Special Ideas

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SPECIAL IDEAS

A SPECIAL PROJECT SUBMITTED TO
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IN PARTIAL FULFILLMENT
OF THE REQUIREMENTS FOR THE DEGREE OF
EDUCATION SPECIALIST

BY
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MAY, 1988
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SPECIAL IDEAS

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Marlene Ashby
Special Ideas is a handbook of ideas written for the classroom teacher to use with the mainstreamed learning disabled student, the underachiever, and the slow learner.
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Special Ideas is a composite of practical strategies and techniques assembled for the primary-grade teacher's use with the learning disabled student, slow learner, and underachiever. The focal point of this material is the basic skills of reading, math, spelling, handwriting, and general ideas on classroom management, behavior management, and motivation. The purpose of the material is to provide the classroom teacher with practical ideas that may serve as a guide to help the teacher adapt and/or modify the curriculum, the materials, and the methods of instruction to the needs of the special child. The sources for these ideas include personal experiences, a variety of periodicals and other educational materials. Many of the ideas are written to help the child who learns best by using a specific mode such as visually, auditorially, or by tactile-kinesthetic methods.
INTRODUCTION

In November, 1975, The Education for all Handicapped Children Act (Public Law 94: 142) was passed by congress. This law required the placement of handicapped children into the least restrictive environment and as a result many children who were in self-contained classrooms were slowly mainstreamed into classes with their nonhandicapped peers.

Because regular classroom teachers had neither training nor experience with the handicapped child they were faced with an overwhelming task. They soon recognized a need for advice on the management and educational needs of their special children.

A study produced by Ganschow, Weber, and Davis (1984) reported the following:

It would be expected that state education agencies (SEAs) would have revised certification requirements, that would prepare elementary/secondary teachers to meet the intent of P.L. 94-142. However, recent surveys have shown that SEAs have not necessarily assumed that responsibility (p. 74).

In 1980, one such survey showed that only ten states required a course on exceptionalities for the regular education trainee.

In 1984, a questionnaire was sent to commissioners of education or their designees in all 50 states. Results of the survey showed that 14 SEAs had no specific certification requirements; 17 SEAs required one course on exceptionalities; 2 SEAs had one required course pending; 2 SEAs had a two-course requirement; 7 SEAs had specific guidelines; and 8 SEAs made general reference to competencies about handicaps in their guidelines. These results raise serious questions about how actively SEAs are committed to ensuring quality education for exceptional learners (Ganschow et al., 1984, p. 75).
Ganshow et al. (1984) also found that these SEAs which had set guidelines could not "rigorously enforce the compliance" of educational institutions to provide their students with the appropriate educational experiences. Often regular education students only had opportunities to get a sample of "exceptionalities" in an introductory educational psychology course.

Although the SEAs have made progress, the problem remains--teachers are not adequately trained to cope with the problem of educating the exceptional children in their classrooms.

During the identical period of time that Ganshow, Weber, and Davis were conducting their study the Kentucky Teacher Preparation and Certification Handbook (1984-85 edition) revealed that Kentucky's program of preparation for the Provisional Elementary Certificate consisted of six semester hours of study in Human Growth and Development and Learning Theory. The handbook states that this six hour component shall include the following:

Preparation in an amount approximating 2 semester hours shall consist of the study of principles and procedures for adapting educational programs to accommodate the integration of exceptional children in the regular classroom to include: the identification of educationally relevant characteristics of gifted and those with intellectual, emotional, physical, speech, language, auditory, and visual disabilities; utilization of relevant special education methods and materials; modification of the curriculum and classroom environment; and utilization of supportive services and personnel, including resource teachers (p. 47).

These few hours of study of the exceptional child have failed to give Kentucky teachers sufficient answers to the many problems of the special children in their integrated classrooms. Campbell, Dobson, and Bost (1985) in a study of educators perceptions of behavior problems of mainstreamed students make the following statement concerning the need for educators to be provided with appropriate information and techniques: "One might hypothesize that inappropriate behavior of mentally handicapped students in the mainstreamed
Environments is perpetuated by educators who have not internalized information for working with handicapped children (p. 302).

Campbell, Dobson and Bost (1985) concluded their study with the following statements:

The results of this study indicate that the diversity of educators who work with children in the school setting need to acquire skills relative to dealing with behavior problems of both handicapped and nonhandicapped students in an equitable and appropriate manner. Teacher training institutions must prepare educators to effectively deal with the behavior problems of handicapped and nonhandicapped students. Colleges and universities cannot continue to prepare educators as though they will encounter a homogeneous group of students. Preparing all types of educators to function effectively in mainstreamed environments necessitates providing information and opportunities for internalization of techniques in managing the behavior of all students, both those with identified special needs and the so-called 'normal' students. Educators may then be able to provide a learning environment conducive to increasing student achievement and self-discipline (p. 302-303).

Because most regular 'mainstream' educators lack the training and experience needed to develop the best strategies and techniques for teaching the special child, this author senses that teachers need a source of practical information and ideas to supplement their present knowledge and understanding of children and their needs. At the present time very little material, which presents practical ideas in an easy-to-read format for use with the special child, is available to teachers. Therefore, the information herein is written principally for primary-grade teachers who are working with mainstreamed learning disabled students, the underachievers, and/or the slow learners (special children). However, many of the ideas and activities may be used or adapted for use by the teacher in the intermediate grades.

This material is not proposed to replace the curriculum of the special student, but to serve as a guide for adapting and modifying the curriculum, the materials,
and the methods of instruction to the needs of the special student. It is not meant to be a panacea to all the problems of special children as that would be an impossible task since all children are different and all have varying needs.

The primary purpose of this material is to provide the classroom teacher with specific practical ideas that have worked for others. It is hoped that these ideas will stimulate the teacher to use what she already knows about children and how they learn and to adapt that knowledge to the needs of the special child in the regular classroom setting. The focal point of this writing will be on the basic skills of math and reading/language arts at the primary level. However, a composite of general ideas on classroom management, behavior management, and motivation will be included.

*This writer acknowledges the standard practice of using a masculine pronoun when referring to both males and females. However, since the majority of primary teachers are female a feminine pronoun will be used when referring to both male and female teachers.*
POTPOURRI OF IDEAS

It is difficult to define all the key influences for creating a successful situation for the mainstreamed learning disabled student, the underachiever and the slow learner. However, some of the factors might include capitalizing on the student's strengths, social and academic, while working to remediate his weaknesses; providing support services and inservice training; a positive attitude shown by the teacher and the peers; and altering the methods and materials. This alteration of the methods and materials should not be to the degree that they are so different as to alienate the student from his classmates (Holland, 1980).

Because the student may have a short attention span the materials may need to be broken down into basic elements and planned according to the student's individual needs. This is not to imply that a one-to-one approach is needed, however, it does mean that the student needs to receive daily instruction tailored to his educational needs (Mercer and Mercer, 1981).

After the skills are divided into the basic elements they should be taught in sequential order and spaced so that one skill is mastered successfully before the next skill is presented. "As the student experiences success his confidence will grow and he will be motivated to attempt the next skill" (Woodward, 1981, p. 51). The teacher should be extra patient and should give extra encouragement to the child who is trying to be independent (D'Zamko and Hedges, 1985).

Since the student will remember more quickly and easily the lesson concepts that are related to ideas that are already familiar to him, the teacher should make a conscious effort to discover the interests of the student and relate the lesson concepts to those interests. When the student can associate new information to previously learned information he is more likely to remember the new. In other words, "Learning is built on combining bits and pieces of past experiences with new information" (D'Zamko and Hedges, 1985, p.15).
Lead the students to use as many of their senses as possible during the instruction process, during the time of teacher-directed practice, and during the time of independent practice. Since children may learn best visually, or auditorially, or by tactile-kinesthettiic methods, or by a combination of any of these, the use of several modes of instruction and reinforcement will bring more assurance that learning will take place. If the teacher uses several modes and is observant of her special children she may be able to detect the student who learns best by each mode or combination of modes.

Spirit master pages must be clearly printed for the child with perceptual problems. Also, make sure his pages are simple with only a few problems per page. Often larger print is helpful (D’Zamko and Hedges, 1985).

The stimulus value of material can be increased by enlarging the size of the print, using color cues, underlining important words or ideas, using highlighting markers, and using configurations (D’Zamko and Hedges, 1985). If a paper or worksheet seems to be too “busy” or distracting to the child, the child can sometimes be helped to concentrate on the paper by blocking it off or folding it to show only one row at a time (Grabow, 1978). Since too much print can cause confusion limiting the amount of print on a page often helps improve attention and retention (D’Zamko and Hedges, 1985).

A tape recorder or Language Master* could benefit students who have poor reading skills and those who learn auditorially. Auditory stimulation can also be increased by using rhyme and music to teach a skill. Examples are the use of the Alphabet Song: calling attention to rhythms such as clapping for the number of syllables in a word; and by varying volume. An illustration of varying volume is given by one teacher who, as he lectures or explains material, shouts key words as he walks around the room. For example, “Truman became president after Roosevelt” (D’Zamko and Hedges, 1985, p. 7).

*The Language Master system consists of an audiocard and a machine which reads the card. The audiocard is approximately eight by three inches with a picture or other visual presentation on the top portion of the card and a corresponding audio presentation on a strip of magnetic recording tape at the bottom. The student feeds the audiocard into the machine, observes the visual, and listens to the audio presentation.
Children can be encouraged to create tunes or rhymes when they need to learn lists of items such as the names of the months or days of the week (Hayes, 1975). For example, "On Sunday I rest, On Monday I do my best, On Tuesday I run a race, On Wednesday I wash my face..." and so forth.

"Because of poor auditory discrimination, learning-disabled students need to sit on the side near the front so they can hear all the sounds clearly, to eliminate garbled messages from instructions and lectures" (Washburn, 1979, p. 12). Aides or tutors could be used to tape record instructions and lectures for the distractible students.

Use of tactile-kinesthetic cues are important to some learners. Tactile materials provide stimulation through use of textured surfaces and kinesthetic cues involve the tensions and relaxation of muscles. When we use tactile cues, kinesthetic factors operate also. As the child is instructed to trace over or feel the textured surface he uses the tension and relaxation of his muscles. These two cues together provide a memory pattern of how the shape is formed, assisting the child in recreating the form later, or in identifying it when he sees it (Hayes, 1975).

Using a single sheet of newsprint over ordinary window screening or nylon net, and writing with a crayon or pencil, provides good tactile-kinesthetic practice. This idea can also be used with older children who are working on spelling, math combinations, or similar tasks (Hayes, 1975).

Other tactile-kinesthetic materials are the salt or meal tray and the clay pan. A thin layer of salt, meal, Kool-Aid or other grainy material is placed in a tray, box lid, or shallow pan. The child "writes" with a fingertip, with the movement of the coarse-textures providing tactile and kinesthetic stimulation. The clay pan should contain ordinary plastic-type modeling clay rolled flat in the pan where the child uses a stylus or pencil for writing (Hayes, 1975).

Some learning disabled students learn best when learning is reinforced by touch; give them things to handle and feel in order to enhance memory (Washburn, 1979). Examples of this method of reinforcement will follow in later chapters.
By arranging chairs in a semicircle the teacher will be able to maintain visual contact with her students during instruction and will be able to continuously observe the students to make sure they are paying attention. Her physical proximity will enable the students to see and hear her easily and will also help the teacher’s awareness of a student’s daydreaming or looking away. A touch may be used to regain the student’s attention. Cue words are also helpful. "Get your ears [eyes] ready."; "Listen."; "Look." and "Are you ready?" are directions that help the student focus his attention (Mercer and Mercer, 1981).

When the teacher is ready to give directions or instructions she must spell them out in full detail without leaving out a logical step however trivial and obvious it may appear to an adult or a normal child (Kinsbourne and Caplan, 1979).

Understanding and remembering directions are frequent problems. Some hints that might be helpful include the following:

1. Use short brief directions.
2. Use consistent language.
3. Write directions or steps on the chalkboard or a poster.
4. Alternate the use of colors for each step in a series of directions.
5. Record directions on a cassette tape.
6. Use diagrams or pictorial illustrations.
7. Provide a completed example (D’Zamko and Hedges, 1985, pp. 7-8).

To make direction sheets easier to read and understand, use pictures to indicate the tools or implements needed for a particular step (Aiella, 1984). To ensure that the special student understands the directions and can follow them appropriately, the teacher may ask the student to model the task before being required to complete the assignment. If the child appears to have difficulty organizing material, it may be helpful to encourage him to devise a checklist approach to work. In this manner, the student can list the assignments that need to be completed and can physically check each item off the list as it is completed (Monitored Study Centers, 1986).
Some children may have difficulty completing even one page. Instruct the child to go to a certain point only. When that point is reached, the child will experience personal satisfaction as well as a feeling of success (Grabow, 1978). Gradually encourage the child to complete more and more work until he can finish a total page in one sitting.

