd or even, prime or composite-or as a multiple or factor of another number.

As students work with numbers, they gradually develop flexibility in thinking about numbers, which is a distinguishing characteristic of number sense.

**Why Is It Important?**

Number sense enables students to understand and express quantities in their world. For example, whole numbers describe the number of students in a class or the number of days until a special event. Decimal quantities relate to money or metric measures, fractional amounts describing ingredient measures or time increments, negative quantities conveying temperatures below zero or depths below sea level, or percent amounts describing test scores or sale prices. Number sense is also the basis for understanding any mathematical operation and being able to estimate and make a meaningful interpretation of its result.

Number sense develops as students understand the size of numbers, develop multiple ways of thinking about and representing numbers, use numbers as referents, and develop accurate perceptions about the effects of operations on numbers (Sowder 1992).

**How Can You Make It Happen?**

In teaching number sense, using manipulatives and models (e.g., place-value blocks, fraction strips, decimal squares, number lines, and place-value and hundreds charts) helps students understand what numbers represent, different ways to express numbers, and how numbers relate to one another.

When students trade with place-value blocks they can demonstrate that the number 14 may be represented as 14 ones or as 1 ten and 4 ones. They can also demonstrate that 10 hundreds is the same as 1 thousand. By recording the number of each kind of block in the corresponding column (thousands, hundreds, tens, or ones) on a place-value chart, students practice writing numbers in standard form.

Using fraction strips, students find that 1/4 is less than 1/3 and that it names the same amount as 2/8.

Using decimal squares, students see that 8 tenths can be written as 0.8 or 8/10. By pairing up counters to identify even numbers and marking these on a hundreds chart, primary-grade students discover that, beginning with 2, every other number is an even number.
Intermediate-grade students can mark multiples of 3 and 6 on a hundreds chart and find that every number that has 6 as a factor also has 3 as a factor.

Using a number line, students see how fractions with different denominators relate to the benchmark quantities of 0, 1/2, and 1.

From these concrete experiences, students build the foundation for number sense they will bring to computation, estimation, measurement, problem solving, and all other areas of mathematics.

**How Can You Stretch Students' Thinking?**

Help students identify whole-number relationships that are different from decimals, fractions, and integers. Students may unsuccessfully try to apply these relationships to decimals, fractions, or integers.

For example, while a three-digit whole number is less than a four-digit whole number, a three-digit decimal may be greater than, less than, or equal to a four-digit decimal (34.5 > 3.456, 1.11 < 1.111, 68.2 = 68.20).

The whole number 6 is greater than the whole number 5, but when unit fractions have these numerals as denominators, the relationship is reversed, and 1/5 > 1/6. Similarly, -5 > -6. Encourage students to use manipulatives and models to explore any misconceptions.

**When Can You Use It?**

**Reading/English**

For students in primary grades, read and discuss any of the many available counting books that illustrate numbers up to 10, 20, and so on.

Have students in intermediate grades identify ways that numbers are represented in print. Ask them questions such as, "When are numbers shown in standard form? Word form? Short-word form? When are actual numbers used? When are rounded numbers used?"

**Writing**

Ask students to write about number representations by defining and giving examples of different forms of numbers—standard, expanded, word, and short-word.

**Social Studies**

For students in primary grades, find and discuss different ways numbers are used in the environment (e.g., addresses, time, temperatures, grades, speed limits, phone numbers, on recyclable plastics).

Have students in intermediate grades find population figures for town or city, state, and country. Then ask them to compare and order the populations they found with those other students found.

**Science**

For students in primary grades, represent numbers with concrete objects. Choose linear measurements relating to science, such as the sizes of dinosaurs, and represent lengths using pieces of string or yarn. Label the strings, and then
compare and order them. Make comparisons between string lengths, string length and classroom dimensions, string length and students' height, and so on.

Have students in intermediate grades discuss and practice writing numbers using scientific notation. Have them find examples of measures written with scientific notation and identify the situations in which they are used and why.
Estimating Unknown Quantities

What Is It?

Estimation is the process of guessing the approximate value of a number. An estimate is useful when:

- An exact value is impossible or impractical to obtain (e.g., the number of stars in our galaxy)
- An approximate value is adequate (e.g., the number of people who will attend a party)
- An approximation serves as a rough check of the accuracy of a measurement (e.g., your scale says you weigh 1,850 pounds)

Estimation is an important aspect of quantitative thinking—and a critical life skill in a world in which we often need to make decisions on the basis of inexact or undefined information. Students at every grade level, from kindergarten to high school, should learn increasingly sophisticated estimation skills.

Note: Students are often tested on estimation skills using multiple-choice items, such as "Which of these estimates most closely represents the total?"

11 + 17 + 15 = ?

a. 20  
b. 30  
c. 40  
d. 50

This type of problem is more closely related to rounding than to estimating. In computations in which a quantity can be found, rounding numbers to reach a reasonable estimation is an important skill.

Types of Estimation

There are at least three different ways of estimating unknown quantities:

1. Eyeball Estimates

An "eyeball estimate" is an educated guess about a quantity based on sight and using some known benchmarks as guides. For example, based on our memories of how long a 12" ruler looks and how high 10' looks (the height of a basketball net), we can make an estimate about how high a ceiling is.

Depending on our life experiences, the benchmarks that we use in making eyeball estimates may include the length of a football field (300 feet, 100 yards), a gallon of milk, Larry Bird's height (6' 9''), the size of a sweater that will fit you, the length of the top part of your thumb (about 1''), and so on. To be able to make eyeball estimates, children must have developed their own set of benchmark quantities for standard measures of length, volume, weight, time, money, and so on.

2. Sampling

Sampling is another estimation skill that is used when it is easier to count "parts" than "wholes." We count one part, estimate the amount of parts in the whole, and then multiply. For example, in trying to estimate the number of candies in a five-gallon jug, we might use a formula like this:
Total candies = candies per handful \times handfuls per layer \times layers per jug

To find out how many times a human heart beats in a lifetime, we can count the number of heartbeats in a minute, multiply by 60 to get the number in an hour, and so on.

To find the number of hairs on someone's head, we might try to count the number of hairs in one square inch, make an assumption about the number of square inches in total, and multiply to find an estimate of the total.

A refinement of this method is to pull several samples and count the items in each, find an average, and then multiply using this number. For example, to find the number of candies in a jar, we can count the number of candies in five handfuls, then take the average as an estimate of the number of candies in a handful, and then multiply by the number of handfuls we estimate are in the jar.

3. Estimate by Analysis

An even more sophisticated kind of estimation involves dividing a complex problem into small parts, then working out estimates for each part separately. In these kinds of problems where there is no correct solution, spreadsheets are extremely valuable because students can create formulas for calculations, change assumptions easily, and immediately see the implications of their changes.

For example, consider the following budget for a simple party.

<table>
<thead>
<tr>
<th>Assumptions</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>guests</td>
<td>25</td>
</tr>
<tr>
<td>glasses of punch per person</td>
<td>2</td>
</tr>
<tr>
<td>sandwiches per person</td>
<td>1</td>
</tr>
<tr>
<td>cost of one liter of punch</td>
<td>1.25</td>
</tr>
<tr>
<td>servings per liter</td>
<td>8</td>
</tr>
<tr>
<td>cost of loaf of bread</td>
<td>2.50</td>
</tr>
<tr>
<td>sandwiches per loaf</td>
<td>8</td>
</tr>
<tr>
<td>cost of pound of cold cuts</td>
<td>4.50</td>
</tr>
<tr>
<td>sandwiches per pound</td>
<td>6</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Calculations</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Items</td>
<td>Cost/Item</td>
</tr>
<tr>
<td>------------------</td>
<td>-----------</td>
</tr>
<tr>
<td>liters of punch</td>
<td>7</td>
</tr>
<tr>
<td>loaves of bread</td>
<td>4</td>
</tr>
<tr>
<td>lb. of cold cuts</td>
<td>5</td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td></td>
</tr>
<tr>
<td><strong>Cost/person</strong></td>
<td></td>
</tr>
</tbody>
</table>

It's impossible to measure the exact amount of food or drink you need for a party since it can only be measured after the event has occurred. However, you can predict the amount that you will need before the event, and create a budget for the party. The estimated budget is based on past experiences and assumptions. Break down the budget into its component parts ("itemizing"), then estimate quantities and prices for each part to make an educated guess about how much the party will cost.

With further research (e.g., a visit to the supermarket), the estimate can be improved by refining some of the assumptions. Other ways to improve the estimate might include taking actual measurements (how many slices of bread per loaf) or consulting experts.

### 4. Multiple Methods

One way to improve the accuracy of an estimate is to try more than one method of calculation. For example, to estimate the number of supermarkets in the United States, one method would be to count the number of supermarkets in one city. Estimate the population of the city, and use that number to divide to find an estimate of the number of people per supermarket. To calculate a rough estimate of the number of supermarkets in the United States, divide the number of people in the United States (300 million in 2007) by this number.

Another method might be to visit a supermarket and try to estimate the number of customers in the store at that time. Use this number to estimate the total number of people who might be shopping at that same time everywhere in the United States. Calculate how many supermarkets it would take to accommodate this many people by dividing 300 million by the number of customers in your local market. Taken alone, each method produces a very rough estimate. However, used in combination, they may serve as a check on each other, giving an estimate that we may be more confident in than if we used only one method.

**Why Is It Important?**

Estimation serves as an important companion to computation. It provides a tool for judging the reasonableness of calculator, mental, and paper-and-pencil computations. Most importantly, the ability to make a reasonable estimate of an unknown quantity is an empowering skill—it frees us from the need to be precise when precision is impossible and lets a number that is reasonably accurate be good enough.

Unfortunately, mathematics instruction too often focuses on getting precise answers. For example, we frequently ask students to solve problems such as, "How long will it take a car to travel 5 miles if it is traveling 60 miles per hour?" We
seldom ask students to calculate how fast cars are traveling along the street outside the school. Both involve the same sort of mathematics. The first problem is relatively easy to solve, has a single correct answer, and is not very interesting. The second is somewhat harder to solve because it involves taking some actual measurements; there is no single correct answer. This type of question might motivate students because it involves a part of their everyday lives.