Adapting and controlling the physical arrangement of the classroom can be important toward behavior management. The environment of the classroom should be controlled so that unessential noise is limited. Some students will attend to their work better in a carrel. Carrels can be made from a three-panel screen cut from a cardboard box (D’Zamko and Hedges, 1985). Other children may need to have their desks close to the teacher’s desk for convenience. The teacher can then quietly give extra help with directions, see that assignments get started correctly, help find the place in a book, control behavior, or lessen distractions (Grabow, 1978).

For the distractible child "special consideration should be given to arrangement of desks, reduction of open spaces, designation of traffic patterns, and establishment of routines, limitations, and expectations" (Banbury, 1984, p. 21). Having this child seated away from extraneous noises and confusion should minimize auditory and visual distractions (Banbury, 1984).

Remember that the child often does not understand what is expected or how to act in a social situation. Once you have claimed his or her attention, keep your requests simple; ask one thing at a time and explain any changes in your regular routine in advance (Grabow, 1978).

When distractions do occur ignore them as much as possible and reward the student’s complying behaviors. For example, the child who talks out during class should be ignored completely with no response given to his behavior. However, when he raises his hand during a discussion, he should be given immediate recognition and praise for this behavior. This method will be effective only if teacher attention is reinforcing to the student. Peer attention to the inappropriate behavior may also need to be controlled (Mercer and Mercer, 1981).
The teacher can call attention to appropriate behavior by commenting on behavior she would like to see modeled: “Jimmy raised his hand today instead of talking out, so I will answer his question first.” The student will tend to follow the example of the model and will learn the behaviors which have positive consequences (Mercer and Mercer, 1981).

Likewise the teacher will want to “ignore out-of-seat behavior and give verbal praise to students who remain in their seats. Students who remain seated during work periods may be rewarded by being allowed to participate in a game involving movement (musical chairs, kick ball)” (Mercer and Mercer, 1981, p. 21).

Since the child needs to feel wanted, worthy and loved, he needs to hear positive feedback about the things he can do and he needs to be sincerely complimented several times each day. When he sees how much praise can be won for right actions, other problems will decrease (Grabow, 1978).

If teacher attention is not reinforcing to the student the teacher might try some type of token reinforcement. One example of token reinforcement follows: Cut out a silhouette of the child and include a large pocket on the front. Put the silhouette on a bulletin board or tape it on the wall. Whenever the child exhibits appropriate behavior drop a token or chip into the pocket. If inappropriate behavior is displayed such as “out of seat,” “talking out,” or “use of swear words,” remove a chip from the pocket. At the end of the day the student can exchange the tokens for a reinforcing activity such as free time, playing a game, or watching a filmstrip (Mercer and Mercer, 1981).

The very active child might need periodic breaks which would allow him to get out of his seat to move around or leave the room. These breaks could be given as errands to run for the teacher (Mercer and Mercer, 1981). These special children also depend heavily on realistic encouragement. However, one must remember that children are sensitive to deceit and exaggeration but need the realistic encouragement (Kinsbourne and Caplan, 1979).

Be creative and use a wide variety of verbal reinforcers such as the following:

“Jason, you sure knew the topic of that story.”

“Kim, that’s excellent adding.”
"April, that's super spelling."

"Kevin, you're great with short vowels."

Hand in hand with praise must go firmness. The extremely active child will experiment with many situations, therefore, a firm explanation as to why something cannot be done is essential (Grabow, 1978).

It is significant that the child feel needed and important, consequently, the teacher should remind herself to write "Good Work!," "Nice Try!," or some other positive encouragement on each paper, rather than only the number completed incorrectly (Grabow, 1978).

Feedback, verbal and written, is essential. "Without feedback, the student is unable to determine whether a response is correct or incorrect. With feedback, the student can check his responses and make the changes necessary for learning" (Mercer and Mercer, 1981, p. 17). When asked to answer a question, learning disabled children often need more time to think than other children. Pressure often causes them to falter, therefore, the patience the teacher shows in waiting can enable the student to retrieve the answer (Grabow, 1978). Prompting also helps the student and eases some of the pressure.

Wilson and Wesson (1986) advocate using the demonstrate, prompt, practice, test, review, and feedback model of instruction and indicate that it is helpful to the learning disabled student. "Increasing the use of demonstration (modeling the correct response) and prompting (giving hints that lead to correct responding) during teacher-led time by using concrete and meaningful examples facilitates concept acquisition and is a critical step for learning disabled students" (Wilson and Wesson, 1986, p. 16).

Sometimes children are reluctant or embarrassed to ask for help before the entire class. A small card with the words "I need a little help" can be used as an alternative to raising the hand and will not be as noticeable to the other children (Aiella, 1984).

Often testing is a problem for the learning disabled student. Sometimes the child can respond verbally but is not ready to read a question and respond with a
written answer. Arranging a test that could be answered orally or even on a tape recorder could solve the testing problem (Grabow, 1978).

Since an average twenty-five minute assignment may take the learning disabled student up to three hours to complete, any homework assignments for the special child should be reduced to whatever the child can do in fifteen to thirty minutes (Grabow, 1978).

If a child cannot work independently he may be taught independence by using the following five-step model of Cognitive Behavior Modification for self instruction:

1. The instructor models the task performance as he describes what he is doing.
2. The learner performs the task as the instructor describes it.
3. Again, the learner performs the task as he talks himself through it.
4. The learner performs the task once again while whispering the description to himself.
5. Finally, the learner performs the task with covert self instruction (Monitored Study Centers, 1986).

Often pupils make reversals or inversions such as: (1) Reading from right to left instead of the normal left to right sequence, e.g., was for saw, or pot for top. (2) Reading letters in reverse, e.g., d for b, or p for g. (3) Making partial reversals in words (the letters within words), e.g., ant for nat. (4) Reversing words within sentences, e.g., The rat chased the cat, instead of, The cat chased the rat.

The following recommendations may be considered in the remediation process:

A. Emphasize left to right in everything.
   1. Cover words with a card so that the word or sentence can be read as it is uncovered. The student may find it helpful to make a window marker such as the one shown below. The child uses it as he would a regular marker, but lets the lines of print show through the slot.
2. Underline the word while sounding the word or underline the sentence as it is being read.

3. Teach the child to use his hand in a left to right movement across the page while reading.

4. Draw arrows pointing left to right under words he might reverse.

B. Have the pupil make 8 1/2" X 3" word cards and let him trace these troublesome words with the index and middle fingers (both at once) while he sounds the parts of the words. Next, have him write the words from memory.

C. Use flashcards to give practice on difficult words.

D. Let the child use a typewriter to enable him to see each word formed from left to right.

E. Pair the letters which are causing difficulty, such as p and q, then let the pupil trace the letters with his index and middle fingers sounding each letter as it is traced.

F. If whole words are reversed the teacher can have the pupil trace a word several times, and then attempt to write it from memory.

G. Have the pupil manipulate 3-dimensional letters on a magnetic board to form words commonly reversed.

H. Write commonly reversed words in pairs (was-saw, net-ten, war-raw, trap-part, etc.). Use one word in a sentence then ask the pupil to point to, or write the word used.

I. Use a colored letter at the beginning of commonly confused words. However, be sure to discontinue this practice as soon as the word no longer presents any difficulty for the child (Ekwall, 1970).

A few ideas on motivation have previously been mentioned in this writing, however, it is felt that teachers need to have many "tricks in the bag" to pull out as
the need arises. The following ideas have been found to be successful by some educators:

1. For the student who avoids academic tasks, let him choose an activity or activities from a variety of activities within a certain skill area. This allows the student to think he selected his own work and that it was not forced upon him. Another method is to let the student complete his tasks in various ways, such as using a red pen or working in a different area of the classroom. Also, a variety of stimuli, such as the tape recorder; Language Master; and manipulative materials, may be used to maintain the student’s attention to the task (Mercer and Mercer, 1981).

2. Another method of incentive for the student who avoids his tasks is to “give him a worksheet with the first few problems already completed” (Mercer and Mercer, 1981, p. 121).

3. Provide a reward, shortly after an academic task has been assigned, for those students who have started the work and have completed several problems. The student who avoids tasks will be encouraged to become more involved (Mercer and Mercer, 1981).

4. Let the student select a task then set a realistic goal. Every day record the child’s progress toward that goal and then reward him when it is achieved. To make him feel proud of his accomplishments, point out the student’s progress every day (Mercer and Mercer, 1981). Consider the child who never completes his math work for an example of this method of reinforcement. On Monday discuss with him and set a goal for the number of problems he thinks he can complete that day. At this same time encourage him to set a higher goal for each succeeding day of that week. Be sure the goals are realistic for him. As the daily goals are reached, chart his progress for all to see and discuss, then present the reward at the end of the week when the goal is achieved.


6. The teacher should move physically closer to the student when he shows a task interference behavior, such as looking out the window. This will
make the student aware of the teacher's presence. Also, modeling may be used to produce appropriate behavior. This is attained by pairing the student with a productive worker (Mercer and Mercer, 1981).

7. Making some academic tasks look more difficult than they really are can help the student gain self-confidence. When he successfully completes a task he thought was very difficult he will feel good about himself (Mercer and Mercer, 1981).

8. Provide immediate feedback to the student and help reduce the practice of his errors by using self-correcting materials. Often a student will avoid a task for the purpose of avoiding failure, however, with self-correcting materials the student can immediately correct his responses without his failure being known to others (Mercer and Mercer, 1981).

9. "Present academic tasks in game formats, such as start-to-finish races or card playing" (Mercer and Mercer, 1981, p. 121).

10. Let the student who often avoids academic tasks select the reinforcers (Wilson and Wesson, 1986).

11. Offer group rewards to be given to everyone when the entire class completes the assignment (Wilson and Wesson, 1986).

12. Use a reinforcing error-correction procedure. Marking each correct answer with a "C" and leaving the errors unmarked can be rewarding. Students can then correct errors and a 100% can be written on the page. Consider how much more reinforcing this is than a C -- or F (Wilson and Wesson, 1986).

13. Let the student work against a timer and record his progress on a chart. This will help him increase his speed in performing academic tasks. For example, the number of subtraction problems correctly completed during a three-minute period of time may be recorded on the chart each day. As the student makes progress in his rate of work, the difficulty of the tasks may be increased (Mercer and Mercer, 1981).
14. Increase teacher enthusiasm. Students pay more attention and learn more when teachers loosen up and ham it up at appropriate times (Wilson and Wesson, 1986).


Teachers of special children often feel torn between the needs of the entire class and the extra time and attention the special child needs. "Peer-tutoring might be one method the teacher could consider as a source of help for the special child and as a means to enrich and challenge the brighter children in the classroom. The peer-tutors should be selected on the basis of those who are most apt to benefit from the experience and also those who are willing to volunteer.

It is the teacher's job to train the student tutor in the methods of teaching and reinforcement, provide easy-to-use materials, and to set the routine (Mercer and Mercer, 1981). The peer-tutor, a competent student, is paired with a student who has difficulty in a particular academic area. The tutor should be given individual folders with written objectives based on the special child's needs. The skills should have been previously introduced and taught by the teacher, thus, leaving repetition, reinforcement, and maintenance for the tutor. Peer-tutoring may also be used to improve social skills as the child will be likely to model the appropriate behavior.

It is hoped that this Potpourri of Ideas will inspire the teacher in numerous ways and will help increase the general achievement of her special students. Remember what Dorothy Law Nolte states in her poem (Banbury, 1984):

***Children Learn What They Live***

If a child lives with criticism,
he learns to condemn.

If a child lives with encouragement,
he learns to be confident.
If a child lives with tolerance,
he learns to be patient.
If a child lives with praise,
he learns to be appreciative.
If a child lives with acceptance,
he learns to love...
READING

All areas of learning are affected by the child's ability or inability to read. According to Kirk, Kliebhan and Lerner (1978) reading is the basic tool for all other academic learning. Since reading is an essential tool throughout life it is important that the special child be motivated and learn to enjoy reading. If the teacher can personalize the reading instruction it will become motivational and relevant to the student. Personalizing the instruction is done by designing instructional activities around events in the child's environment and by using the student's name, and names of peers, family members, teachers, and the school staff. Reading comprehension can then be taught by composing and using paragraphs written about the pupil and his contemporaries. Sequencing of events, predicting outcomes, and following directions will become more realistic to the student and personal self-concepts will soar (D'Zamko and Hedges, 1985).

Kirk, Kliebhan and Lerner (1978) suggest that relating a skill to the child's life situation also assures some transfer to situations outside the instructional period.

To compensate for poor reading abilities of the children it is suggested that readalong records and tapes, alternate texts and library materials on an appropriate reading level, repeated oral readings, and recorded word problems might be used to help the special student. Because preparation of these activities would be time consuming for the teacher it is suggested that parent volunteers, members of service organizations and/or the more advanced students in the classroom be used to prepare these special materials (D'Zamko and Hedges, 1985).

"Talking Books for the Blind" may be borrowed from your local association for the blind. Students with more severe reading problems may use these materials
as they are now available for the students with severe visual perception problems as well as for visually impaired students (Alella, 1984).

To motivate children to read independently Swatek (1977) suggests letting the children make a reading tablecloth. Take an old sheet or other white cloth and divide it into boxes of various sizes. As students complete a book have them draw a scene or character from the book in one of the boxes. They should include the title of the book and their own initials. While students continue reading and recording books they have read, the tablecloth will become an exciting addition to your room. The reading tablecloth could be awarded, at the end of the school year, to the student who has read the most books. A variation of this idea for the special child or a reluctant reader would be to give him his own smaller tablecloth with sections to complete as he reads his chosen books.

Reading Readiness

Comments on reading readiness will be limited to alphabet recognition and matching of upper and lower case letters. Auditory discrimination, listening vocabulary, listening comprehension, creating a desire for learning to read, other readiness skills, and other types of visual discrimination skills will not be discussed as it is felt that these skills can be taught to special children in much the same manner as they are normally taught to other children. The most extreme difference between teaching these skills to the special child and other children will be the rate at which special children will learn the skills. Much has been discussed previously on learning left to right progression in the chapter entitled Potpourri of Ideas.

Many special students will have difficulty learning the letters of the alphabet. If the letters can be personalized, as was suggested earlier, they will become more meaningful to the child and will be easier for him to remember. Begin working with the letters in the child's name. For example, if his name is James Scott White, begin working with the letter J for James. After he learns the J, teach
the S, then later the W. Next, teach the M for mother and the D for dad. Go next to names of his siblings, friends, cousins, aunts, uncles, family pets, and anything else that appears to be of interest to him.

The auditory learner will possibly be stimulated to learn a letter if you help him rhyme it in a silly phrase. Examples of this could be "N rhymes with Lynn," "Z rhymes with me," "I like pie," "Mr. J likes to play." To provide other auditory reinforcement have the pupil orally describe his movements as the letter is being written (D'Zamko and Hedges, 1985). The visual learner may learn best when given visual cues such as: "i has a black dot like the black dot in the middle of your eye;" "g has a monkey's tail;" and "j is like a fish hook."

For the child who needs tactile-kinesthetic reinforcement the following ideas may be helpful:

1. Cut three tagboard cards for each letter of the alphabet and use different materials such as beads, yarn, dry beans, and sand paper to form each letter on the cards. Place several letter sets on a table. The child can trace over each letter with a finger to find the three that match from the pile of different letters (Green River Teaching Center, 1982).

One of the most common tactile-kinesthetic materials is the sandpaper alphabet letters. They are made by marking a letter with a bright marking pen on a small square of sandpaper. Each piece of sand paper should have a notch cut at the center bottom so that the child can be taught to turn the card so that the "teepee" or "Indian house" sits on the desk surface (Hayes, 1975).

2. Another easy way to make the tactile letters is to write the letter with a thin line of white glue and sprinkle with sand, glitter or plastic reflective beading (Hayes, 1975).
3. Let the children use cooked spaghetti which has been coated with vegetable oil to form letters on a paper plate. Use a marking pen to write a letter in each plate for the child to use as a guide (D'Zamko and Hedges, 1985).

4. Large letter forms may be practiced by spraying shaving cream on butcher paper (D'Zamko and Hedges, 1985).

5. A flashlight beam may be used to trace letters on a chalkboard (D'Zamko and Hedges, 1985).

6. Children may use wet fingerpaint to practice forming the letters (D'Zamko and Hedges, 1985).

7. Trace the letter on the back of the student's hand and ask him to name the letter.

8. To stimulate the child's memory place a few small plastic letters of the alphabet in the bottom of a sack. (If plastic letters are not available the letters can be cut from poster board and laminated.) The child reaches into the sack and picks up one letter, feels of it, names the letter then withdraws his hand to check for accuracy. If he is correct he keeps the letter, if inaccurate, he places it back in the bag and tries again until he names all the letters accurately.

9. Give the child a medium length jump rope. Call out the name of a letter and ask the child to make that letter with his rope. After it is made ask the child to walk on the shape of the letter as he gives its name. Be sure the child walks in the same direction that he would use if he were writing the letter with a pencil (Norton, 1977).

When the child is ready to match the upper case letters with the lower case tell him all the capital letters are the mothers and the lower case letters are the babies, then have him help each mother find its baby. Help the child see the likenesses and differences by telling him that some of the babies look exactly like their mothers (Ww, Oo, Zz, Vv, Cc), some look almost the same (Ff, Tt, Mm, Ll, Jj, Kk, Pp), while some others are very different (Dd, Bb, Qq, Gg).

To make a tangible game for matching mothers with their babies use a permanent marking pen and write each upper case letter on a lid from margarine.
tubs. Then, write each lower case letter on a lid from baby food jars. The child can then pick up the "baby" and place it with its "mother."

When the child masters the recognition of most of the letters of the alphabet he is ready to begin working on word analysis skills.

**Word Analysis**

Word analysis is the ability to acquire the pronunciation and/or meaning of a word through the use of phonics, structural analysis, or context clues (Ekwall, 1970). Since pupils need to be taught a method that they can follow consistently in attacking a new word, it is suggested that the following rules be taught to the pupils and also be written on a chart and displayed in the classroom to assist the pupils in attacking new words.

1. Study the word.
2. Does any part of it look like a word you already know?
3. Look at its beginning. Look at its ending.
4. Read the whole sentence and use the other words to help you unlock the new word.
5. Watch for and/or listen for the word in the rest of the lesson (Ekwall, 1970).

The following ideas have been found to be helpful when practicing word analysis skills.

**Initial Consonant Grid**

**Materials:**

Glue; marking pens; pictures of simple objects; small cards cut from poster board; a grid made on poster board or a pocket chart.
Directions:
Glue the pictures on the small cards. If the grid is used write a consonant in each left-hand square. (If the pocket chart is used write consonants on some of the small cards and place them along the left side of the pocket chart.) The student places each picture card beside the appropriate initial consonant. Blends, digraphs, vowel sounds and final consonants may be drilled in this same form (Mercer and Mercer, 1981).

<table>
<thead>
<tr>
<th>b</th>
<th>![Picture]</th>
</tr>
</thead>
<tbody>
<tr>
<td>h</td>
<td>![Picture]</td>
</tr>
<tr>
<td>t</td>
<td>![Picture]</td>
</tr>
</tbody>
</table>

Pocket Chart

A variation of the above idea follows:

Consonant Boxes

Materials and directions for construction:
Find five or six small pictures of objects that begin with each consonant letter of the alphabet. Glue each picture on a piece of poster board which is approximately 4 X 4 inches in size. For greater durability laminate the cards. On one side of a one-pint plastic freezer box write one initial consonant. Beside each letter paste a picture of an object that begins with that consonant. (Milk cartons, which are less expensive, may be cut and used in place of the freezer boxes, however, they take more storage space because they cannot be stacked.)
Directions:
Give each child several boxes and several sets of cards. Ask him to sort the cards by the initial sounds and drop each one in its appropriate box. For example, a picture of a ball would be put into the freezer box which has the initial consonant “B” pasted to the side.

Modifications:
Boxes may also be made for long and short vowels, final consonants, blends, and digraphs (Green River Teaching Center, 1982).

Picture Dictionary

Materials:
A scrapbook made from writing paper with a construction paper cover; marking pens; pictures cut from magazines.

Directions:
Each child can make his own picture dictionary by using a scrapbook indexed with the letters of the alphabet. He then draws pictures or cuts them from old magazines. When he learns to read the word shown by the picture, he pastes the picture on the page representing that initial consonant sound. For example, a picture of a cat would be pasted on the “C” page. This dictionary creates interest because the student makes it himself and it contains only words that he is using. Completed dictionaries can be exchanged so that each student learns to read other student’s dictionaries (Mercer and Mercer, 1981).
The Rat Family
(Initial Consonants and Word Families)

Materials:
Poster board, marking pens, brad, scissors

Directions:
Any attractive design or object may be cut from poster board. Print the desired letters of a word family on it then cut out a square in front of the letters. Next, cut a small circle out of poster board and print the applicable initial consonant letters on it. Attach the circle to the back of the larger poster board and position it so that the letters will be exposed in the opening as the circle is rotated (Mercer and Mercer, 1981).

Phonics Rummy (Game)

Materials:
Make several sets of phonics cards. Each set should contain four cards with the phonics element written at the top and with four other words listed under the word containing the phonics element. A different word should be underlined on each of the four cards in the set. Thirty-six cards are enough for two players while additional card sets may be added for additional players.
Directions:
Deal eight cards (face down) to each player. Place the remaining cards face down in a stack in the center of the players. The first player asks any player of his choosing for a word using a certain phonics element. His goal is to try to obtain three or four cards in a set. For example: “John give me bat from the a group” -- the player must pronounce the short a sound. If the player who was asked has the card, he must give it to the caller. The caller may continue to ask for cards from any player of his choosing until he fails to get a specified card. He must at that time take the top card from the center pile. The players take turns calling for cards and when a player has three cards from a certain phonics element set he may lay them down. When a fourth card to a set that has already been played has been drawn, it may be put down. The winner is the player who gets rid of all the cards in his hand.

Modifications:
Use four synonyms or four antonyms for a specific word in place of the phonics elements on each set of cards (Mercer and Mercer, 1981).

Vowel Spinner

Materials:
A spinner made from a cardboard circle divided into five equal segments with a vowel written in each section; a grease pencil; two or more laminated cards containing three-, four-, or five-letter words with the vowels deleted.
Directions:
The first child spins the spinner and tries to use the vowel the spinner stops on to complete a word on his card. He uses the grease pencil to write the vowel in the selected place. The word must make sense. The player loses that turn if he cannot use the vowel. Next, the second player spins and attempts to use his vowel. The children continue to take turns, with the winner being the first student to fill his card by completing every word with an appropriate vowel (Mercer and Mercer, 1981). This game may also be used with long or short vowels words.

Materials:
3X5 index cards, glue, scissors, tape, marking pen, pictures of words beginning with short vowels.

Directions:
When teaching letter sounds write a short vowel on a 3X5 index card then draw or glue a picture on the card to associate with the sound, such as an apple (a), elephant (e), igloo (i), octopus (o), or an umbrella (u). Sometimes these cards appear on the blackboard or wall, but the distance may be too far to be of benefit. Remember that distractions between the special child and the blackboards may be many (Grabow, 1978).
Old McDonald Vowels

Have the children sing the song "Old McDonald Had a Farm." When they reach the part that says, "Ee-igh, ee-igh, Oh!" substitute a,e,i,o,u. When they reach the animal name and animal sound have them substitute one of the short vowels. Continue until five verses are completed using one vowel each time in sequential order (Fenderson, 1974).

Locating Contractions

To develop knowledge of contractions students may be given sentences to read in which several words are underlined that could be made into contractions. Direct the students to change the underlined words into the appropriate contraction as he reads.
For example:
a. There is nobody she will go with to the store.
b. He has not done the problem because he cannot see it.
The students may also be asked to underline all contractions, or words that could have been made into contractions in a selected reading passage. Variations of this activity might include giving the students sentences with contractions and having them read the sentences with the words they stand for, or call out two words and see who can give the contraction (Mercer and Mercer, 1981).

Mickey Mouse Contractions

Materials:
A laminated figure of Mickey Mouse's head made from cardboard with holes cut for the eyes and nose; a flexible flap made of thick black felt and held in place over the nose opening with two fasteners; a long piece of laminated cardboard with the two words to be made into a contraction written so that they will show
through the eye openings and the contraction form answer positioned in the middle column so that it can be seen in the nose opening; three strips of cardboard taped to the back of Mickey's head to hold the large task card of contractions in place and to allow it to slide through to present each contraction task: a piece of paper.

Directions:
The student places the large task card through the strips on the back of Mickey's head so that the first two words to be made into a contraction appear in Mickey's eyes. Next, the student writes down the contraction form of these two words on a piece of paper and then lifts the nose flap to reveal the answer and check his response. The student continues by sliding the card up to present each set of words (Mercer and Mercer, 1981).

Materials:
A start-to-finish game board; cards with pictures of words containing initial blends; a spinner with numbered segments; game markers; answer key with the correct initial blend for each picture.
Directions:
The first player draws the top card from the deck. He identifies the picture (for example, train) and tells the initial blend (tr). Another student then checks his response by referring to the answer key. If the player is correct, he spins the spinner and moves his game marker the number of spaces shown by the spinner. The players take turns; when a player cannot identify the blend or gives an incorrect response, he loses that turn and does not spin the spinner or move his marker. The winner of the game is the first player to reach the finish space on the game board.