**How Can You Make It Happen?**

Estimation is not a skill that you can teach on a given morning; it is a "habit of mind" that should be cultivated over a lifetime. Experienced teachers are always on the lookout for problems that allow students to apply their skills in mathematics, science, and communication.

1. **Fermi Problems**

   One way of helping students develop estimation skills is to ask them to solve Fermi Problems. Fermi Problems, named after the Italian physicist Enrico Fermi, are open-ended problems with no easy solution. Rather, they require students to make rough calculations based on a reasonable set of assumptions. Here are some examples:

   - How many leaves are on the two trees standing outside the school?
   - How many gallons of water does our class drink every day?
   - How many pencils are there in our school? What is the average length?
   - How much money could we save by turning the lights off when we leave this room?
   - Are Spanish words longer than English words? Do they use more vowels?

   To solve problems such as these successfully, students need to have good computation skills, their own benchmarks, an understanding of the concept of an assumption, and comfort with a range of possible values as opposed to an exact value.

2. **Benchmarks**

   A benchmark is a point of reference for making estimations and is developed through past experiences. An important aspect of estimation is making sure students have developed a variety of benchmarks in all areas of measurement. Students should have plenty of experiences in estimating heights, lengths, weights, volume, and time to develop personal benchmarks that they can apply to future estimations. A benchmark can be anything that allows students to relate the relative size or magnitude of something to a known size or magnitude. For example, if students have internalized the benchmark of 1 foot, they can estimate the length of a car to be about 10 feet.

   A simple activity is to time the length of a minute, and ask students to raise their hands when they think a minute has passed. After repeating this activity several times, students will have a much better sense of the length of a minute. (You might teach them the trick of counting seconds by saying "one Mississippi, two Mississippi, three Mississippi...")

   Practice estimating using benchmarks, and have students share their strategies for making estimations.

3. **Assumptions**

   Assumptions are the building blocks of an estimate. To estimate how much punch you need for your party, you make assumptions about the number of guests who actually will come (which may be different from the number that you invite) and the amount of punch that each will drink. The assumptions that you make will be different depending on your past experiences. For example, an experienced painter may estimate that a house will take
four days to paint, based on the assumption that the house is similar to another house she painted previously. Someone who has never painted a house may estimate that it will take seven days to paint it. Once you've made your assumptions, the estimate itself is simply a matter of calculation.

It takes a certain amount of courage to make an assumption. Making an assumption is risky because you could be wrong. Some students may balk at making assumptions for fear of not getting it right. Therefore, it is important to create an environment in which it is safe to make, and challenge, assumptions.

4. Range of Acceptable Values

It is often useful to consider a range of values for a particular estimate. For example, in estimating how many people speak English as a primary language, an estimate would not be 301,025,601 people. An acceptable estimate may be a range, such as between 250 and 400 million people.

One way to introduce the idea of a range of possible values is to have students, working individually or in groups, come up with estimates for the same problem. For example, divide the class into groups, and have each group estimate the area of the classroom. Poll the groups, and write the estimates on the board, possibly in the form of a bar graph. Ask the "outliers" (groups whose estimates are far above or below the average) to explain their assumptions, which may lead them to change their estimates. Then suggest that the true answer is probably somewhere between the highest and the lowest estimates. Students can then measure the area of the classroom and compare their estimates to the actual measurement.

5. Teaching Estimation Every Day

Students should understand that estimation is a skill that is used every day in many different situations and is not only a topic in math class. Explain to students the different types of estimates and when each would be used. You may want to start by having students brainstorm situations in which they have made estimates. Then, categorize the examples to show the wide use of estimation in real-world situations. For example, students might use estimates to predict the amount of money they need to go to the mall for a day or how long their homework will take them on a given night. They might make eyeball estimates of the length of their hair or the weight of objects in the classroom. Ask students to describe how they make estimates, and be sure that they understand all types of estimation. This will allow you to determine what assistance they may need in developing appropriate estimates.

To introduce a class to making estimates, give students a simple Fermi problem, such as, "If we lined up all of our shoes in a row, end to end, how long would the row of shoes be?"

As students think about the problem, ask them to record their ideas. Here are some questions to get them thinking.

1. Define the problem. What sort of answer are we looking for? What would be an example of a solution?
2. What are the appropriate units of measure?
3. What do we need to know to arrive at an estimate?
4. What assumptions can we make?
5. What calculations can we make? What mathematical operations can we use?
6. How can we check our estimate to see if it makes sense?

For Step 1, be sure students understand that they are trying to estimate the length of the row of shoes, not how many shoes there would be. They should decide if their row consists of shoes lined up end to end, or side by side.

For Step 2, have students choose the unit they will use: yards, inches, feet, meters, or centimeters. Remind students of the benchmarks they know from past experiences. Students may know that an inch is about the length of the top
section of their thumb, a foot is the length of a ruler or about the length of a standard piece of notebook paper, or a meter is about the length of a baseball bat.

In Step 3, students need to find out how many shoes will be in the row and how the length of each shoe will be calculated. For Step 4, guide students to make assumptions about how wide or long the shoes are and how many shoes will be in the row. Students can measure the length or width of five shoes and find the average, or measure a few shoes and take the most frequently occurring measurement.

During Step 5, students should calculate the length of the row by multiplying the number of shoes by the shoe length or width they arrived at in Step 4 by using their assumptions. Younger students can repeatedly add the length of shoes to reach an estimate. If students are working in groups, discuss the range of reasonable estimates based on the assumptions students made. Ask them to make new assumptions if their estimates are outside of that range. Once all students have estimates that are within the acceptable range of values, the class can measure the actual length of all the lined-up shoes. Have students compare the actual length to their estimates.

**How Can You Stretch Students' Thinking?**

Here are some ways of getting students to stretch their estimation skills:

- Give students increasingly difficult problems. The best problems are ones that are slightly beyond their comfort zone.
- Have students clearly document their estimations by listing and justifying all of their assumptions, describing their process, and showing all calculations. Have students try alternate methods of estimating, and ask them to share their processes with one another. Encourage students to try a variety of strategies and apply them to new situations.
- Teach students how to challenge one another’s assumptions in a respectful way and how to defend and justify their own estimates to one another.
- Encourage students to estimate a range of solutions by exploring what happens when they change their assumptions within reasonable bounds.
- Help students use programmable calculators or spreadsheets to build their own estimation tools. Advanced computer science students can be challenged to build simulation models.

**When Can You Use It?**

There are many opportunities to use estimation in science, research, history, and economics to quantify amounts when accurate numbers are not needed.

**Reading/English**

Students can read about estimations in news articles, on Web sites, or in textbooks. Students can analyze the statistics or assumptions that were made to arrive at the estimate and then discuss questions that arise about their estimates.
**Writing**

Have students explain their estimations in writing. Students can describe the process they used to estimate in a given scenario. Have students explain the strategies, assumptions, and benchmarks they used to arrive at their estimate.

**Math**

Have students estimate using a variety of measures, such as weight, height, and time. Provide students with daily or weekly estimation problems and make them use new operations or estimation strategies.

**Social Studies**

Discuss the many ways estimates are used in social studies. Discuss how statistics for population, geography, careers, language, and the like were determined. Discuss the sampling, surveying, or other methods that were used to determine the estimates.

**Science**

Have students make estimations before and during experiments. They can estimate the mass, height, length, or volume of various objects and then find the actual values and compare them.
Lesson Plan: Estimating Angles, Area, and Length

This lesson plan is for students in middle school. Students estimate angles and surface area and perform computational estimation.

Grade Levels: 3 - 7

Objective

Math students in middle school will use estimation to approximate values, angle, and area measurements of a triangle.

Materials

- paper
- pencil
- string

Procedure

1. Demonstration

   Explain to students that they are going to work as a class to estimate the measurements of several angles and compare the estimates with measured values. Then, students will work in groups of four to estimate a triangle's angles and area. Explain that this lesson covers two benchmark units, degrees and centimeters.

   Draw two triangles on the chalkboard, and write the base and height for each: first triangle, height = 732 and base = 1239; second triangle, height = 128 and base = 985. Have students select an acute angle from the first triangle, and show them that they can visualize whether the angle is less than or greater than 90 degrees. Then have them determine if the angle is less than or greater than 45 degrees. This will help them narrow the angle's range to 45 degrees (0 - 45 or 45 - 90). If the angle is less than 45 degrees, students can determine whether the angle is closer to 0 or 45 degrees. Guide them through this process for the first triangle, and then repeat the process for the second triangle. Prompt them with questions about the angle's relation to 0, 45, 90, 135, and 180 degrees to help them narrow the acceptable range, and then have them make their estimate. Finally, have students measure the actual angles and compare the estimates with measured values.

   Have students estimate the area for each triangle by estimating the product dictated by the formula for the area of a triangle (area = [base/2] x height) and document their process in their notebooks. Explain that they should choose numbers that are close to the originals, but are easier to work with. For example, with the parameters given for the first triangle, a student might say,

   "The base is 1239, which is very close to 1200, so I will divide that by 2 to get 600. 600 x 732 is difficult to calculate, but 732 is very close to 700, and 600 x 700 = 420,000."

   Have students calculate the actual area with the exact measurements and compare these measurements to their estimates. The actual area of the first triangle is 453,474, so the estimate is only off by 7% (453,474 - 420,000/453,474 = .07 = 7%).

2. Guided Practice
Divide the class into groups of four. Have three of the students face one another, and provide them with a string approximately 10 feet in length. Have each student tie his or her string to another student's so that they form a triangle. Have students estimate the angle they create at their vertex (the point at which they hold the string). Ask the fourth student to record the estimates on a sheet of paper, add the three estimates, and compare the sum to 180 degrees. The sum of the angles of a triangle is equal to 180 degrees, so the addition of the estimates should be somewhere between 170 and 190 degrees. If the sum of the estimates is outside the acceptable range, discuss possible reasons why. Next, have the fourth student use a protractor to measure each of the angles and record the actual angle measurements. The fourth student should share this information with the rest of the group.

Have the four students estimate the base and height of the triangle in centimeters and then estimate the area by performing the calculation in their heads. They should use estimation techniques for the base and height of the triangle as well as for the area.

For example, if the estimate for the base is 68 centimeters, and the estimate for the height is 81 centimeters, students might estimate 68 x 81 is similar to 70 x 80 so the estimated area is (70/2) x 80, or 2800.