Modifications:
Make picture cards that illustrate words containing digraphs, diphthongs, medial vowels, or initial consonants. To create excitement and interest, the game board can have various instructions on certain spaces—for example, Go back one space, Spin again, Lose one turn, Move ahead one space (Mercer and Mercer, 1981).

Word Blender

Materials:
Make cards with words containing initial blends, then cut the cards in half so that one half shows the blend and the other half contains the remainder of the word.

Directions:
Both decks of blend cards, the blend deck and word cards, are shuffled and placed face down. The first player turns over the top cards from each deck and checks to see if the blend fits the letters on the word card. The player places the cards together and says the word. If he is correct he keeps the cards, however, if he is incorrect, or if the blend or letters do not form a word, the cards are placed in their respective discard piles. The players take turns trying to form a word. When the decks are depleted the discard piles are shuffled and reused. At the end of a
predetermined time (or when all the cards are matched), the players count their cards and the player with the most matches wins the game.

Modifications:
Prefixes, suffixes, or words with various endings may be used on the cards (Mercer and Mercer, 1981).

Root Word Game

Materials:
Poster board, index cards, construction paper, magic markers.

Directions for construction:
Make a “fat” tree on the poster board. Cut slits to hold the prefixes and suffixes. Write prefixes with a green marker and suffixes with a red marker on index cards which have been cut in half lengthwise. The green indicates “go” or begin a word and the red indicates “stop” or end of word. Write root words on uncut index cards. Add some wild cards for “bonus points.”

Directions for game:
Shuffle the cards and place face down. Each player, in turn, draws a card from the root words card pile, reads the word, and adds as many prefixes and suffixes from the tree as he can. For each word the player scores a point (Vail, 1976).

Sight Vocabulary

Ekwall (1970) states that a sight word is any word that a reader has seen enough times in the past to enable him to recognize it instantly. The most common list of Basic Sight Words is the 220 words from the Dolch Basic Sight
Vocabulary. These are the words which are the most frequently used in the reading books of the primary grades. (Other sight vocabulary lists have been developed by Johnson, Fry, and Hillerick.) Dolch also has formed a list of 95 Common Nouns which teachers have found to be valuable for use with special children. If the child has insufficient knowledge of the basic sight vocabulary he will be a word-by-word reader and will not be able to phrase words correctly.

An excellent kinesthetic aid that boys enjoy is called "wiring" the words. Give the boys colorful coated electrical wire and let them form the sight words. The wire is expensive but it can be used many times (Hayes, 1975). Another method for practicing sight words and sight phrases is to make a ladder that will hold word or phrase cards on each rung. The student must try to climb the ladder by reading each word or phrase. When the student is able to climb to the top of his ladder by pronouncing each word correctly, he receives a reward (reinforcement) and begins to work on a more difficult set of cards (Mercer and Mercer, 1981).

The following games have been found to be motivational to students who are practicing sight vocabulary.

Fish

Materials:
A deck of word cards containing three cards for each word. The word should be written in the top right-hand corner and also upside down in the lower left-hand corner of the card; a picture illustrating the word may be placed in the center of the card.

Directions:
Each player is dealt nine cards and the remaining cards are placed face down in the middle of the players. The first player asks any other player for a match for a word in his hand. If the asked player has the word card he must give it to the caller. If he has two cards of that word set he must give both cards to the caller.
The caller continues to ask for cards until the person does not have the card asked for. At that point the asked player says, "Go Fish." When told to "Go Fish" the player must take the top card from the pile. If it happens to be the word card he had just asked for, his turn continues. The players take turns, and when a player completes a set of three cards with the same word he lays it down in front of him. The first player to use all his cards is the winner (Mercer and Mercer, 1981).

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Gamble for Words

Materials:
Pocket chart, word cards containing sight words, one die.

Directions:
Place the word cards to be worked on in a pocket chart. One child rolls a die. He then picks up the same number of cards from the chart as the number revealed on the die. He must be able to say each word as he picks it up. The turn then goes to another child. The object of the game is to see who can get the most words. The game may be by teams or by student vs. student. The teacher may set a time limit of a certain number of minutes or by a certain number of refills of the pocket chart (Ekwall, 1970).
Word Match

Materials:
A pack of word cards which includes two cards for each word to be used. The number will depend on the number of players involved.

Directions:
Each player is dealt four cards which are placed face-up in front of him. Five cards are placed face-up in the middle of the table. If the first player has a card that matches any of the cards in the middle of the table he picks it up, pronounces the word and keeps the pair, turning them face down in front of him. He continues playing until he can make no more matches. He then draws to refill his hand to four cards and replaces the five face-up cards in the middle. If in the process, cards which match are drawn and placed on the table they are left for the player who has the next turn. Play continues to the first player on the left. If a player can match a card on the table, but cannot pronounce the word he must place his card on the card in the middle and leave it. If the following player can pronounce the word he may take the pair. The winner is the player with the most cards when all the cards are paired (Ekwall, 1970).

Word Football

Materials:
Large sheet of drawing paper containing the drawing of a football field, small replica of a football, word cards.

Directions:
Place the football at the 50 yard line to begin the game. The word cards placed face up on the table and two children (or two teams) take turns reading them. When a child reads a word correctly he moves the football ten yards towards the opponent’s goal. If the word is read incorrectly it is considered a fumble and the ball goes ten yards toward his own goal. When the ball crosses into the end zone
six points are scored. The scoring team then gets to read one more word to try for
the extra point (Ekwall, 1970).

Dominoes

Materials:
Write a different word on each end of a word card, then divide the card in the
middle with a line. Repeat each word on several different cards.

Directions:
Deal all the cards out to the players. The first player must place a card in the
middle, and the next player must match one of the words in order to play a card.
The player must pronounce the word as he plays it. A design is formed as the
cards are matched in either direction. When a player cannot match a word, he
loses that turn. The winner is the first player to use all his cards.

Modifications:
Other sets of word cards can be devised using blends, digraphs, diphthongs,
compound words, contractions, or words with prefixes or suffixes (Mercer and

\[\begin{array}{c}
\text{clock} & \text{frog} \\
\text{frogs} & \text{grass} & \text{broke} \\
\text{steam} & \text{glass} & \text{glass} & \text{knob}
\end{array}\]
Bingo

Materials:
Bingo cards containing five squares across and five squares down with a sight word written in each square; a master list which includes all the words on the cards; discs to use as markers.

Directions:
Give each student a Bingo card and several discs. The teacher or a caller reads a word from the master list and checks it off. The players look for the word on their cards and cover it with a disc when it is found. The first player to find and cover five spaces in any direction calls out "Bingo." After the player calls out "Bingo," he must also pronounce each covered word to win the game.

Modifications:
Bingo cards can be made with other categories such as words with prefixes or suffixes, compound words, or words containing blends (Mercer and Mercer, 1981).

Word War

Material:
Word cards containing several sets of identical words.

Directions:
Shuffle the cards and deal all of them to the players. All players simultaneously reveal one card at a time from their stacks. When two (or more) identical cards are turned up, the first player to read the word correctly takes the turned-up stacks of cards from the players who were involved in the "war." The player who gets all the cards or the most cards within a specified time period is the winner (Mercer and Mercer, 1981).
Word Game Board

Materials:
Make a start-to-finish laminated game board with words or phrases in the squares—special squares may contain directions such as *Move back three squares*, *Take an extra turn*, or *Go back to start*; dice, markers.

Directions:
The first player rolls the dice and moves his marker according to the number shown on the dice. In order to remain there the player must pronounce correctly the word or phrase on the square where he lands. If the player cannot correctly pronounce the word or phrase he must move his marker back to the space where he was prior to the roll. When the player lands on a special square he must follow the directions written therein. The players take turns, and the player who first reaches the Finish square is the winner.

Modifications:
The game board may be laminated or covered with clear plastic so that the words can be written with a grease pencil and changed to other vocabulary words (Mercer and Mercer, 1981). On laminated surfaces a permanent marker can be used, then later the words can be removed with nail polish remover.

Synonym Lotto
Feedback device:
On the back of each word card write the correct answer.

Materials:
A large cardboard square, six squares across and six squares down, with a vocabulary word written in each of the squares; word cards containing a synonym
for each of the words written on the large board and the correct answer written on
the back of each card. (If the front side of the card is a different color than the
back side of the card, they will be easier to organize.)

Directions:
After the student draws a word card, he matches it with its synonym on the large
board. Next, he may turn the card over to see if his choice is correct. He
continues to make matches until the entire board is covered.

Modifications:
The students may be required to match antonyms, words with pictures,
contractions with contracted words, or words with definitions.

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<tr>
<th>little</th>
<th>ended</th>
<th>smiled</th>
<th>cent</th>
<th>woman</th>
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</thead>
<tbody>
<tr>
<td>glad</td>
<td>present</td>
<td>cry</td>
<td>reply</td>
<td>pretty</td>
<td>scared</td>
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<tr>
<td>mad</td>
<td>large</td>
<td>bag</td>
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<td>distant</td>
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<tr>
<td>nearly</td>
<td>grandma</td>
<td>chief</td>
<td>stone</td>
<td>speak</td>
<td>beach</td>
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<td>began</td>
<td>flat</td>
<td>trip</td>
<td>shout</td>
<td>odd</td>
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<td>woods</td>
<td>hurry</td>
<td>weary</td>
<td>near</td>
<td>hungry</td>
<td>auto</td>
</tr>
</tbody>
</table>

Cards may be made with the following words and with the appropriate
synonym from the large square written on the back:

tiny       stopped      grinnned      penny       female       path
joyful     gift          weep         answer       lovely       afraid
angry      huge          sack         right        afar          quick
almost     Granny       head         rock         say           shore
difficult  haste         level         journey      yell          different
forest     haste         tired         close         starved       car

(Mercer and Mercer, 1981)
Heart Puzzles

Feedback device:
When the two puzzle pieces fit together to make a heart they indicate a correct answer.

Materials:
Several sets of heart puzzle pieces: One part of the heart contains a picture, a second part fits together with the picture piece and has the word illustrated by the picture written on it, and two other heart pieces that do not fit together with the picture piece but contain words with a minimum of letter differences from the word that identifies the picture.

Directions:
The student looks at the picture then selects the word he thinks is illustrated by the picture. He fits the two pieces of the heart together to check his selection. Only the word which matches the pictures will fit to make the heart.

Modifications:
Puzzle pieces may be made which contain various tasks, such as matching the word with the correct definition, matching the correct blend with a picture, or matching the correct number of syllables with the word (Mercer and Mercer, 1981).
This idea might also be adapted to help the child who has reversal problems.

Word Baseball

Materials:
Vocabulary words written on flash cards and an answer key.

Directions:
Mark a first base, second base, third base, and home plate on the floor. Then divide the class into two teams. A member of the first team becomes the batter and goes to home plate. A designated pitcher on the opposing team holds up a word from his set of flash cards. The batter must correctly pronounce the word, define it, and use it in a sentence before he can advance to first base. A score keeper with the answer key must judge the batter’s response before he moves to first base. A score is kept by crossing home plate while an out occurs when a batter misses a word or its definition. Each team is allowed three outs before the opposing team comes to bat. After at least three turns by each team, the winner is the team with the highest score.
Modifications:
To indicate the value of the hit, the word cards may be given a point value by labeling them *single*, *double*, *triple*, or *home run*. The word cards may be divided according to words with one, two, three, or four syllables. The number of syllables may indicate the number of bases a correct response is worth. However, in addition to reading the word, the student must state the number of syllables in that word or he is called "out." The pitcher may be allowed to select his pitches (word cards) depending on who the batter is; however, once a word card has been used it is out of the game for that team (Mercer and Mercer, 1981).

Clothespin Wheel

Materials:
A ten-inch cardboard circle and eight clothespins. The cardboard is divided into eight sections with definitions written on one side and a symbol or number on the other side in each section; words corresponding to the definitions are written on one side of the clothespins and a symbol or number written on the back.

Directions:
The student reads the word on the clothespin then looks for the definition on the circle. He clips the clothespin to the section of the wheel which contains the definition and then turns over the circle to check his answer. If his response is correct, the symbol or number on the clothespin will match the one on the back of the circle.

Modifications:
The clothespins can be made with synonyms, antonyms, or contractions to be matched with the appropriate section of the circle. Another variation is to have a word written in each section on the front of the circle with a corresponding picture in each section on the back. The student reads the word, clips a clothespin to the
section, and turns the circle over to check his answer by looking at the picture (Mercer and Mercer, 1981).

Categories

To develop vocabulary and to emphasize word meanings, have the students group words in categories. For example, words that relate to specific interests may be grouped together, such as football words, or soccer words or cooking words. Also, words may be grouped in categories such as “Animals That Swim,” “Things That Are Alive,” or “Things That Eat” (Mercer and Mercer, 1981).

Comprehension

Comprehension and vocabulary are partners in the reading process and both should be stressed at all times. Comprehension results only if the child has knowledge and understanding of the vocabulary in the passage he is reading.

Ideas for helping the special child will be focused in the following comprehension areas: important details, main idea, sequence, following directions, predicting outcomes, developing visual images, and cause and effect.
**Comprehension: Important Details**

Often when the special student is asked questions at the end of a long chapter or story he will become confused and will not be able to remember back to the beginning. If the special student is unable to answer relevant questions at the end of a story, ask the questions at the end of a paragraph; two or three paragraphs; or a page. This procedure should be continued until success is experienced; then the number of paragraphs or pages can be increased, gradually shaping the response so that all comprehension questions can be asked at the end of the story (Idol-Maestas, 1983).

**Sentence Numbers**

Select a passage from an old basal reader and write a number at the beginning of each sentence. Have the student read the story then ask several detailed questions about the reading selection. Require the student to give the number of the sentence in which each answer is located (Mercer and Mercer, 1981).

**Irrelevant Details**

Give the students several paragraphs, each of which contain one word or one sentence that does not fit the meaning of the rest of the paragraph. Direct the students to cross out the irrelevant word or sentence and write an appropriate one in its place (Mercer and Mercer, 1981).
Packaged Comprehension

Feedback device:
Attach an envelope to the back of the folder and insert an answer key with the correct answers.

Materials:
A food can label or a candy wrapper attached to the front of a manila folder with comprehension questions concerning the label or wrapper written inside the folder (How much does the product weigh? Name three ingredients?); an envelope attached to the back of the folder containing an answer key.

Directions:
After reading the label or wrapper on the front of the folder the student opens the folder to read and answer the comprehension questions. He answers each question on a sheet of paper without rereading the information on the front and then checks his responses with the answer key.

Modifications:
Attach a brief reading selection or short story to the front of the folder instead of a label or wrapper. The inside of the folder should contain comprehension questions concerning the reading passages (Mercer and Mercer, 1981).

Comprehension Game

Materials:
A start-to-finish game board containing squares, each colored either red, blue, or white; a red set of cards (made from construction paper) containing comprehension questions (who, what, when, why, where, or how questions) about the story content; a blue set of cards containing vocabulary words from the
story; a white set of cards that are synonym cards and give a sentence with one 
word underlined; markers; spinner.

Directions:
Each player is given a copy of the story to read. The first player spins the spinner 
and moves his marker the number of indicated spaces. The player must take the 
top card from the card set that is the same color as the space where his marker 
landed. If the player takes a red card, he must correctly answer the 
comprehension questions. If he takes a blue card, he must correctly define the 
vocabulary word. If he takes a white card, the player must give a synonym for the 
underlined word on the card. If he is not able to respond correctly to his card, he 
must move his marker back to its position prior to the turn. The other players must 
decide if each answer is correct; they may refer to the story if necessary. The 
winner is the first player to reach the Finish square (Mercer and Mercer, 1981).

Comprehension: Main Idea

Four very helpful ideas to use with the special child to assist him in 
recognizing the main idea follow:

1. Read the introduction or title to a story or a chapter, and then anticipate 
with the child what the author is going to say (Ekwall, 1970).

2. After reading a paragraph have the child tell in his own words what the 
author has said (Ekwall, 1970).

3. Have the student read a story then give him several titles, ask him to select 
the best one, and then justify his response. An alternative to this procedure is to 
have the child read a story and then make up an appropriate title for it (Mercer 
4. After cutting several articles out of the newspaper, cut off the headlines. Ask the student to read the articles then match them with the appropriate headline.

_Comprehension: Sequence_

1. After reading a story selection to the children, write down a sequence of events from the story and ask the children to number them in the order in which they happened (Ekwall, 1970).

2. Choose a paragraph and copy each of the sentences on a separate piece of paper. Ask the student to arrange the sentences in a logical order to form a paragraph that makes sense (Ekwall, 1970).

The following idea will develop and improve the student’s ability to recognize and follow sequence of happenings and will develop his ability to predict the outcome of a situation.

_Comic Strips_

Feedback device:
Numbers to indicate the correct sequence are written on the back of each comic section.

Materials:
Laminated cardboard-mounted sections of newspaper comic strips which have numbers on the back of each section to indicate the proper position in sequence.
Directions:
Mixed-up frames of a comic strip are given to the student. He reads each frame and rearranges them in the proper sequence (Mercer and Mercer, 1981). The student then may turn the frames over to see if they are numbered in order.

Comprehension: Following Directions

Learning to read and follow directions can be lots of fun if the directions are applied to something of interest to the children. Give them directions to some specific activity and have them perform the activity step by step. A children's cookbook is often a handy item to have for this reading activity as the directions and pictures will help the children attend to specific details. Often recipes are given for "no-cook" foods which would be quite safe for children to make. Recipes for "no-bake" cookies or "no-cook" candies are favorites.

After the children have practiced following directions have them write directions for others to read and follow. Subjects such as "How to make a peanut butter sandwich," "How to find the baseball" (hidden somewhere in the classroom), and "How to fold paper to make a star" could be suggested to get them started.

Mercer and Mercer (1981) suggests that children write directions for playing a game; then another student can follow the directions to learn how to play the game.

Comprehension: Predicting Outcomes

Ekwall (1970) gives the following suggestions for helping children learn how to predict outcomes:
1. Before allowing the children to read a story show the pictures from the story and then have the children tell, either in writing or orally, what they think the story will be about.

2. Begin reading a story to the children. At an exciting point stop reading and ask the children to tell or write their predictions of how the story will end.

3. Ask the children to read the title of a chapter, tell what they think the story is about, and then read the story to see how close their version is to the author’s.

**Comprehension: Visual Images**

A child’s visual images of scenes in a story will be directly related to his own experiences. The teacher may broaden the child’s experiences with pictures, field trips, films, and filmstrips.

The following activities will help children develop visual imagery:

1. Cut pictures from magazines or catalogues then write descriptive statements about them. Let the children match each picture with the description (Mercer and Mercer, 1981).

2. Let a child write descriptive statements for pictures then have other children match the picture to the description.

3. As each child reads a story the teacher might stop him from time to time and ask him to describe the scene he has read (Ekwall, 1970).

**Comprehension: Cause and Effect**

To help the students distinguish between cause and effect, have one student describe an event—for example, “the dog wagged his tail.” The second student must give a reason for the event: “because his master came home.” Then a third student is asked to give a probable effect: “the dog jumped up and licked his master’s face” (Mercer and Mercer, 1981).
Fluency

To read fluently is to be able to read easily, gracefully, and with the words flowing smoothly. The child has fluency problems if he reads haltingly word by word, with inadequate phrasing, and slowly and monotonously (McKee, 1948). Extra practice with sight vocabulary, opportunities to read simple familiar material, and practicing the following exercises will help remedy problems of inadequate fluency.

1. The child's eyes may be no farther across the line of reading than his voice. This eye-voice span may be spread by asking the child to read aloud a familiar passage. After he has read a line or two, tell him to stop. At this point, ask him to tell all of the next words he remembers. As he continues to read encourage him to increase the number of words remembered (McKee, 1948).

2. Use commercial or teacher-made rapid exposure materials which may be phrases printed on flash cards or phrases written on the chalkboard and exposed rapidly (McKee, 1948).

3. Practice with phrase cards. After the student has mastered short, easy phrases, longer and more difficult phrases may be introduced. The phrase cards may be arranged to make a sentence or tell a story. Phrase reading may also be encouraged by underlining words which should be read together in a given passage. For example, "All the children ran quickly to the car" (Mercer and Mercer, 1981).

4. Chunking is a technique which can be used to expand the student from single word to the phrase, clause, and sentence levels. It is very similar to the method mentioned above.

The teacher selects a familiar reading passage and divides it into phrase groups by using a pencil to make slash marks (/) directly in the text. As the student masters these smaller phrase groups, some of the slash marks are erased leaving larger phrase groups. Gradually all the slash marks are erased until the student can read the text in larger more meaningful units.
To force the student to commit the words to memory the context clues may be removed. This is accomplished by writing the phrases on flashcards. Initially these phrases are presented in the order in which they occur in the passage. Later the phrases are re-ordered and flashed randomly (Henk, Helfeldt, and Platt 1986).

5. The repeated reading procedure involves having the student repeatedly read, over and over again, sections of text containing words that occur frequently in written English. When a competitive incentive is added to the task the child usually does not get bored. To add this incentive each oral reading is timed and then recorded on a chart or graph. Students compete with themselves, trying to improve their reading rate and reduce their errors on each attempt. The visible evidence on the chart is motivational to each child (Henk, et al., '1986).

6. Allowing the student to read material he is familiar with or material that has a lower-level vocabulary (high interest--low vocabulary stories) will help reduce the word-by-word reading (Mercer and Mercer, 1981).

7. Tape record a student reading of a selected passage to help him become aware of his omitted and/or repeated words. Later give him a copy of the passage and ask him to follow along with his finger as the tape is being played. Ask him to circle all the words he omits and underline all the words which he repeats. This will focus attention on omitted and repeated words and increase his awareness of this tendency as he reads (Mercer and Mercer, 1981).

8. Tape recordings of stories read in class can be made for later use as a read-along story for the special children. The better readers can make the tapes (Aiello, 1984).

9. For classroom reading assignments pair the students by putting an average reader with a poorer reader. Rotate the pairs often. (Aiello, 1984) The poorer reader will have the average reader for a model as they read to each other.

Two students are paired according to their general reading level and their ability to work with and trust one another. These students read the same text aloud in unison. If the students are comfortable with their partners, one will lend assistance when the other falters. Peer tutoring will occur between students who are mutually committed to improving their reading. Materials should be used that are equally familiar to both students. The sessions can be tape-recorded and played back for the students to evaluate. Reading rate, pausing, intonation, and expression as well as word recognition accuracy should be discussed with the pair.

11. Echo or imitative reading is another method a teacher can use to improve fluency. This procedure works best with students who already comprehend well, have a sight word vocabulary, and some word attack skills.

In imitative reading, the teacher reads a segment of the text aloud while the student follows along silently. When the teacher has finished reading the segment, the student tries to echo or imitate what the teacher has said. The primary goal of this method is to improve word recognition accuracy, although proper intonation and phrasing should be encouraged as well.

During the initial readings the teacher should read only small segments of text. Sometimes it will be necessary to limit the segments to phrases, however, most students can begin with entire sentences (Henk, et al., 1986).

12. Radio reading is a procedure for developing fluency in a group setting while protecting the student with limited reading ability from embarrassment. Each student is given a "script" to read aloud. The selections may be taken from any source whose contents can be converted into a news story. Only the teacher and the reader have copies of the script; the other students just listen. Because the others have no script to follow, minor word recognition errors and/or insertions will go unnoticed if the story still makes sense.

The student should read the story silently to himself or aloud to the teacher. When he has gained confidence with it, he should read aloud to the group. Students are encouraged to keep the ideas flowing smoothly in the same way as a radio broadcast would. Since most mistakes will not be apparent to the
listeners, the reader will not be embarrassed if he deviates slightly from the text (Henk, et al., 1986).

13. A system in which the student and the teacher read the same passage aloud simultaneously is called the neurological impress method (NIM). In the beginning, the student sits slightly in front and to one side of the teacher and both hold the text. The teacher moves her finger beneath the words as they are read in unison. They try to maintain a comfortable but brisk, continuous rate of oral reading. The teacher’s duty is to force the pace when the student begins to slow down. The teacher’s voice is directed into the student’s ear so that the words are seen, heard, and said at the same time. The multisensory involvement of the NIM is believed to “impress” the fluent reading patterns of the teacher onto the student through modeling.

The goal for each NIM session is to cover as much reading material as possible in a ten-minute period. During the first session the reading material should be from high interest/low readability books. However, more difficult materials can and should be used rather quickly. The teacher’s voice must dominate the oral reading, but in later sessions it should gradually be reduced. This eventually allows the student to assume the vocal lead naturally. Three sessions per week are usually sufficient to obtain noticeable results (Mercer and Mercer, 1981).

14. To focus on comprehension while increasing the student’s speed of reading, give him a short selection to read during a limited amount of time. Next, present a series of questions based on the selection and ask the student to answer as many of the questions as he can. The teacher can also present questions prior to the reading, give the student the selection, and then allow the student a short period of time to locate as many answers as possible (Mercer and Mercer, 1981).
Choral Reading

Choral reading can be fun for children and simultaneously can help them remedy several types of reading problems. Ekwall (1970) defines choral reading as reading done orally by two or more pupils from the same passage at the same time. The following activity with choral reading can be used in small groups or as a whole class activity.

Choose a short, simple poem to begin with and write it on a chart for all the children to see. Introduce the poem by reading it from the chart to the children. Next, ask the children to look for rhyming words, contractions, hyphenated words, punctuation marks, or any other reading skill that you may want to emphasize. Discuss and have the children help define any new vocabulary terms.