Emphasize that the best way to estimate the product of two numbers is to either round the numbers up or down or to use a substitute number that is easier to work with. Answers will not be exact, but the estimates should be reasonable. Have the fourth student record all estimates and then measure the base and height of the triangle (in centimeters). Finally, have the fourth student calculate the area and compare the actual value to the estimates.

3. **Assessment**

Have students write a short paragraph that describes how they arrived at their estimates for the triangle's angles and area. Collect their paragraphs, and evaluate their understanding of the estimation process. As a final evaluation, have students draw two triangles with different measurements on one sheet of paper. Have them estimate both triangles' angles and areas. They should provide estimates for the lengths of all sides as well as a computational estimate of the area. Evaluate the estimates to determine if students are able to estimate proportionally. For example, if one side is obviously longer than another, be sure estimates reflect that. For the angle measurements, evaluate students' ability to estimate angles and their relation to well-known angles in addition to how close the sum of the estimates is to 180 degrees. For the estimate of the area, evaluate students' choices of suitable alternate numbers with which perform computational estimates.
Foundations of Algebra

What Is It?

Algebraic thinking involves finding and describing patterns, making generalizations about numbers, using symbols and models to represent patterns, quantitative relationships, and changes over time. Here are some typical algebraic expressions:

Distance = Rate \times Time
\text{total Apples} = \text{num Trees} \times \text{apples Per Tree}
a^2 + b^2 = c^2

Why Is It Important?

The National Council for Teachers of Mathematics (NCTM) has extended the algebra standards to pre-kindergarten, citing research that algebraic concepts need to be grounded in extensive experience and developed over a long time (Sfard, 1991).

Teaching these concepts early using the language in which most of mathematics is communicated provides students with a solid foundation for understanding more ambitious mathematical thinking in the higher grades. Younger student should start learning algebraic concepts such as patterns, multiple representations, and modeling mathematical relationships, such as change over time. Expanding the amount of time students have to explore algebraic concepts and abstract ways of thinking increases their chances of success. NCTM considers algebraic representation a prerequisite to formal work in "virtually all mathematical subjects including statistics, linear algebra, discrete mathematics, and calculus" (National Council of Teachers of Mathematics, 1989).

How Can You Make It Happen?

The important algebraic concepts for elementary students to understand are variables, patterns and relationships, equality, constants, and change.

Variables

Variables can represent a range of values-numbers that vary-or for an unknown value. Variables typically are represented by italic symbols or letters, such as $x$, $y$, or more usefully in words, such as $\text{numApples}$. For example, consider the following problem:

If each tree in an apple orchard produces an average of 325 apples each season, then what is the total number of apples an orchard produces each season?

Start by representing this problem in words.

The total number of apples depends on the number of trees, which can be different for different orchards. If we want to find out how many apples there are, we have to know the number of trees in the orchard. The number of apples is equal to the number of trees times 325.
Once students have an understanding of how to state the mathematical relationships in words, then have them represent their thinking by using variables. The following are simple mathematical models of the relationship between apples and trees in an orchard.

**Number of apples** = **number of trees** x 325  
or

**numApples** = **numTrees** x 325

Variables can be used to represent specific values. For example, if we know the number of trees is 100, we can substitute that information in the expression.

**numApples** = 100 x 325  
**numApples** = 32,500

When variables represent specific values, they are subject to the same principles and rules of mathematics as numbers. For this reason, variables can be used in mathematical expressions to describe all manner of patterns, relations, or functions. For example, variables can be divided.

**numApples/numTrees** = 325

Encourage students to be clear about what each variable represents (the weight, length, cost, etc.) and to use variable names that convey the meaning of the values they represent. For example, in making mathematical models understandable, this expression:

**Total cost** = **price per person** x **number of tickets**

might be easier to understand than this expression:

**c** = **p** x **t**

Some single-letter variables names are conventional such as **x** and **y** for horizontal and vertical components of a point on a graph, **r** for radius, **C** for circumference, and **a**, **b**, and **c** for base, height, and hypotenuse of a right triangle.

**Function Machines**

Using the concept of a "function machine" is an excellent way to demonstrate algebraic concepts to students. A function machine is something that takes in a value, does something to it, and generates a new value based on a rule or operation. A function machine shows students how different values for variables change the results of a situation, and can be any series of operations that demonstrate a pattern. For example, suppose you are having friends over for dinner, and estimate that each friend will eat two hot dogs. You can figure out how many hot dogs you need by constructing a function machine.

**Patterns and Relationships in Tables**

A data table is another common way of studying algebraic relationships. For example, imagine a "mystery" function machine in which students input a number of friends and the function machine outputs the number of hot dogs.
<table>
<thead>
<tr>
<th>Number of Friends</th>
<th>Number of Dogs</th>
</tr>
</thead>
<tbody>
<tr>
<td>2</td>
<td>4</td>
</tr>
<tr>
<td>3</td>
<td>6</td>
</tr>
<tr>
<td>4</td>
<td>8</td>
</tr>
<tr>
<td>5</td>
<td>10</td>
</tr>
</tbody>
</table>

What is the relationship between the numbers in the table? What pattern do you see? How many hotdogs will be needed if 155 friends attend the party?

Careful study of the table shows that the number of hot dogs is equal to the number of friends multiplied by two. This relationship can be represented by an expression such as:

\[
\text{numHotdogs} = \text{numFriends} \times 2
\]

If 115 friends are expected at the party, then

\[
\text{numHotdogs} = 115 \times 2
\]
\[
\text{numHotdogs} = 230
\]

Equality

Another important concept for students to understand is algebraic equality. Young students may be accustomed to having the numbers and characters on the left side of the equal sign represent an arithmetic operation, the equal sign mean, "Here comes the answer," and the numbers and characters on the right side of the equal sign represent the answer. Students should be taught to view the equals sign as a symbol of equivalence and balance. The equal sign simply expresses that both mathematical phrases on either side of it are equal, not necessarily that either phrase is an answer.

In other words,

\[
\text{numHotdogs} = \text{numFriends} \times 2
\]

is mathematically equivalent to

\[
\text{numFriends} \times 2 = \text{numHotdogs}
\]

To further illustrate the idea of algebraic equality, consider a balanced scale with an apple on the left side of the scale and two bananas on the right side of the scale. In this example, we assume the weight of the apple is equal to the weight of two bananas. To verbalize this to students, say, "The weight of one apple is equal to the weight of two bananas."
The following expression can be used to represent this equality algebraically:

\[
\text{apple weight} = \text{banana weight} + \text{banana weight}
\]

Assuming the two bananas are of equal weight, then

\[
\text{apple weight} = 2 \times \text{banana weight}
\]

To find the value of the weight of a banana, we can divide. When an operation is performed on one side of an equal sign, the same operation must be performed on the other side of the equal sign to keep the equation balanced. The results of dividing both sides of the equation by two are shown below.

\[
\begin{align*}
\text{apple weight} &= 2 \times \text{banana weight} \\
\text{apple weight} / 2 &= 2 \times \text{banana weight} / 2 \\
\text{apple weight} / 2 &= 1 \times \text{banana weight} \\
\text{apple weight} / 2 &= \text{banana weight}
\end{align*}
\]

**Constants**

A constant is a value that does not change. For example, in the expression

\[
\text{Fahrenheit} = \text{Celsius} \times 1.8 + 32
\]

Fahrenheit and Celsius are variables, while 1.8 and 32 are constants.

In the hot dog example, one constant is the number of hot dogs you will buy for each invited friend, or two hot dogs. If your brother eats three hot dogs, then you will always need one extra hot dog, regardless of the number of friends you invite. The number of hot dogs for your brother is a constant, because that number will not change. Based on this, you can construct a new data table that shows the total number of hot dogs you need.

<table>
<thead>
<tr>
<th>Number of Friends</th>
<th>Number of Hot Dogs for Friends</th>
<th>Number of Hot Dogs for Brother</th>
<th>Total number of Hot Dogs</th>
</tr>
</thead>
<tbody>
<tr>
<td>2</td>
<td>4</td>
<td>1</td>
<td>5</td>
</tr>
<tr>
<td>3</td>
<td>6</td>
<td>1</td>
<td>7</td>
</tr>
<tr>
<td>4</td>
<td>8</td>
<td>1</td>
<td>9</td>
</tr>
</tbody>
</table>

The first column describes the number of friends invited—a variable. The second column is the number of friends multiplied by two (the number of hot dogs per friend—a constant), the third column is the number of hot dogs for your brother, one (a constant), and the fourth column is the number of hot dogs for your friends plus one (the number needed for your brother). This can be stated as, "The number of hot dogs needed is equal to two times the number of friends plus one."
This is the algebraic equation that explains the rule:

\[ \text{totalHotdogs} = (2 \times \text{numFriends}) + 1 \]

**Change**

Algebra is also used to study change in different situations. Algebraic equations can be derived to describe how quickly or slowly something changes such as the change in a student's weight or height over the years. For young students, having the ability to interpret graphs that describe change, either at a variable rate or constant rate, is an important skill that will prepare them to both derive and interpret change situations in higher-level algebra. By having students create and analyze change represented by tables or graphs, they can determine patterns for the rate of change.

The following data table:

**Height of Jack's Beanstalk**

<table>
<thead>
<tr>
<th>Day</th>
<th>Height (feet)</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>2</td>
</tr>
<tr>
<td>2</td>
<td>5</td>
</tr>
<tr>
<td>3</td>
<td>10</td>
</tr>
<tr>
<td>4</td>
<td>17</td>
</tr>
<tr>
<td>5</td>
<td>26</td>
</tr>
<tr>
<td>6</td>
<td>37</td>
</tr>
</tbody>
</table>

can also be represented as a line graph or as an equation:

\[ \text{stalkHeight} = \text{day} \times \text{day} + 1 \]
\[ \text{stalkHeight} = \text{day}^2 + 1 \]

or as a function machine.

**How Can You Stretch Students' Thinking?**

To challenge students' thinking, model word problems that have multiple answers, and discuss algebraic expressions one could use to solve them. Have students use formulas in a spreadsheet to build simple mathematical models of word problems.

Another way to stretch student's thinking is to make data tables that represent the results of functions, and then have students create graphs from the data. Students can then interpret the graphs, asking questions and analyzing the changes and constants that are represented graphically.
When Can You Use It?

**Reading/English**

Have students compare the readability of texts and plot the reading difficulty on a chart, creating a scatterplot. Students will find variables, such as the average number of sentences and syllables per word, creating functions to find the readability of texts.

**Writing**

Once students have constructed algebraic models, have them provide written descriptions of how they developed the model and how it works, illustrated with appropriate graphs, tables, and mathematical expressions.

**Math**

One of the best ways to engage students is to have them collect data, identify patterns, create mathematical models, and then test those models by considering the data they generate.

**Social Studies**

Have students collect statistical data (e.g., population growth, crime statistics, agricultural statistics, or sports statistics), display the data in multiple forms (e.g., graphs and tables), and then create mathematical models that approximate the relationships across values. For example, have students look at total population growth in their state over time compared to the population growth of the United States as a whole. Then ask them if the relationship be expressed by a formula.

**Science**

Students can graph information from an experiment. For example, have students graph the air temperature in their state on the first day of each month of the year. Have them interpret the graph and discuss why the temperature changes throughout the year. Ask them to hypothesize about why the temperature changes more rapidly during certain months than others. Do the same for different regions around the world and compare the results. Can students develop a formula or function machine that "guesses" the temperature, if given the month of the year?

Have students use scales to experiment with balance and equality. Have them explore the weight of various objects and create equations based on their results. For example, "The weight of one stapler is equal to the weight of two cups, one book, and eight pencils." Then have students use variables to record their equations and describe their equations in writing.
Collecting Data

What Is It?

We collect, display, and analyze data to describe social or physical phenomena in the world around us, to answer particular questions, or as a way to identify questions for further investigation. Students' first experiences in gathering data are likely to be collecting and counting objects, such as stamps or coins, or taking simple surveys of their classmates. As students become more skilled, they also will collect data by observing or measuring, or they may use data that is a subset or compilation of information collected by someone else.

Why Is It Important?

The main purpose of collecting data is to answer questions whose answers are not immediately obvious. Students' natural inclination to ask questions must be nurtured. Students should learn through multiple experiences that how data are gathered and organized depends on the questions they are trying to answer (NCTM, 2000).

Of all the math skills taught, with perhaps the exception of computation skills, data-analysis skills are the ones people have the most opportunity to use in their day-to-day lives. The better a person is at data analysis, the better he or she is equipped to understand and evaluate the barrage of statistical information encountered daily in the media—in weather reports, product or service advertisements, sports broadcasting, health and environmental news, political advertisements, stock market reports, and so on.

When students participate in the steps of data analysis by formulating questions and collecting, displaying, and analyzing data, they acquire a valuable skill that encourages their curiosity and helps them describe their world and make decisions about it. Also, when they know the inaccurate ways data can be collected, displayed, and analyzed, they can evaluate the soundness of another person's data analysis.

How Can You Make It Happen?

In the primary grades, students begin collecting data from their immediate surroundings. Help them formulate questions on topics that interest them, such as nature—what kinds of leaves are in the school yard, in their backyard, or at a park—and limit their number of responses. Discuss how they will collect and record the data they need to determine an answer. At first they'll count or gather objects. Later on, they can do surveys; once they've learned to skip-count by fives, they can use tally marks to record the data. In their initial experiences with data analysis, students should collect, display, and analyze the data in short, or even combined, steps. For example, if they are choosing their favorite color from among red, blue, and yellow, have them choose a connecting block of their favorite color. Then, one by one, have students bring their blocks to the front of the class, connecting them to like-color blocks to build a tower of each color. As they collect their data, they're also displaying it. They then can analyze the data quickly by standing the block towers side-by-side to compare height.

As students gain experience with data analysis and move into the intermediate grades, they are ready to widen their scope and apply their skills to questions or concerns that have importance beyond the individual classroom. They might investigate a schoolwide question such as, "Should students wear uniforms?" A community-wide question such as, "Can the old railroad bed can be turned into a bike trail?" An environment-based question such as, "How much precipitation is there in October?"

Students' data-collection methods should expand to include observation and measurement as well as using a subset of data collected by others, such as statistics available in print or on the Internet from agencies such as the U.S. Census
Bureau or the National Oceanic and Atmospheric Administration. The length of time spent on investigations should vary from quick surveys to projects extending over many days or weeks.

Provide students with the opportunity to formulate questions and investigations that require them to collect different types of data, numeric, categorical, or longitudinal, and to design recording methods appropriate to that data.

Avoid collecting data for its own sake. Rather, you should start with a question that the data analysis will help to answer, or have students collect data that will raise some interesting questions. Here are some examples of questions that students can answer by collecting data:

1. Is it more likely to rain on the weekend than on weekdays?
2. Are there any interesting differences in the amount of space that different newspapers allot to different kinds of stories?
3. Which states have the most towns and cities derived from Native American language? Do you notice any geographical patterns?
4. What is the average speed of the traffic going by the school? Do motorists obey the speed limit? Do men drive faster than women? If so, why do you think this is?

**How Can You Stretch Students' Thinking?**

Help students to think about who or what population their results represent. Discuss the idea of sampling a population. For example, if they found that chocolate milk is the favorite drink in their class, ask them whether they think they would get the same results surveying another classroom of the same grade, a lower-grade or upper-grade classroom, or a group of people at a coffee shop. What characteristics do groups have that would make it likely or unlikely to have the same results? Discuss random as well as calculated ways of choosing a sample population from a target population, for example, using computer generated randomization or identifying a focus group. Discuss how the selection methods, as well as the sample size, can affect the reliability of the results.
Displaying Data

What Is It?

People collect, display, and analyze data to describe social or physical phenomena in the world around them. After collecting and organizing data, the next step is to display it in a manner that makes it easy to read—highlighting similarities, disparities, trends, and other relationships, or the lack of, in the data set. After this, the final step of analysis can occur. The methods students use to display data as they move through the primary and intermediate grades include making tables, charts, bar graphs, line graphs, pictographs, circle graphs, and line plots. Students in middle and high school also create histograms, box-and-whisker-plots, scatterplots, and stem-and-leaf plots.

Why Is It Important?

When students decide how to display data and go through the steps to create that display, they learn which type of graphs are useful in displaying the different types of data, and the advantages and disadvantages of each display. They also learn how a graph may be selected and manipulated to misrepresent the data—for example, by choosing intervals along an axis that make a line graph seem to go up or down precipitously or make the differences between bars on a bar graph seem to be very great or very small.

It is important for teachers to highlight ways in which different representations of the same data can convey different information and to emphasize the importance of selecting representations suited to the particular mathematical tasks at hand (Moschkovich, Schoenfeld, and Arcavi 1993).

How Can You Make It Happen?

Students' experiences in displaying data should progress from the concrete, to the pictorial, to the abstract. When creating bar graphs, for example, they may progress from using objects, such as blocks or pieces of candy, to using sticky notes, to creating single-bar graphs, to using a color key to identify different bars of a double-bar graph. From the beginning, students should learn to label graphs with a title, the labels for each axis (x and y), the units of analysis (e.g., feet, meters, dollars) and how to create a key. Over time, students should learn the names of the different parts of different graphs.

Questions that can be addressed with numerical data include, "How many pets do you have?" or "When were you born?" Line plots, bar graphs, scatterplots, and stem-and-leaf plots are often used to represent numerical data. The most effective way to analyze numerical data is to look at the mean, median, counts, and the shape (for example, the arc of a bell curve or the clustering of scatter plots) of the data.

Questions about categorical data are not answered with numbers, but with words. Generally line plots, bar graphs, and circle graphs are used to represent categorical data. An effective way to analyze categorical data is by counts or percentages.
Questions that can be addressed by collecting data over time (longitudinal data) include "What is the average temperature in the month of June?" or "What was the daily weather conditions in month of June?" Descriptions of the various graphs students will learn to make as they progress from the primary to the middle grades are listed below, with examples:

- **Bar Graph**: Used when comparing various items or ideas.
- **Histogram**: Used to show frequency and compare items or ideas; each bar represents an interval of values.
- **Line Graph**: Used to show change over time.
- **Pictograph**: Used to show frequency and compare items or ideas.
- **Circle Graph (or Pie Graph)**: Used to show parts or percentages of a whole.
- **Box-and-Whisker Plot**: Used to show the range of values as well as the median, quartiles, and outliers; five-number summary is another name for this representation.
- **Line Plot**: Used to easily organize one group of data.
- **Scatterplot (or Scattergram)**: Used to determine if a correlation exists between two data sets, and how strong it is, also used to calculate line or curve of best fit.
- **Stem-and-Leaf Plot**: Used to show frequency; data is grouped according to place value, using the digit in the greatest place.

It is valuable for students to explore various ways to represent the same data. Students can determine which graph makes the most sense to use and which graph can help them answer their questions most easily. For example, a favorite book survey can be shown as a table, a bar graph, a circle graph and a picture graph. Students can discuss which representation most clearly shows which book got the most votes or the difference in votes. Students can remove the least favorite book and vote again to explore the change in data.

It is also valuable for students to understand that the same data is not always best represented in different ways. For example, line plots, bar graphs, scatterplots, and stem-and-leaf plots are best used to represent numerical data. However, longitudinal data are best represented by line graphs. Categorical data are not displayed in a specific order and most often are represented by line plots, bar graphs, and circle graphs.

**How Can You Stretch Students' Thinking?**

The way data is displayed is often dependent on what someone is trying to communicate. Discuss how data can be distorted, and give students the chance to experiment with graphing software or other technology to explore how changing parts of a graph, such as the intervals in a bar or line graph, choosing to start a bar or line graph at zero or another value, or changing the multiple represented by a single pictograph symbol, affects the graph. For example, provide students with fictitious test scores, and have students display the data to appear more beneficial to students, and then display the data to appear more beneficial to teachers. Other ideas might be to have students display data from a fast food restaurant to support the position that fast food is healthy, display data about different careers to support a student's choice, or display data from sporting events to support the high cost of tickets.

Have students explain how they created each graph, and discuss how changes enhanced or distorted the data, and how the display affects how the data are communicated.
Analyzing Data

What Is It?

Data analysis is the process of interpreting the meaning of the data we have collected, organized, and displayed in the form of a table, bar chart, line graph, or other representation. The process involves looking for patterns—similarities, disparities, trends, and other relationships—and thinking about what these patterns might mean.