Ask the children to read the poem silently as you read it aloud to them again. Next, ask for two or three volunteers to read the poem with you. At this point remind the children that you are the leader and that they must try to read at your rate of speed. Point out commas and periods on the chart and remind them that you will be pausing and stopping at these places. Explain how you will read when you approach an exclamation point. Let this first group read the poem with you one or two times then let the whole class read it with you again. Ask for two or three more volunteers to read with you, however, remember your better readers will be your first volunteers. After this group has read with you stop the session while the enthusiasm is still high. Tell the children that you will continue this activity tomorrow and that you hope others will read with you at that time. Leave the chart where the children can see it and can practice if they desire.

On the next day begin the session by having the children read silently while you read the poem aloud, then let the total group read it aloud with you. Next, ask for one volunteer to read the poem with you. Afterwards ask the volunteer if he would like to read it alone.

When you feel that your reluctant readers are beginning to become familiar with the poem ask one of them to read with you. Don’t force the child but remind him that you will be leading and helping him.
On the third day, begin the session again by having the children read silently while you read aloud, and again, have the total group read aloud with you. After a few volunteers have read with you, choose a good reader to be the leader and let him lead a group of two other readers. Remind the children that he is the leader and that they must read at his pace.

To keep the enthusiasm high, on the fourth day it is good to introduce a new simple, short poem. Use the same procedure for introducing the new poem.

Occasionally a poem can be divided into parts and a leader can be chosen to lead a group of children in the reading of a certain section of the poem. Remember to call on the reluctant reader only after he has had time to become comfortable with the poem.

If this procedure is followed daily, for ten or fifteen minutes, it will help remedy problems such as substitutions, word-by-word reading, incorrect phrasing, omissions, repetitions, and insertions.
The ultimate goal of the math curriculum should be to relate the math problems to the "real world." In other words the student needs to learn that math is made up of the same problems that he encounters or will encounter in everyday life. When the child realizes that learning math skills is important to his ability to function independently in society it will increase his motivation toward learning. It is the teacher's duty to relate the curriculum to what is reality to the child.

One method which has been used successfully to help children realize that math is an important part of life is to personalize the math instruction. Personalizing the math can be accomplished by constructing worksheets which can be adapted for different individual pupils or groups of pupils.

The following problems are samples of worksheets that may be personalized:
1. _____ has 5 teddy bears. _____ has 3. How many do _____ and _____ have altogether?
2. Mr. _______ lives 15 miles from his brother's house. His motorbike averages five miles per hour. How long will it take Mr. _______ to travel to his brother's house (D'Zamko and Hedges, 1985)?

Each new math concept should be presented to as many of the senses as possible. Let the student see the problems, hear the facts, manipulate the concrete aids, and relate the problem to facts or problems already familiar to him. This procedure will help math become logical and rational rather than just a set of memorized facts.

The following adaptations are recommended to help assure success during instruction and practice of math skills:
A. Many children make poor math grades because the teacher cannot read or follow the child's work. Other children make errors in their problems because the numbers are not in the proper place value alignment. To help these children, turn their notebook paper so that the lines go up and down. Turning the paper provides columns for the ones, tens, and hundreds (Vitale, 1982).

Example:

```
+ 256
1837
data rearranged
2093
2262
6520
8802
```

B. Allow the students to check their answers with a calculator upon completion of the problems. For the answers which are not correct direct the students to a specially designated student for help (Aiello, 1984).

C. To reduce the visual stimuli on a worksheet take a few seconds to draw lines on the page. Instruct the child to fold the page along the lines so that he can work on one-half or one-quarter of the the problems at a time. Cutting down on the visual stimuli may enable the child to complete the entire task (Aiello, 1984).

D. If the student is overwhelmed by the amount of work assigned and does not complete his independent work assignments the following adaptations may be made:

(a) Fold the page of problems like an accordion and have the student work on only one line at a time.

(b) Cut the page of problems into fourths and give him only one-fourth at a time.
(c) Fold the page in half.
(d) Draw different colored boxes around several problems (e.g., first ten problems in a purple box, next ten in a green box, etc.) and have the student work on only one color at a time (Lambie, 1986).

E. When the student is not motivated to complete his independent work try the following adaptations:
   (a) Give the child a reward for completing work within a specific time allotment.
   (b) Allow the student to skip work when the child previously has demonstrated proficiency.
   (c) Provide ample opportunity for enrichment (Lambie, 1986).

F. For the student who works accurately but very slowly the following adaptations are recommended:
   (a) Have the student work only the odd or even problems.
   (b) Have the student complete only a sample of each type of problem.
       Star the selected problems.
   (c) Assign half of the problems to be completed in class and half to be completed as homework.
   (d) Prompt the student frequently and check his progress periodically (Lambie, 1986).

G. If the student is a busybody and this prevents him from completing his assignments the following suggestions are recommended:
   (a) Require the student to use a carrel for independent work.
   (b) Seat the student in front of the classroom and/or near the teacher's station.
   (c) Compliment peers who are working and encourage them to ignore the student.
   (d) Tape a square on the floor around the student's workspace and apply negative consequences for leaving the space without permission (Lambie, 1986).
H. If a student is a daydreamer the following methods may be useful:
   (a) Raise the student’s time consciousness with the use of a timer or stopwatch.
   (b) Alternate interesting tasks with tasks which are uninteresting.
   (c) Stop at the student’s desk regularly for frequent checks.
   (d) Help the child analyze long assignments to help predict how long each part will take (Lambie, 1986).

I. If the student does not complete his work because he does not know his math facts try the following:
   (a) Have the student practice flashcards with a partner or a cross-age tutor.
   (b) Have the student practice the math facts on Language Master cards.
   (c) Conduct a “math bee” on different levels for students who are slow to learn all the math facts. Color-code the cards by levels.
   (d) Have a competition once a month for the “Facts Hall of Fame Club.” A pencil that says “Math Hall of Fame” could be presented to all those who know their facts.
   (e) Direct speed drills which challenge the student to “Beat the Clock.” When the student does beat the clock, reward him with a homework pass that he can use at anytime he chooses.
   (f) Give the student a set of response cards with answers to questions or math facts. Let a peer tutor ask the questions while the student selects the correct response card to hold up for his response (Lambie, 1986).

J. When a student cannot follow through when given complex oral directions try the following adaptations:
   (a) Ask a peer to rephrase the directions one step at a time as they are completed.
   (b) Tape-record the directions and allow the child to replay them as many times as he needs them.
   (c) Write out the directions for the students (Lambie, 1986).
K. When the student does not attend to the oral directions the following ideas may be helpful:
   (a) Cue the child to listen by holding up a card with an "ear" drawn on it.
   (b) Give the student a card with "Directions" written at the top and require him to write down the direction as it is given.
   (c) After the direction has been given ask the student to repeat it (Lambie, 1986).

L. The following ideas may be helpful for the student who finds the instruction boring:
   (a) Use real objects such as coins, candy, fruit, etc., in the instructions.
   (b) Allow the child to skip areas in which he is competent.
   (c) Use stories with the student's name to create interest.
   (d) Use samples from the child's experiences.
   (e) Reward on-task behaviors (Lambie, 1986).

M. When the student finds the material or assignment boring try the following:
   (a) Have the student use a unique pattern to complete the problems (e.g., work corner problems first, third row next, fourth column next etc.)
   (b) Tell the student to do all the problems with a 9 in them first, then those which have a 5, and so forth.
   (c) Tell the student to work from the end to the beginning.
   (d) Allow the student to choose 25 of the 50 problems to work.
   (e) Drill and practice could be done on the computer.
   (f) Keep a daily graph of the percentage correct and post this on the board or on the desk (Lambie, 1986).

N. Adapt the work in the following manner when the student finds the instruction moves too fast:
   (a) Lower the expectations by placing the student into the math group of another teacher.
   (b) Let a peer assist the student with another assignment.
   (c) Allow the student to do a learning center or computer work while others are busy being instructed.
(d) Have a peer tutor or cross-age tutor teach the lesson outside of the classroom. The tutor can work at a pace slowed enough for the special student to be successful (Lambie, 1986).

O. When the student is making numerous errors and needs frequent feedback to complete worksheets correctly the following adaptations are recommended:

(a) Provide a checking center in the room with answer keys, teacher's guides, and tape recordings of answers.
(b) Write the answers in yellow directly on the worksheet. The student can place a red transparent plastic sheet over the worksheet before he looks at the page. The red sheet neutralizes the answers. The student can then move the plastic sheet down the page as problems are completed and can check the answers problem by problem.
(c) One student can be assigned each day to be in charge of checking answers for other students.
(d) Allow the student to skip difficult problems.
(e) Check the answers of the special children and then analyze errors to determine patterns (Lambie, 1986).

P. When the student has problems with left and right movement this may cause him to improperly align the problems. This will cause difficulty in solving written math problems, therefore, the following adaptations may be useful:

(a) Have the student write one number per square on one quarter-inch graph paper. (See also Math Adaptation A)
(b) Color code the ones, tens, and hundreds columns by having the student write each with a different colored marker.
(c) Write the problem in color-coded spaces.
(d) Provide arrows as cues on the paper.
(e) Use a green marker at the beginning of the movement and a red marker to indicate the ending.
(f) At the top of the page write an example of a completed color-coded problem (Lambie, 1986).
Q. If the student solves problems incorrectly when more than one operation is included on a page try the following remedies:

(a) Box in all the addition problems with a blue marker, all the subtraction problems in red, and so forth.
(b) Put a star of one color by all the division problems, subtraction in another color, and so forth.
(c) Have the student mark each type problem with a different marker before he begins (Lambie, 1986).
(d) Use a highlighter pen to color the signs (+, ×) and clue words ("more than," "times") and thus direct the focus of the student's attention (D'Zamko, 1985).

R. When the student does not focus on oral or written instructions and therefore does not know where to start nor how to take one step at a time to solve problems the following ideas may be helpful:

(a) Use a cue card depicting an "ear" to remind the student to listen.
(b) Indicate relevant written parts in a text with a highlighter pen.
(c) Underline steps that go together in one color, another type of information in another color, and so forth.
(d) Tape a cue card to the desk which color codes each step in the solution process. (e.g., green=first step, yellow=second step, . . . red=last step) (Lambie, 1986).
(e) Provide a sample problem for each assignment (D'Zamko, 1985).
(f) Color-coding the various steps may help the child understand.

For example:
yellow=division
blue=multiplication
purple=subtraction
brown=bring down
red=add
green=carry (D'Zamko, 1985).
Using one adaptation in isolation may not be sufficient for solving the student’s problems, therefore combinations of the adaptations may have to be used. The teacher should try an adaptation consistently before presuming that it does not work. Adaptations should be varied to prevent the student from becoming bored. Praising a student is not an adaptation; however, it should be realized that students who need adaptations also need lots of encouragement and praise for small steps in the right direction (Lambie, 1986).

**Numeral Recognition**

When a student has difficulty recognizing the numerals give him visual and/or auditory cues to help stimulate his thinking.

Examples:

1 is skinny. One-sun.
2 needs a shoe. Two-shoe.
3 rhymes with me. Three-me.
4 needs more. Four-more.
5 has a big, fat stomach and we call it a big fat 5. Five is alive. Five-alive.
6 can mix. Six-mix.
7 rhymes with heaven. Seven-heaven.
8 looks like two circles. Eight-plate.
9 has a head. Nine-mine.
10 pigs in a pen. Ten-pen.

**Twist and Do**

On a one and one-fourth yard piece of oil cloth draw several six inch circles. Cut numerals from colored contact paper and attach one numeral to each circle. Make two spinners from large cardboard circles. Mark one spinner into four sections and print one of the following in each section: left hand, left foot, right
hand, right foot. Divide the other spinner into ten sections then laminate or cover with clear contact paper. Put one contact numeral in each section. Use as many or as few numerals (from 1-10) as the students have previously learned. Any contact numerals which are not being used may be removed from the spinner and/or oil cloth and placed on wax paper. Attach a spinner to each cardboard circle with a brad. The child spins both spinners and follows the directions such as: left foot, nine. He must move the foot or hand to the numeral indicated. The child is out if the numeral called is occupied or if he cannot reach the space.

Variation: Use letters instead of numerals (Malish, 1974)

For a tactile presentation of numerals trace them on the back of the child's hand or trace them on his back and let him guess the name of the numeral.

Counting Orally

To provide a visual stimuli along with the oral stimuli have the child drop manipulatives such as buttons or chips into a clear plastic cup. As he counts he can see how many chips are represented by the number (D'Zamko, 1985).

Do It Board

On a large sheet of plywood put ten rows of nails spaced about three inches apart. Write numerals on three-inch cards with a hole punched at the top. Ask the student to order a group of numbers on the board as he counts aloud.