When analyzing data, ask students questions such as:

- What pattern do you see?
- What does this graph tell you?
- Who could use this data? How could they use it?
- Why is this data shown in a line graph?

The process of collecting, organizing, and analyzing data is not always a simple, sequential process; sometimes a preliminary analysis of a data set may prompt us to look at the data in another way, or even to go back and collect additional data to test an emerging hypothesis. For example, students could survey their classmates on how they are transported to school (such as by car, by bus, by foot, or another way), and then display the data in a circle graph.

After analyzing the data in this graph, students might look at the data in a different way. Students might be interested in finding out more about people who are transported to school by car. Why do they ride in a car to school? Are they on a bus route? Do they carpool with other students? Are they close enough to school to walk, but choose to ride? Is the neighborhood between home and school too dangerous to walk through? Do the people who walk sometimes ride in a car, also? They might discover that most students in the “other” category ride their bikes to school, and decide to create an additional category.

In all grades, students look at graphical displays and describe them by identifying aspects such as the greatest value, the least value, and the relationship of one data point to another. Students in the intermediate grades learn how to summarize or characterize a data set in greater depth by determining the range and two measures of center, the mode and median. Students in the upper grades learn to find the third measure of center, the mean, and also to determine quartiles, identify outliers, and, for scatterplots, calculate a line or curve of best fit and describe any resulting correlation. High-school students should be able to design their own investigations that include effective sampling, representative data, and an unbiased interpretation of the results.

At every grade level, you should encourage students to think about the meaning of the data they have collected and displayed. The crucial question is "Why?"

Why Is It Important?

The ability to make inferences and predictions based on data is a critical skill students need to develop.

In studying data and statistics, students can also learn that solutions to some problems depend on assumptions and have some degree of uncertainty. The kind of reasoning used in probability and statistics is not always intuitive, and so students will not necessarily develop it if it is not included in the curriculum. (NCTM, 2000).

Data analysis is crucial to the development of theories and new ideas. By paying close attention to patterns, the stories behind outliers, relationships between and among data sets, and the external factors that may have affected the data, students may come to have a deeper understanding of the crucial distinction between theory and evidence.
How can you make it happen?

Students in the primary grades view a graphical display as a collection of individual parts and are chiefly interested in the part that represents information about them. As they progress into the intermediate grades, they begin to consider the whole picture represented by the graphical display, and look for ways to describe and summarize it. Students can make observations about the shape (for example, the arc of a bell curve or the clustering of scatter plots) and range of the data, and determine the median and mode.

As students continue into the middle grades, their analysis broadens to include comparing two data sets or two characteristics within one data set. At this stage, it is important to help students develop an understanding of a data set as a subset, or sample, of a larger data set or population. Help them learn to make inferences, extrapolations, and conjectures on the relationship of a particular data set to other sets within that larger population. Data collected from a fourth grade class could be used to make inferences about the entire fourth grade population at a school. Data collected from a local pond could be used to make predictions about all pond habitats in the geographic region.

In a scatterplot, students can begin to analyze the data by asking questions such as:

- Which two values are being compared?
- What is the relationship between the data sets?
- Why do you think there is a relationship?
- Was this a valid sample of the population? Are all second-graders represented?
- Would the data be the same if the sample were first-grade students?
- What can you infer about the data?
- What conclusions can be drawn about the data? Why?

Encourage students to support and justify their answers by referring to the data.

With older students, discuss the margin of error that is possible in surveys, and how sampling can misrepresent a population. For example, surveying a crowd outside a bookstore and asking them about their favorite actors may yield a very different result than surveying a crowd outside an acting school. Students should be able to evaluate the sampling of a population and understand how the samples might be distributed throughout a population to determine if there was any bias in reporting the data.

Your role in helping students progress through the different skill levels in data analysis is complex. The key is to:

- Provide students with lots of practice looking at graphs and other forms of representation, both those made by the students themselves as well as those from other sources. These should include representations that accurately reflect the data set on which they are based as well as those that do not.
- Teach students the skills they can use to summarize data. You should introduce skills, such as determining the measures of center (mean, median, and mode), identifying range, outliers, quartiles, and so on, as they are appropriate.
- Teach students the correct statistical terms so they have the words necessary to clearly convey their thinking; terms such as axis, range, median, correlation, interval, and so on, should become part of their vocabulary.
- Encourage students to look at different aspects of the data displayed in graphs and charts, not only those aspects that support an author's findings.
- Guide students in evaluating graphs to see if they answer the questions for which they were designed. For example, if students conduct a survey of which soft drink is preferred in the school cafeteria for the purpose of ordering drinks for the vending machines, the data should be displayed in a way that clearly shows the students' preferences. Displaying data in a line graph that shows what times of day students typically buy soft drinks would provide inappropriate data that does not answer the question.
- Have students not only communicate their opinions and arguments, but also back up them up with data.
• Encourage students to think of extensions or follow-up research for their analyses.

When students analyze data, have them ask questions such as:

• Is my data source valid?
• What are the different categories of data?
• What problem am I trying to solve?
• Is there missing information?
• Is there extra, unnecessary data?
• Are there places where the data are concentrated or clumped?
• What trends are visible in the data?
• Are there values for which there are no data?
• Are there data points that have unusual values?
• Are these values consistent with my predictions?
• Do I have enough background information to analyze this data?
• What level of accuracy is required in my analysis?
• What is the range, mean, median, mode, and so on?
• Why might there be an increase/decrease in the data?
• How might this data change if...? (This may be a change in history, market value, audience questioned, etc.)
• What is the most appropriate way to summarize my findings?
• Based on this data, what will happen in the future?
• For what other data sample might I use a similar graph?

**How Can You Stretch Students' Thinking?**

Students often have difficulty understanding how the measures of center—the mean, median, and mode—differ from one to another, particularly the mean and median, when describing an average value for a set of data. Have students find all three measures for a set of data, then change one value in the set, and have them determine if and how that change affected each measure. Change a different value, and repeat the process. Continue, choosing values both near the middle of the set as well as those at either end. Have students try this with different data sets. They should find that, generally, the mean is more sensitive than the median or mode to a single changing value and, as such, is more affected by extreme values in a data set. Help them conclude that the mean is useful to describe an average value for a set of data where there are no outliers; when there are outliers, using the median may be more appropriate; and lastly, if there are many identical values, using the mode may be the better choice.

Show students graphs that aren’t labeled and challenge them to describe types of data that would fit the graphs. For example, a line graph that shows a line going up could represent the rising cost of movie tickets; a graph with a line going down could represent the shrinking cost of DVD players; a graph with a line that repeatedly goes up and down could represent the seasonal fluctuations in ice cream sales or bike rentals.

To discuss possible bias in representing data, display a set of data and a graph that misrepresents that data. For example, a bar graph in which the proportionality of the values in the data set are not preserved—a bar is three times the height of another, yet the value it represents is not three times as great as the other value. Have students write about whether they think the graph is accurate or not and why.
Journaling in Math

What Is It?

Journaling involves having students record their thoughts, understandings, and explanations about mathematical ideas or concepts. Writing about mathematics helps students articulate their thinking, and provides useful information for teachers about learning difficulties, incorrect assumptions, and student's progress in communicating about mathematics.

Writing or drawing is a way of engaging students in the material and helping them construct meaning. The journals should be used to record short, informal, exploratory thoughts or ideas. It shouldn't be graded or edited. Its purpose is for students to explore and note what they are thinking about and what they are learning.

Why Is It Important?

Communication is one of the National Council of Teachers of Mathematics (NCTM) Strands of Standards, and the Council encourages the use of communication as a very powerful tool to foster the learning of mathematics.

"Communicating about mathematical ideas is a way for students to articulate, clarify, organize, and consolidate their thinking. Students, like adults, exchange thoughts and ideas in many ways-orally; with gestures; and with pictures, objects, and symbols. By listening carefully to others, students can become aware of alternative perspectives and strategies. By writing and talking with others, they learn to use more precise mathematical language and, gradually, conventional symbols to express their mathematical ideas. Communication makes mathematical thinking observable and therefore facilitates further development of that thought. It encourages students to reflect on their own knowledge and their own ways of solving problems. Throughout the early years, students should have daily opportunities to talk and write about mathematics. They should become increasingly effective in communicating what they understand through their own notation and language as well as in conventional ways."

NCTM Standards for School Mathematics: Communication

When Should It Be Taught?

Journaling can be used as a short, three to five minute activity before, during, after, or throughout instruction.

What Does It Look Like?

EXAMPLES:
Lesson Plan: Comparing Fractions with Unlike Numerators Using Journaling

Grade Levels: 3 - 5

Objective

This is an introduction to comparing fractions with like denominators and unlike numerators, for students with a basic understanding of fractions as part of a whole, numerators, and denominators. After completing the lesson, students will be able to name and write fractions represented by drawings or models and represent a fraction using models and symbols.

Key Understandings/Vocabulary

- **Fraction**: A number used to name a part of a group or a whole. The number below the bar is the denominator, and the number above the bar is the numerator.
- **Numerator**: The top part of a fraction. The numerator represents how many pieces of the whole that are discussed.
- **Denominator**: The bottom part of a fraction. The denominator represents the total number of equal parts in the whole or the set.
- **Like Denominator**: Fractions that have the same number as the denominator.