The Do It Board may be used for a variety of tasks including the following: placing words in alphabetical order; matching picture cards and words; matching coins to amount; matching clocks to time; ordering words to make a sentence; ordering letters to make a word; matching addition, subtraction, multiplication, and division equations to correct answers; matching letters; matching colors and
words; ordering pictures and sounds; matching upper and lower case letters (Malish, 1974).

Number Symbols

The number symbols and their order from one to twelve must be learned completely by rote. However, beyond twelve it is possible to teach meanings to the number words by looking at the parts of the words. For example, in the words thirteen, fourteen, fifteen and so forth the syllable 'teen' indicates the presence of ten. Thirteen denotes three-ten and fourteen denotes four-ten, etc. From the number word twenty-on, reasoning can be used to recognize the sense of repetition in the number play. *Ty* is thought of as ten. *Twen, thir, for, fif* are seen as substitutes of two, three, four and five. Therefore, twenty-one should be thought of as two tens and one, thirty-four as three tens and four. With this rationality the learning of number names should not be totally rote.

When teaching the number words from thirteen to nineteen, the pronunciation of the teen should be stressed. From this the children should be able to learn that teen really means "ten" and that fifteen means "five and ten" (Peterson, 1973).

Ordinal Numbers

The following ideas have been successfully used to teach ordinals.

Pocket Creatures

Materials:
A pocket chart, index cards on which pictures of animals have been drawn or pasted.
Directions:
Place several pictures in a row in the pocket chart. The child is asked to identify each creature's position as first, second, etc. (Malish, 1974).

Me First People

Materials:
Heavy tagboard cut into 2x3 inch rectangles, clothespins, a wire coat hanger.
Draw or glue a picture of a person onto each rectangle then glue each picture onto a clothespin.

Directions:
Hang several pictures on the coat hanger. Ask a student to identify the position of each people card as first, second, etc. (Malish, 1974).

Three in a Row

Materials:
Tagboard cut into 8x10 inch rectangles with the position words first, second, etc. written on them, a twenty-inch piece of yarn or string attached to each rectangle in order that they may be hung around the children's necks.

Directions:
In the front of the room line up three children in a row. Give the first child a card which says 'first', the second child a card which says 'second', and the third child a card which says 'third'. Tell the children that each one has a new name and that each must listen carefully and follow the directions when his new name is called. 
Next, give the following commands:

  First, touch your head.
  Third, raise your hand.
  Second, clap your hands.
  Will the first person touch your shoes?
Will the third person cross your feet?
I want the first person to go to his chair and sit down.
Now, will the second person go to his chair and sit down?
Now, the third person will sit down.
The game continues with a new row of three students.

Variation:
The terms first, middle, and last may be substituted (Peterson, 1973).

Math Facts

Hasselbring (1987) advises teachers that they should not be content when the special child can compute answers to basic facts by using counting strategies or electric calculators. Recent research indicates that these procedures may interfere with higher level math skills such as multiple-digit addition and subtraction, long division, and fractions. Most cognitive scientists believe that as basic skills are practiced their execution requires less cognitive processing capacity or attention and therefore becomes automatic. We all have a limited capacity for processing information. Therefore, if we do not need to use part of this limited capacity for performing basic skills, we will have more capacity left to execute higher level skills. The ability, it appears, to succeed at higher level skills, is directly related to the efficiency with which lower level processes are executed. This knowledge unquestionably indicates that more emphasis should be placed on helping special children develop rapid, effortless, and errorless recall of basic math facts. Automatic retrieval of basic facts should be the goal for all students (Hasselbring, 1987).

Use flashcards containing the basic facts to assess the student's level of automaticity. Flash a card. If the student takes more than 1 to 2 seconds to retrieve the correct answer, or if the student uses an obvious counting strategy, that problem should be considered a nonautomatized fact. If the student can
respond instantaneously, the fact should be considered automatized (Hasselbring, 1987).

After the flashcard test, group all the automatized cards together by the size of the minimum addend. For example, place all the facts with a minimum addend of 0 together (e.g., 0+0, 0+1, 0+2, 0+3) and all the facts with a minimum addend of 1 together (e.g., 1+0, 1+2, 1+3, etc.). Next, select from the unknown facts with a minimum addend of 0 and their reciprocals for him to learn. For example, 0+8 and 8+0, along with 0+9 and 9+0. Do not work on more than two or three facts and their reciprocals at a time. When all or the facts with a zero have been learned review all the known facts then move to the facts with a minimum addend of 1. After all the minimum addends of 1 are learned review all known facts then move to the minimum addend of 2, and so on until all facts are automatized (Hasselbring, 1987).

Mercer and Mercer (1981) present the math fact families in the following manner:

<table>
<thead>
<tr>
<th>0</th>
<th>1</th>
<th>2</th>
<th>3</th>
<th>4</th>
<th>5</th>
<th>6</th>
<th>7</th>
<th>8</th>
<th>9</th>
</tr>
</thead>
<tbody>
<tr>
<td>0</td>
<td>0</td>
<td>1</td>
<td>1</td>
<td>2</td>
<td>2</td>
<td>3</td>
<td>3</td>
<td>4</td>
<td>4</td>
</tr>
<tr>
<td>1</td>
<td>1</td>
<td>2</td>
<td>2</td>
<td>3</td>
<td>3</td>
<td>4</td>
<td>4</td>
<td>5</td>
<td>5</td>
</tr>
<tr>
<td>2</td>
<td>2</td>
<td>3</td>
<td>3</td>
<td>4</td>
<td>4</td>
<td>5</td>
<td>5</td>
<td>6</td>
<td>6</td>
</tr>
<tr>
<td>3</td>
<td>3</td>
<td>4</td>
<td>4</td>
<td>5</td>
<td>5</td>
<td>6</td>
<td>6</td>
<td>7</td>
<td>7</td>
</tr>
<tr>
<td>4</td>
<td>4</td>
<td>5</td>
<td>5</td>
<td>6</td>
<td>6</td>
<td>7</td>
<td>7</td>
<td>8</td>
<td>8</td>
</tr>
<tr>
<td>5</td>
<td>5</td>
<td>6</td>
<td>6</td>
<td>7</td>
<td>7</td>
<td>8</td>
<td>8</td>
<td>9</td>
<td>9</td>
</tr>
</tbody>
</table>

(p. 183)

A "Fact Fact of the Day" game may be played to help automatize the facts. For example, a particular fact can become the password for the day. Students may not enter or leave the room until they give the Fast Fact without computing it.
Set up a variety of opportunities during the day which can be used to require the students to recall the Fast Fact (Hasselbring, 1987).

Challenge Time may also be used to reduce the retrieval time of the facts. After the students have learned the Fast Fact, even though it may take them three to five seconds to do so, mix the Fast Facts with the already automatized facts and present them orally or with flashcards in a random order. Challenge the student to retrieve the facts from memory within one to three seconds, gradually reducing the time to one second. The student must respond within the challenge time. If the time elapses or an incorrect answer is given, provide the answer and present the Fast Fact again. Continue this until the correct answer is given correctly within the challenge time. Provide corrective feedback if the student cannot do so. Challenge time will force the student to recall answers rapidly (Hasselbring, 1987).

The special child often needs the use of manipulatives or semi-concrete representations to help him understand and comprehend the math facts. Many objects such as beans, buttons, small blocks, paper punch dots, rice, macaroni, or rocks may be used to increase learning for those who need visual and/or tactile-kinesthetic stimulation.

Paper punch dots, rice, or macaroni may be glued beside the numerals of a problem or in the answer position (Vitale, 1982).

\[
\begin{array}{c}
3 \quad \cdots \quad 3 \\
+4 \quad = \quad +4 \\
\quad \cdots \quad = \quad \cdots
\end{array}
\]

For students who are visual learners the following methods have been found to be helpful when teaching the math facts:

Since color increases sensory stimulation it can be used to emphasize sameness of answers. Explain to the child that problems written in the same color will have the same answers. Thus, red could be used for 2+3, 3+2, 1+4.
4+1, 0+5, etc. and blue for 2+4, 4+2, 3+3, 5+1, etc. It is also very important to have the child do his own writing in color to reinforce this concept (Vitale, 1982).

"Pleat the Paper" is a visual method for practicing math facts or spelling words. Choose a fact the child is having difficulty remembering. Ask the child to study the fact then write an answer to it on the outer edge of a piece of paper. Next, have the child fold back the paper hiding the fact before rewriting it. Then have the child unfold the pleat to check the problem with the first answer on the sheet. If correct, ask him to repeat the process three or four more times. When the student is incorrect, have him study the fact using the first writing as a prompt (Mercer and Mercer, 1981).

The following device is another visual tool which is useful to some students.

**Clipping Answers**

**Materials:**

A segmented pizza board with arithmetic problems on the front and symbols on the back; clip-type clothespins with answers on one side and symbols corresponding to those on the back side of the pizza board.

**Directions:**

The student reads the problem, clips on the answer to the problem, then turns the board over. When the symbol on the back of the board matches the symbol on the clothespin the answer is correct (Mercer and Mercer, 1981). (See example under Sight Vocabulary game entitled Clothespin Wheel.)

To make subtraction more concrete for the child have him add to reach his answer. Start with the small number then add counters until he reaches the answer. The number of counters indicates the answer.

```
8   (say)   (point to counters and say)
5   five   six, seven, eight
3
```
This method may help the visual learner grasp the meaning of subtraction (Vitale, 1982).

Another visual device involves the use of triangle cards. Write a math fact on each card by putting one part of the fact in each corner. The student should study these "triangle families" by covering the numeral in one corner. Next, he states the addition or subtraction fact using the two uncovered numerals. He can then move his thumb from the covered corner to check his answers (Thornton, 1986).

For the child who needs tactile and/or kinesthetic stimulation, two methods follow:

One valuable kinesthetic aid is an oversized number line which has been taped to the floor. Let the children walk out their math problems (Hayes, 1985). "Ghosting" is also a useful tactile-kinesthetic method to use with special students. First, write the fact on a chalkboard. Next, the child should finger trace and say the fact until all the chalk has been rubbed away by the finger movement. The "ghost" would remain and the fact would be "laid to rest" in memory (Thornton, 1986). "Ghosting" may also be used with spelling and with sight words.

The auditory learner may need to repeat the math facts orally. Sometimes chanting or singing them, with a visual stimulus to correct himself, may be the best method (Hayes, 1975). Commercial recordings of the multiplication facts in song are available and helpful to the auditory learner.

"Beat Yourself" is a game in which the child records math facts from a selected worksheet onto an audio tape and attempts to say or write the answer before it is heard on the tape (Thornton, 1986).

The following three games are useful for practicing math facts after they have been mastered.
Bark

Materials
A decorated tall box with a construction paper or fabric cutout of a dog glued to the outside, a paper cup dog food bowl fastened to the box with a brad, bones cut from construction paper which have been laminated, a grease pencil or overhead marking pen to write stimulus cues on the bones.

Directions:
Write "bark" on some of the bones, on the others write number facts. Put the bones in the tall box. The children take turns drawing out a bone. If they can give the correct answer to the fact the bone is fed to the dog by putting it into his bowl. If the answer is incorrect it is put back into the box. If the child draws a "bark" bone he feeds the dog automatically. The winner is the child who puts the most bones in the dog's bowl.

Modifications:
The bones may contain shapes, colors, color words, letters, numerals, number words, sight words (Malish, 1974).

Math War

Materials:
Make sets of index cards consisting of all the math family patterns through the sums of 9 (54 cards in each set). Example: The family pattern for 7 is: 0+7, 7+0, 1+6, 6+1, 2+5, 5+2, 3+4, 4+3.

Directions:
Each player shuffles his deck of 54 cards and places them face down. Each player turns over one card. The player who turns the card with the largest sum wins all the turned cards. Then the players each turn their next card. If two players turn cards with equal sums, then those two players declare war. They
each place three cards face down and turn the fourth card face up. The player whose card has the highest value wins all four cards of the other player (three face down, one face up) and all the cards which were played by the other players. Whoever has the most cards after all cards are played wins.

Modifications:
Other math facts may be used such as sums to 18 and multiplication facts (Mercer and Mercer, 1981).

Math Concentration

Materials:
Ten index cards (3x5 size) with arithmetic facts on one side and blank on the other side; ten index cards with the answers to the problems of the stimulus cards on one side and blank on the other side.

Directions:
The cards are placed face down in rows. Two or more students take turns. The first player turns over a card and gives the answer. If he is correct, he turns over a second card. If the second card shows the answer to the first card, the player keeps both cards. If the player gives an incorrect answer to the first card he does not turn over a second card. The next player then takes a turn. The player with the most cards when all the cards have been taken is the winner.
Modification

This game may be played with addition, subtraction, multiplication, or division facts (Mercer and Mercer, 1981).

Column Addition

After the addition and subtraction facts have been mastered the children are ready to move on to more difficult math skills. When teaching column addition, help the children look for patterns within the problem, such as, pulling out 10's, grouping numbers (i.e., starting with the largest number); or mixing the process.