Procedure

1. **Demonstration**
   a. **Journaling**. Have students write a short definition of a numerator in their journals. This is meant to access their prior knowledge of fractions, specifically numerators. Example journal entry: Numerators are the smaller number in a fraction. They are on the top of the fraction.
   b. **Review parts of a fraction using models**. Draw a square divided into 4 equal parts with 3 parts shaded. Write the fraction 3/4 and review how it represents three of four equal parts shaded. The 3, or numerator, tells how many parts are shaded, while the 4, or denominator, shows how many equal parts the whole is divided into. Ask students to volunteer their definitions of numerators and discuss the correct definition, which could be something like: The number above the line in a fraction. The numerator represents how many pieces of the whole that are discussed. Draw a model of the fraction 2/4 and compare the two fractions. Ask, "Which fraction is greater?" Discuss the idea that the amount of space that is shaded shows which fraction is greater.
   c. **Journaling**. Have students answer: How do you know if a fraction is greater than another fraction? This is meant to help students access their thinking and problem solving in comparing fractions. Example journal entry: I know when a fraction is bigger than another fraction by comparing how big they both are.
   d. **Draw a rectangle with 4 parts**. Shade one of the equal parts, and write the fraction. Explain what the numerator represents. Draw a similar rectangle directly below the first rectangle, and shade another equal part, so that 2 parts are shaded, and write the fraction, explaining the numerator. Draw another rectangle, directly below the second rectangle, and shade another part, and write the fraction. Point out that the number of shaded parts increases, and discuss how the numerator changes, depending on how many parts are shaded.
   e. **Have students use the handout found at the end of this lesson and square pieces of paper cut to use as fraction squares**. Ask them to cover one more part, and write the fraction. Continue until all parts are covered. The fractions they wrote should be: 1/8, 2/8, 3/8, 4/8, 5/8, 6/8, 7/8, 8/8.
   f. **Journaling**. Write what happens when the numerator of a fraction increases. Pair up students, have
them exchange notebooks and discuss what they found. As a class, have students share what they wrote, and discuss their findings. Example journal entry: The numerator gets bigger when more of the parts are shaded. The number of equal parts doesn't change when the numerator increases. As the numerator increases, the covered parts increase.

g. **Compare fractions.** Introduce or review the inequality symbols of greater than, > and less than, <. Have students use the fraction pieces to show the fraction 2/8, and then to show the fraction 3/8. Explain how to write an inequality, from left to right, and read it as a sentence. For example, 2/8 < 3/8 is read as "Two-eighths is less than three-eighths." If students need help in remembering which symbol to use, you might want to have them think of an animal, such as an alligator, who wants to eat the greatest fraction. The "mouth" of the animal should be opened to the greatest fraction.

2. **Guided Practice**

To provide guided practice comparing fractions with like denominators, have each student in a pair cover as many parts as they choose, then compare the two fractions that are made. Have pairs determine which is greater, by writing the inequality, and stating the fractions aloud. For example students may write 1/8 > 2/8, and say, "1/8 is greater than 2/8."

3. **Sharing Ideas**

Have students return to their previous writing, and revise their answers to the question: How do you know if a fraction is greater than another fraction? Discuss answers with the class. Journaling. Have students reflect on the lesson and journaling. Have them write about what they liked about journaling and if they learned more about comparing fractions.

4. **Independent Practice**

Have students draw several pictures of two fractions with like denominators, and then determine which is greater. Students can write an inequality comparing the fractions. For example: 2/3 > 1/3

5. **Assessment**

Check student understanding by observing their answers during guided practice, along with checking their independent practice examples.
Lesson Plan: Comparing Fractions with Unlike Numerators Using Journaling

Grade Levels: 3 - 5

Objective

This is an introduction to comparing fractions with like denominators and unlike numerators, for students with a basic understanding of fractions as part of a whole, numerators, and denominators. After completing the lesson, students will be able to name and write fractions represented by drawings or models and represent a fraction using models and symbols.

Key Understandings/Vocabulary

- **Fraction**: A number used to name a part of a group or a whole. The number below the bar is the denominator, and the number above the bar is the numerator.
- **Numerator**: The top part of a fraction. The numerator represents how many pieces of the whole that are discussed.
- **Denominator**: The bottom part of a fraction. The denominator represents the total number of equal parts in the whole or the set.
- **Like Denominator**: Fractions that have the same number as the denominator.

Procedure

1. **Demonstration**
   a. **Journaling**. Have students write a short definition of a numerator in their journals. This is meant to access their prior knowledge of fractions, specifically numerators. Example journal entry: Numerators are the smaller number in a fraction. They are on the top of the fraction.
   b. **Review parts of a fraction using models**. Draw a square divided into 4 equal parts with 3 parts shaded. Write the fraction 3/4 and review how it represents three of four equal parts shaded. The 3, or numerator, tells how many parts are shaded, while the 4, or denominator, shows how many equal parts the whole is divided into. Ask students to volunteer their definitions of numerators and discuss the correct definition, which could be something like: The number above the line in a fraction. The numerator represents how many pieces of the whole that are discussed. Draw a model of the fraction 2/4 and compare the two fractions. Ask, "Which fraction is greater?" Discuss the idea that the amount of space that is shaded shows which fraction is greater.
   c. **Journaling**. Have students answer: How do you know if a fraction is greater than another fraction? This is meant to help students access their thinking and problem solving in comparing fractions. Example journal entry: I know when a fraction is bigger than another fraction by comparing how big they both are.
   d. **Draw a rectangle with 4 parts**. Shade one of the equal parts, and write the fraction. Explain what the numerator represents. Draw a similar rectangle directly below the first rectangle, and shade another equal part, so that 2 parts are shaded, and write the fraction, explaining the numerator. Draw another rectangle, directly below the second rectangle, and shade another part, and write the fraction. Point out that the number of shaded parts increases, and discuss how the numerator changes, depending on how many parts are shaded.
   e. **Have students use the handout found at the end of this lesson and square pieces of paper cut to use as fraction squares**. Ask them to cover one more part, and write the fraction. Continue until all parts are covered. The fractions they wrote should be: 1/8, 2/8, 3/8, 4/8, 5/8, 6/8, 7/8, 8/8.
   f. **Journaling**. Write what happens when the numerator of a fraction increases. Pair up students, have
them exchange notebooks and discuss what they found. As a class, have students share what they wrote, and discuss their findings. Example journal entry: The numerator gets bigger when more of the parts are shaded. The number of equal parts doesn't change when the numerator increases. As the numerator increases, the covered parts increase.

g. **Compare fractions.** Introduce or review the inequality symbols of greater than, > and less than, <. Have students use the fraction pieces to show the fraction $\frac{2}{8}$, and then to show the fraction $\frac{3}{8}$. Explain how to write an inequality, from left to right, and read it as a sentence. For example, $\frac{2}{8} < \frac{3}{8}$ is read as "Two-eighths is less than three-eighths." If students need help in remembering which symbol to use, you might want to have them think of an animal, such as an alligator, who wants to eat the greatest fraction. The "mouth" of the animal should be opened to the greatest fraction.

2. **Guided Practice**

To provide guided practice comparing fractions with like denominators, have each student in a pair cover as many parts as they choose, then compare the two fractions that are made. Have pairs determine which is greater, by writing the inequality, and stating the fractions aloud. For example students may write $\frac{1}{8} > \frac{2}{8}$, and say, "$\frac{1}{8}$ is greater than $\frac{2}{8}$."

3. **Sharing Ideas**

Have students return to their previous writing, and revise their answers to the question: How do you know if a fraction is greater than another fraction? Discuss answers with the class. Journaling. Have students reflect on the lesson and journaling. Have them write about what they liked about journaling and if they learned more about comparing fractions.

4. **Independent Practice**

Have students draw several pictures of two fractions with like denominators, and then determine which is greater. Students can write an inequality comparing the fractions. For example: $\frac{2}{3} > \frac{1}{3}$

5. **Assessment**

Check student understanding by observing their answers during guided practice, along with checking their independent practice examples.
Lesson Plan: Finding Equivalent Fractions and Simplest Form

Grade Levels: 3 - 5

Objective

This lesson is for third through fifth grade students who have an understanding of equivalent fractions using models, an understanding of multiplication and division facts, and of multiplying and dividing fractions. Students will use multiplication and division to show equivalent fractions.

Key Understandings

If you multiply or divide both numerator and denominator by the same number, the new fraction will be equivalent to the original fraction.

Vocabulary

- **Denominator**: The bottom part of a fraction. The denominator represents the total number of equal parts in the whole or the set.
- **Numerator**: The top part of a fraction. The numerator represents how many pieces of the whole that are being discussed.
- **Equivalent Fractions**: Fractions that reduce to the same number and have an equal value. They are fractions that name the same amount in different ways.
- **Simplifying**: Reducing to lowest terms.
- **Lowest terms/Simplest Form**: The numerator and denominator of a fraction in lowest terms have no common factors except one.

Procedure

1. **Demonstration**

   Review vocabulary and what students know about equivalent fractions. Show models of equivalent fractions and explain that even though the numerators and denominators in the fractions are different, the fractions represent the same amount, which means they are equivalent.

   Use models to show the fractions 1/2 and 2/4, or draw them for students. Have students point out what they know about the fractions. Lead them to see that there are twice as many pieces in the drawing of 2/4 than in the drawing of 1/2, but they represent the same amount.

   Review that numbers that are multiplied by one equal the same number. Ask students to give a few examples of one as a fraction, for example: 3/3, 4/4, 2/2. Write 1/2 x 2/2 = 2/4, and show that the numerator and denominator are doubled to show the new fraction. Explain that this is another way to find equivalent fractions.

   Multiply the numerator and denominator by the same number to find an equivalent fraction. Or, divide the numerator and denominator by the same number. It's important to write fractions as "stacked", not side-by-side. This will help students when multiplying and dividing.
Show a few examples:

\[
\frac{3}{12} \times \frac{4}{4} = \frac{12}{48} \\
\frac{3}{12} \div \frac{3}{3} = \frac{1}{4}
\]

All of these fractions are equivalent because they name the same amount: \(\frac{1}{4}\)

After a few examples, have students think about a rule for this principle. They should be able to tell you that if you multiply or divide both numerator and denominator by the same number, the new fraction will be equivalent to the original fraction. The only time this won't work is if students multiply by zero.

Explain that sometimes fractions have to be renamed to make them easier to work with. Emphasize that the fractions will still equal the same amount, or be equivalent, but the numerator and denominator will be different from the original fraction.

To simplify fractions, find a common factor that will divide evenly into the numerator and denominator. For example, show the students this fraction: \(\frac{12}{18}\)

Find the factors of the numerator and denominator. The factors of 12 are 2, 3, 4, and 6. The factors of 18 are 2, 3, 6, and 9. The common factors are 2, 3, and 6.

To simplify the fraction, divide by 6, since 6 is the greatest common factor. Show students how to divide the fraction: \(\frac{12}{18} \div \frac{6}{6} = \frac{2}{3}\)

Explain that a fraction is in simplest form if 1 is the only common factor of the numerator and denominator. Have students determine if this fraction is in simplest form. \(\frac{2}{3}\) is the simplest form of \(\frac{12}{18}\).

In order to reduce a fraction to its lowest terms, explain that students can divide by any common factor, and continue until it's in lowest terms, or they can divide by the greatest common factor. For example, students could divide the fraction \(\frac{12}{18}\) by \(\frac{2}{2}\), and then divide by \(\frac{3}{3}\) to show the fraction in simplest form. Or students could divide \(\frac{12}{18}\) by \(\frac{6}{6}\) and show the fraction \(\frac{2}{3}\) in one step.

Discuss the meaning of the word equivalent and what makes fractions equivalent. Have students write in their journals how they can find equivalent fractions. Have them answer the question: How do you know when you have a fraction in simplest form?

2. **Guided Practice**

Have students practice finding equivalent fractions both by multiplying the numerators and denominators and by dividing the numerators and denominators by the greatest common factors. Provide students with several fractions and ask them to find equivalent fractions by multiplying. Some examples could be \(\frac{2}{3}, \frac{1}{4}\), or \(\frac{3}{5}\).

Have students also simplify fractions. Some examples could be \(\frac{6}{30} = \frac{1}{5}\), \(\frac{4}{6} = \frac{2}{3}\), or \(\frac{15}{20} = \frac{3}{4}\).

Another way to have students practice would be to create flash cards of equivalent fractions, and play a game such as concentration, where students find and match the equivalent fractions.

3. **Sharing Ideas**

Discuss what students learned while finding equivalent fractions. Have them share strategies they used.
4. **Independent Practice**

Give students several fractions and have them find equivalent fractions using both multiplication and division.

5. **Assessment**

Students can be assessed by reading their journals entries to check understanding, or by reviewing their independent practice of finding equivalent fractions.

The NCTM standards advocate two students talking and listening as forms of communication in math class, because these skills are usually more advanced than their abilities to read and write. In grades three to five, students should use all forms of communication as a tool for understanding and generating solutions. Their writing should include mathematical vocabulary, along with everyday language, to explain concepts, take notes, or to explain an answer. Students should be able to describe problem-solving strategies and their reasoning.

According to NCTM, middle-grades mathematics teachers should strive to establish a communication-rich classroom in which students are encouraged to share their ideas and ask questions. To encourage this kind of sharing, teachers need to set expectations and establish an atmosphere of trust and respect. The focus in such classrooms is to explain, question, debate, and make sense of math together.

In high school, there should be substantial growth in students' abilities to express themselves clearly, structure logical chains of thought, listen to the ideas of others, and think about their audience when they write or speak. Consequently, students in grades 9-12 should be able to communicate in oral and written exposition, generating explanations, formulating questions, and writing arguments. Students should use correct and appropriate mathematical language and symbols when making their points using spreadsheets, diagrams, or other forms of representing knowledge.

One way to introduce the idea of thinking about thinking, or metacognition, is to have students describe what they were thinking when doing a familiar activity such as choosing what to eat for lunch. You may want to start by having students describe their thinking in words, before describing their thinking in writing. Have them step through the process, explaining what they thought at each point, and what factors they took into consideration. For example, "I knew they served pizza at school today, and I don't like pizza, so I made my lunch. I checked to see if there was any peanut butter and there wasn't, so I made a turkey sandwich with tomato. I looked for mustard and didn't find any, so I added mayonnaise."

Discuss examples that clearly show thinking processes, as well as examples that do not clearly state thinking processes, such as, "I wanted pizza so I bought it." Compare the amount of detail in different descriptions of thinking, and encourage students to identify the sentences or paragraphs that are valuable in describing thinking.

When introducing journaling, start by asking open-ended questions to encourage students to write about how they feel or their opinions about math.

For example:

- I learned that...
- I was surprised that...
- I was happy about...
- I wish I knew more about...

As they become familiar with journaling, ask students to write about math processes that they already know, as a way to review math content.
For example:

- Explain how to add two numbers.
- Explain how improper fractions can change to mixed numbers and remain the same amount.
- Explain how to use a ruler to measure an object.

Then ask students to explain their understanding of new math concepts.

For example:

- What is the most important thing to know about place value?
- What have you learned about decimals today?
- How could you use percentages while shopping?

Encourage students to use diagrams or drawings to explain their thinking, if appropriate, and have them write about problem-solving experiences, including the guesses they made and how they found their answers.

To help students reflect on their learning, teachers can ask students to write commentaries about what they learned in a lesson or a series of lessons and what remains unclear to them. To encourage clear writing, students can write a letter to a younger student explaining a difficult concept. Working in pairs also helps students develop communication skills. This approach is often very effective with students in the middle grades because they can try out their ideas in the relative privacy of a small group before sharing with the class.

**Journaling can be used to:**

- Access prior knowledge: Use before a lesson, and have students write what they know about a topic.
- To focus students: Use to focus students on the topic being taught if they seem confused. For example, "Write a few questions about the math problem you're working on."
- Brainstorm ideas: Have students write about all the words, phrases, or ideas they can think of, related to the topic.
- Ask questions: Have students write questions about the topic or problems they are having in understanding.
- Focus a cooperative learning group: Have students explain in writing how they worked together to solve a problem or discover an answer.
- Show progress in thinking: Have students choose a past journal entry and revise it, using information they now know.
- Reinforce new information: Have students explain what they learned or they write a definition of the new math concept taught.
- Make an observation: Have students write about what they found out, discovered, or saw.
- Justify thinking: Have students write what they think and why, or provide a statement and have students tell if it is true or not, justifying their opinion.
- Apply what was learned: Have students write about how they will use the information, or how it's connected to the real world.
- Dialogue: Students and teachers (or other students) have a dialogue via written journal entries.

As an extension of journaling, teachers can begin having students write formally about a skill or concept, illustrate it, and include examples. This could then be "graded" or evaluated, going through the steps in the writing process. The final product could be a student-created "textbook," which could be used by the students to teach peers, or younger students.

**How Can You Make It Happen?**
Each student should have a notebook or writing material that is kept in a designated place in the classroom. You may want to have students write the date or title of a journal entry at the start of each journaling session, so that you can find the entries when you are looking in their journals. Develop a classroom routine of distributing and collecting the journals, such as assigning a student who is responsible for the journals each week.

Provide an adequate amount of time for students to gather their thoughts and write them down. Try using a timer and start with a few minutes of writing time, working up to several minutes. Give students instructions for what to do if they finish writing early. One idea to encourage students to write for the entire journaling time, is to tell them to write anything, or rewrite what they have written, just to keep their pencils moving. Tell them about how long you will give them to write, and how much writing is generally expected.

Students should be seated in a location that makes it easy to write. Enforce a "no talking" rule during journaling time. Teachers might want to spend the journaling time writing in their own journals, to model this practice for students. Provide feedback in the form of a written conversation, questions, notes in the margin, or some notation that lets students know that you are reading their entries.

**How Can You Measure Success?**

Student journals can be used to assess mathematical thinking and understanding of math concepts. Progress in articulating their thinking should be seen over time.
Intervention Strategies for Mathematics Teachers

Intervention has become an important way for teachers to ensure that all students succeed in today's high stakes testing environment. Helping students who are struggling with mathematics requires teachers to choose an appropriate time and strategy for the intervention. Without a systematic approach, this can be a challenge for teachers who have multiple students in need of help.

Following are some easy strategies to help you identify students who may benefit from intervention, and address the needs of those students.

**Step One: Identify**

Use the following easy and effective strategies to help you identify students who may be struggling and who may benefit from intervention strategies.

**Use Formal and Informal Assessments**

No single instructional strategy is more important than effective, appropriate, and informative assessment. It is critical that teachers are well-informed about their students' understanding and mastery of content. But assessment should also be handled with restraint—too much testing may produce students who are weary and overwhelmed. Use the following techniques when assessing your students.

- Use informal techniques frequently during regular class time to gauge student understanding.
- Use questioning that focuses on student thinking and reasoning to help you monitor your students.
- Incorporate writing activities and group work to observe student thinking and identify misconceptions and gaps in understanding.
- Have students illustrate concepts using drawings, graphs, and models.

**Integrate Warm-Up Activities**

The use of quick warm-up activities in class can be beneficial for several reasons. One of the most common reasons students may need intervention is that they have not fully mastered prerequisites. You can use warm-up activities to review prerequisites and to gauge student mastery. Begin your lessons by having your students complete several problems that cover prerequisites. This technique will also give you time to circulate among your students and have quiet one-on-one conversations. These discussions can be used as valuable informal assessment opportunities.

**Warm-Up Activity**

For a unit on solving systems of linear inequalities, ask students to solve several inequalities as a warm-up activity. Then have your students graph a few inequalities.
**Write to Learn**

Having students write in math class can help you identify areas of misunderstanding and gaps in understanding. Begin your instructional units by having your students write explanations of several key prerequisites. Students may feel more comfortable writing and may be more apt to expose their weaknesses in their writing. This can be especially true for struggling students who may be inclined to stay quiet during discussions. Use math journals to have students record the steps they undertook to solve a problem. You can use their explanations as a form of error analysis to help you identify gaps in understanding.

**Assign Application Problems**

Make sure that you utilize a variety of techniques to gauge depth of understanding in your students. Some students who have a cursory understanding of a topic may be able to perform relatively well on standard assessment questions. However, the lack of mastery of a concept can be illuminated via application problems. This exercise can be especially important prior to moving on to a new concept. An application problem can identify students who have not thoroughly mastered a concept and who will likely require intervention if they move on to a new concept too soon.

**Step Two: Address the Issues**

Using the following instructional strategies to help you address the needs of your students.

**Use Small Groups or Student Pairs**

Having your students work in small groups or in student pairs is a beneficial instructional strategy for struggling students. Students who need intervention may be insecure about their abilities and consequently unmotivated. Small groups or student pairs can be less intimidating for struggling students. Students may be more likely to ask questions and admit confusion when working in small groups or with another student.

Students can also benefit from explanations from fellow students. Often these explanations can make more sense to a student than one offered from an instructor. This instructional strategy can enable teachers to spend time listening to and observing students as they work on assignments.

The grouping of students should be carefully thought out ahead of time to best address the needs of struggling students. For many cooperative group activities, random assignments are fine, but in the case of students in need of intervention, you will want to form groups or pairs that will be conducive to discussion and support.

**Differentiate Instruction**

When it comes to addressing students who need intervention, differentiated strategies may improve learning. Many students who need intervention struggle to learn concepts because they may not be able to grasp abstract concepts. Vary your instructional techniques to best address the learning styles of your struggling students. Some students may not understand a concept when illustrated symbolically, but may be able to understand it when it is illustrated concretely, either via models, manipulatives, or technology. The more varied instructional strategies you incorporate into your lessons, the more likely you will be able to reach all students.
Incorporate Multiple Representations

Many middle and upper grade students require intervention because they are not able to grasp the abstract concepts of higher levels of mathematics. The use of multiple representations can help address these needs. When introducing a new concept, use as many representations of the concept as you can: use manipulatives and models, real-life examples, technology, and symbolic representations.

Try This

For a lesson on parallel and perpendicular lines, use the following multiple representations:

Show examples of parallel and perpendicular lines in architecture and art.

Give students straws to model these lines.

Use dynamic geometry, such as the Geometer's Sketchpad software, to demonstrate parallel and perpendicular lines.

Have your students record in their math journals several examples of lines that can be found in the world around them.

Emphasize Real-Life Applications

Help students see the value and application of the mathematics they are studying by presenting as many real-life applications as you can. By relating a math topic to something relevant in a student's life, you can help increase a student's interest in the topic, and help make mathematics more meaningful. This can be especially beneficial for struggling students who may not be able to see how the math they are studying has any relevance to their daily lives. Many real-life applications of mathematics can make the content more interesting to struggling students. By increasing their interest, you can help increase their motivation.

Learn About Tutoring Options

In addition to these instructional strategies, you should also learn about tutoring options that may be available to your students.

Does your school have an after-school tutoring program?

Are there low-cost tutoring centers near your school?

Are there any mentoring programs available for your students?

Know the tutoring options that are available for the students who may need something extra to help address their needs.

Consider Seating Arrangements

Sometimes intervention can be as simple as where your students sit in your classroom. Sometimes physical placement can get overlooked once students reach the middle and upper grades. Strategically seat your struggling students in the best location in your classroom, where they feel most comfortable, can focus on the lesson, and may benefit from a helpful student peer nearby.

This article was contributed by Heidi Janzen, a former classroom teacher and mathematics specialist. She now works as an educational consultant in the areas of professional development, curriculum, standards, and assessment.
# Top 10 Instructional Strategies to Improve Math Understanding

The past four years I have been involved with a [Math and Science Partnership](#) grant. One strong component of this grant is the intensive two week professional learning that all participants must attend. Two purposes are always a strong component of this grant. One teachers need to engage in high levels of mathematics to improve their content knowledge and to explore and reflect on their instructional strategies. Ten instructional strategies tend to emerge every year. If we could re-tool every math classroom with these strategies, I have no doubt that the United States would become the strongest country on the globe.

## #1 Active Engagement

Is CRUCIAL - We can no longer afford to have math as a passive subject. The days of the teacher modeling a couple procedural problems to students memorizing meaningless steps needs to be replaced immediately. This means that the textbook is a resource and guide but NOT the lessons. We need to allow students time to explore, discover, and make conjectures and generalizations about mathematical concepts. As one teacher from the grant stated, "One must truly understand the whys behind procedures for true learning." Another teacher wrote, "A deep understanding of math is critical to future success."

## #2 Use of Math Tools

Research from RTI or MTSS in Kansas states clearly that CRA approach promotes strong understanding. As students are learning new concepts they should begin with a Concrete experience. This hands-on experience may include manipulatives or other concrete tools. Teachers should then, as students are ready, move them to a representation of the concept. This could be with the use of a graphic organizer or drawing a picture. The teacher is waiting and facilitating discussion to then move the student to the abstract representation of the concept. All students move through this CRA approach at different times. It takes a skilled teacher to move each child through this approach on each new concept. Representation is one of five process standards that NCTM encourages for deeper understanding. [See more at: http://michellef.essdack.org/?q=node/109#sthash.3rKFx1ZF.dpuf](#)

## #3 Comparing of Different Strategies/Algorithms

There is more than one way to skin a cat. I remember my mother telling me this as I grew up. Real mathematicians know that there is more than one way to solve a problem. There may be more or less efficient strategies, but there is more than one strategy. Often times the “traditional” strategy is rote learned with little to no understanding. If students explore and discover strategies or algorithms that works, it is important for them to share and compare their strategies with others. These strategies often make more sense and can be very efficient. Teachers from the MSP grant share the following that they would like to remember: “Have students discover rules/procedures that way they will remember.” “There are different ways of processing information.” “Students who can explain why a procedure works are going to be more successful.”
#4 Questioning and Risk Free Environment

Is it not amazing that when we ask someone a question about their answer, we automatically assume our answer must be wrong? This is true of young children and adults. This stigma of questioning must be changed if we plan on making risk free learning environments. As teachers we must be retrained in our questioning ability. Questions such as “How did you know to …”, “Why did you choose to …” Open questions, which require more than one word answers, are great tools for all educators. I’ve worked with educators for more than twenty one years and I have yet to find an educator who feels competent in asking higher level reflective questions. It is only when we understand that having the “right” answer is NOT the goal of a math lesson or classroom will we be able to create the atmosphere of a risk free environment. Some quotes from teachers: “Be patient with students who don’t understand math.” “Create a safe learning environment.” “It’s ok to try something new.” “The classroom environment must be inviting and welcoming.” “Ask more open-ended generic questions to get students thinking.”

#5 Problem Solving

When in the real-world do you ever encounter a worksheet of naked number problems? If you have, outside of a school setting, please let me know. Math is everywhere in the real-world, but it is always within a context. Usually we don’t have all the information we may need to solve the problem, often we have too much or unnecessary information. Problem solving needs to be a goal. NCTM refers to problem solving as a process standard. The how we should be teaching mathematics. Remember back to when you were in math class. We always did the first thirty naked number problems and then we had two problems at the bottom of the page that the teacher would often allow us to skip. If you didn’t get to skip them, it was pretty clear that you just needed to find the numbers in the problem and do the same computational procedure as the first thirty problems. This fear of story problems needs to stop. As early as Kindergarten, students should have problem solving in math daily. Yes, I said daily.

Cognitively Guided Instruction is the BEST math instructional strategy and philosophy that I have ever been exposed to.

Cognitively Guided Instruction (K-6)
Cognitively Guided Instruction (CGI) is a problem-solving mathematics program designed to improve number sense and computation for students in Kindergarten through third grades. It has been proven effective for boys and girls of diverse social class, racial and ethnic, and language proficiency backgrounds.

This K-6 instructional strategy focuses on student knowledge and encourages teachers to pose story problems that can be solved by any means chosen by the child. Problem-posing and problem-solving become the focus of the mathematics class, rather than the traditional emphasis on memorization of facts and algorithms. The research-based approach was developed by faculty at the Wisconsin Center for Education Research, University of Wisconsin-Madison.

#6 Communication – SharingThinking.

Communication is a process skill according to NCTM. In other words, a student communicating with each other and with the teacher is critical to their mathematical learning. Many teachers feel that they don’t have the time to allow students to communicate or they may be afraid students will not be discussing mathematics. If the math students don’t require them to be actively engaged, then it is very possible the conversation will not be around the problem. It is important that active engagement is infused into your classroom climate. Communicating verbally is one way for students to process information. A few teacher reminders: “Faster is not always better.” “Remember to make students prove why and explain their answer.” “It takes time to develop deep understanding.” “Students need various amounts of time to process.”

I always love the quote, “The one who does the talking, does the learning.” No wonder I got so smart when I taught the same lesson three times through each day when I was departmentalized.
#7 Connection to the Real-World

Why do I need to know this? If I had a dime for every time I heard this from my sixth graders I would be sitting on a beach today instead of writing this blog. LOL! My husband and I are currently building a home. We are our own general contractors. My husband owns a heating and air-conditioning company where he has worked for over 25 years. As we were digging the basement we needed to level the land, make it the same depth, and making our basement square. I came to a real self-realization that rainy day. I’m really good at book math and not so good at real-world math. In fact, I’m not sure I really no what real-world math is. I believe as teachers, we live in a “book math” world. We try to make connections, but these connections are only as good as what we know. In other words, we don’t know what we don’t know. My solution: I think every teacher, specifically middle school and high school, needs to take a sabbatical and go into the real-world, roll up their sleeves, and do the work. It is only in this way, that we will truly begin to understand the mathematical demands of the world. Teachers from the MSP grant remind me: “Bringing in real-life situations truly gives a need and desire to work with numbers.” “Help students develop their own real world problems.”

#8 Estimation and Using Mental Math

This area of mathematics is one that many teachers dread, and maybe even skip in their textbook. Why? I think it is because textbooks attempt to proceduralize estimation by teaching rounding, or some other procedural method. In order to really be able to do mental math or estimate one must have number sense and a strong working knowledge of the concept. For example: One may use mental math to solve the problem 3,459 + 998 by adding one thousand to 3,459 and then subtracting two. This requires the person to know the relationship between 998 and 1,000. If students don’t have a great enough number sense, which requires a lot of opportunity to work with this size of numbers, they only know a computational procedure. If I were to ask you to estimate what 7 1/8 divided by 6/8, if you don’t have a strong conceptual understanding of division and fractions, you would not be able to give me a close estimate. Most teachers cannot give a close estimate themselves. Students need to learn conceptually before they move into a procedure. If we don’t allow this time, estimation and mental math is an unattainable.

#9 Schema Based Instruction

This is the understanding that story problems have different underlying mathematical structures. This allows students to organize types of problems and therefore organize different strategies appropriate to the problem.

#10 Writing and Reflecting on Learning

Metacognition is a hot new term in education. Basically it is the thinking about our thinking. It is important for a person to set goals, and analyze how closely they have reached their goals. It is also important for a student to be reflective on what they know, what they may be confused about, and what they don’t know. It is only when we can look into a mirror to evaluate and reflect on our own learning process, will we be able to move forward in our learning. More and more teachers are beginning to use reasoning books with their students.
Intensive Interventions for Students Struggling in Reading and Mathematics

Also available is a FREE self-paced online 4-module course based on this document. To access the online course, click http://rmceducatorsacademy.com/index.php to visit RMC Educator’s Academy. If you are a new user, you can create a free account for access to other online courses as well.