Example

a Has four "5's" and a "3" or 20 + 3 = 23
b Has two "10's" and a "3" or 20 + 3 = 23
c 6 + 6
4 + 2 = 6
5 + 1 = 6

\[
\begin{array}{c}
\text{Example} \\
6 & 4 & 2 \\
\hline
23 & \text{or} & 23 \\
\end{array}
\]

Regrouping in Addition

Children often have difficulty with the concept of regrouping. The most common method of teaching "carrying" separates the number by placing half of it at the bottom of the problem and half of it at the top.

Example:

\[
\begin{array}{c}
\text{Example:} \\
\begin{array}{c}
39 \\
+14 \\
\hline
3 \\
\end{array}
& \text{or} & \begin{array}{c}
243 \\
\times7 \\
\hline
1 \\
\end{array}
\end{array}
\]

(Vitale 1982)
Often this confuses the child and he reverses the numbers carrying the wrong number. One method which may eliminate the confusion is to have the child carry the number at the bottom.

Example

\[
\begin{array}{c}
\text{Example 39} \\
+14 \\
\hline
13
\end{array}
\]

To eliminate the need for carrying, have the child add left to right, adding the tens or hundreds first and working backwards.

Example

\[
\begin{array}{c}
\text{Example 46} \\
+55 \\
\hline
283
\end{array}
\quad \text{or} \quad
\begin{array}{c}
\text{Example 48} \\
+55 \\
\hline
263
\end{array}
\]

\[
\begin{array}{c}
\text{or} \quad 872 \\
90 \cdot \text{tens} \\
1000 \cdot \text{hundreds} \\
103
\end{array}
\quad \text{or} \quad
\begin{array}{c}
\text{or} \quad 872 \\
800 \cdot \text{hundreds} \\
150 \cdot \text{tens} \\
103
\end{array}
\]

\[
\begin{array}{c}
\text{or} \quad 283 = 200 + 80 + 3 \\
100 \cdot \text{hundreds} \\
15 \cdot \text{tens} \\
103
\end{array}
\quad \text{or} \quad
\begin{array}{c}
\text{or} \quad 872 = 800 + 70 + 2 \\
1000 \cdot \text{hundreds} \\
150 \cdot \text{tens} \\
103
\end{array}
\]

A variation of the above method is referred to as partial sums. When the sum of the ones column is greater than or equal to ten it is written as a two-digit number at the bottom of the ones and tens columns.

Example

\[
\begin{array}{c}
\text{Example 29} \\
+56 \\
\hline
15
\end{array}
\]

\[
\begin{array}{c}
\quad 70 \\
\quad 85
\end{array}
\]

In this example, \(9 + 6 = 15\), thus 15 is written at the bottom of the columns. Next, the tens column is added and the sum is written below the sum of the ones column. In this case, \(2 \text{ tens } + 5 \text{ tens } = 7 \text{ tens or } 70\). Next, the two partial sums are added (Mercer and Mercer, 1981).

A method of regrouping in column addition is shown in the following example:
To add \[ \begin{array}{c}
7 & 6 & 8 \\
4 & 7 & 5 \\
1 & 4 & 6 \\
+ 6 & 8 & 7 \\
\end{array}\]
\[ \begin{array}{c}
7 & 6 & 8 \\
4 & 3 & 7 & 5 \\
8 & 4 & 6 \\
6 & 8 & 7 \\
\hline
2 & 7 & 7 & 6 \\
\end{array}\]

Beginning at the top right in this example, \(8+5\) equals 13, which can be renamed as 1 ten and 3 ones. A horizontal line is drawn through the 5 to represent the ten and the ones digit is written on the extension of the line. Since the line represents the ten the student does not need to try to remember it. The student uses the ones digit that is left over (the 3 in this case) to begin adding until another ten is obtained. In this example, \(3+6=9\); then \(9+7=16\). Thus, a line is drawn thought the 7 to represent the ten, and the 6 ones are written on the line. Since all numbers in the ones column have been added, the 6 is recorded as the ones digit at the bottom of the column.

The two lines drawn in the ones column represent 2 tens; thus, addition in the tens column begins by carrying the 2 tens. These 2 tens are added to the 6 tens and continues until there is a sum equal to or greater than 10 tens: 2 tens + 6 tens = 8 tens. 8 tens + 7 tens = 15 tens. A line is drawn across the 7 to represent 10 tens and the remaining 5 tens are written on the line. Next, 5 tens + 4 tens = 9 tens. 9 tens and 8 tens = 17 tens. A line is drawn across the 8, and the 7 is recorded as the tens digit at the bottom. In the tens column each line represents 10 tens or one hundred. Thus, the two lines in the tens column are carried over to the hundreds column to begin addition there. The 2 hundreds are added to 7 hundreds and addition continues in a similar fashion (Mercer and Mercer, 1981).

**Place Value**

For the child who needs a hands-on experience to help him understand place value, the use of popsicle sticks is suggested. Purchase three hundred or
more popsicle sticks from a local dairy and ice cream business or from a craft shop.

Using colored markers write the following on index cards: hundreds in red, tens in blue, ones in green (Colors may vary according to preference, however, be consistent each time the words are used.) Put the cards on a table in their proper sequence, then put two popsicle sticks in the ones column under the green sign. Next, take a sheet of paper and write (using the same colors with the identical place value words) the hundreds, tens, ones. Using a green marker write a green 2 in the ones column.

Example

<table>
<thead>
<tr>
<th>hundreds (red)</th>
<th>tens (blue)</th>
<th>ones (green)</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

2 (with green marker)

1 (blue) 3 (green)

3 (blue) 4 (green)

2 (red) 2 (blue) 0 (green)

Next, count out ten popsicle sticks, put a rubber band around them to make a bundle. Put them under the blue tens sign, then put three sticks under the green ones sign. Demonstrate the writing of the numeral 13 by using a blue marker to write the one in the tens place and with a green marker write the three in the ones place. The next step is to ask the child to make three bundles each containing ten sticks. Ask him to tell you into which column they should be placed. If he hesitates guide him to the correct column. Then give him 4 popsicle sticks and ask him where they belong. Guide him if necessary. Next, give him the blue and green markers and ask him to write the numerals in the correct colors and in the correct columns on the paper. Give assistance if needed. Continue working with tens and ones until he appears competent. Follow this same procedure into the hundreds place using ten bundles of ten sticks to make one big bundle of a hundred sticks. (Leave the rubber bands around each of the ten groups of ten
sticks within the hundreds bundle as this makes it easier for the child to understand that a hundred bundle is actually 10 tens.

After the child becomes confident with ones, tens, and hundreds discontinue the use of the colored markers and encourage the child to write all the numerals with a pencil.

**Reading Place Value**

Long shoe strings may be attached to four cards for stringing beads to represent the number or value of each place. For example: To represent 5346 the student would string 6 beads onto the ones column, 4 beads onto the tens column and so forth. A knot or a clothespin could be used to keep beads from falling off the string. The cards could be attached to a bulletin board or wall (Mercer and Mercer, 1981).

![Diagram of place value](#)

Use the same colors to write the ones (green), tens (blue), and hundreds (red) that were described in the popsicle stick suggestion. Teach the children to read the numerals left-to-right using the cards and beads as their cue.
Regrouping in Subtraction

The concept of borrowing or regrouping is often confusing to special children. The children often subtract the smaller number from the larger number regardless of the number of times they are told, "Subtract the bottom number from the top number."

Example of mistake

\[
\begin{array}{c}
82 \\
- 49 \\
\hline
47
\end{array}
\]

To aid children in remembering to subtract the bottom from the top number, color code the numbers. Make the top number red and the bottom number green. Next, remind the children by saying, "Subtract the green number from the red number." The color coding will help the children to organize their thinking.

Example:  

\[
\begin{array}{c}
82 \text{ (red)} \\
- 49 \text{ (green)} \\
\hline
33
\end{array}
\]

When children are ready to regroup (borrow), have them circle the numbers they must change.

Example

\[
\begin{array}{c}
35 \circ 9 \circ \\
- 23 \ 7 \ 5 \ 3
\end{array}
\]

(Vitale, 1982)

Another method which often helps children with regrouping is to have them add a ten to the top number on the right and a ten to the bottom number on the left before subtracting.

Example

\[
\begin{array}{c}
95 = 90 + 15 \\
- 29 = 30 + 9 \\
\hline
60 + 6 = 66
\end{array}
\]

(Vitale, 1982)
Multiplication

It is useful to let the children use the times table chart at all times because it is a positive imperss method that will eventually aid the children in learning the multiplication facts.

For children who need visual and/or kinesthetic stimulation to help them understand the purpose and meaning of multiplication, the following idea has been used successfully. Give the child a box of counting blocks or cubes, 12 four-inch circles cut from felt, and a worksheet containing several of the basic multiplication facts from one family of facts such as the following from the 3's family:

\[
\begin{array}{c}
1 \text{ (multiplicand)} \\
\times 3 \text{ (multiplier)}
\end{array}
\]

\[
\begin{array}{ccc}
2 & 3 & 4 \\
\times 3 & \times 3 & \times 3
\end{array}
\]

\[
3 \text{ (product)}
\]

Teach the child to look at the multiplier first. In this case the multiplier is three, therefore, the child places three circles on his desk. Next, he looks at the multiplicand, which is one. He then places one block on each circle. To get the product the child counts all the blocks on all the circles. The child writes the product as he recites the problem by stating \(3 \times 1 = 3\).

Another visual multiplication aid can be created by instructing the child to draw sticks in the margin of his paper. For example, if he is multiplying 8 \(\times\) 4 he can draw eight lines, "cross" them with four lines, then count all the intersections as in the following example:

\[
\begin{array}{ccc}
\quad & | & | & | & | & | & | \\
\quad & \quad & \quad & \quad & \quad & \quad & \quad & \quad & \quad
\end{array}
\]

\[
\begin{array}{ccc}
\quad & \quad & \quad & \quad & \quad & \quad & \quad & \quad & \quad
\end{array}
\]

\[
\begin{array}{ccc}
\quad & \quad & \quad & \quad & \quad & \quad & \quad & \quad & \quad
\end{array}
\]

\[
= 32
\]

This method is especially enlightening to the child when he multiplies by zero. For example, 8 \(\times\) 0 would be done by drawing eight lines, but with no lines to cross
them there are no intersections to count, and the child can easily see that the answer is zero (Hayes, 1975).

The fingers can be used as a visual tool when working on the multiplication facts of six through nine. (Knowing the lower facts through the fives is a prerequisite to using this method.) Teach the children that the thumbs are sixes.

Hold up both thumbs.

![Image of thumbs up]

To multiply 8 x 9. Start with either hand and count up from 6 for the first number; next, count up from six on the other hand for the second number:

![Image of fingers counting]

Now count all the fingers which stick out by tens: 10, 20, 30, 40, 50, 60, 70. Next, multiply all the folded down fingers on one hand by those on the other hand:

\[
2 \times 1 = 2 \\
70 + 2 = 72 \text{ so } 8 \times 9 = 72 \text{ (Hayes, 1975).}
\]

The following method is another finger counting device which works only with the nines multiplication facts. Write a nines fact on the chalkboard, such as 5 x 9. Have the children hold up both hands, then count from left-to-right to finger number 5 and fold it down. They will now have four fingers, a space, then five more fingers or an answer of forty-five. Next, practice this by letting the children write the fact that you show with your hands.
This method may involve a large amount of counting on the fingers, however, for the child who is a visual learner these ideas are very meaningful.

It was mentioned earlier that the addition and subtraction facts should be automatized and that it should be the goal of the teacher to help children develop rapid, effortless and errorless recall of these facts. This recommendation should also be applied to the learning of the multiplication and division facts.

Mercer and Mercer (1981) suggest the following sequence for teaching multiplication facts. This sequence is designed to minimize the amount of memorizing required in learning the facts.

A. First teach that 0 times any number is 0.
B. Next, teach that 1 times any number is that number.
C. Teach that 2 times any number is the same as doubling that number: $2 \times 4$ means $4 + 4$.
D. Teach that 5 times any number is the same as counting by 5's the number of times indicated by the multiplier. For example, $5 \times 7$ means counting, 5, 10, 15, 20, 25, 30, 35.
E. Teach the following method for learning the 9's. Subtract 1 from the multiplier to obtain the tens digit and then add enough to it to make 9 to obtain the ones digit. Example: $2 \times 9 = 18$, $1$ is one less than 2 and $1 + 8 = 9$;
   $5 \times 9 = 45$, $4$ is one less than 5 and $4 + 5 = 9$. 

*Example*

![Diagram of hand counting for multiplication facts](image)
F. Finally, there are only 15 facts remaining to be memorized:

\[
\begin{align*}
3 \times 3 &= 9 & 4 \times 4 &= 16 & 6 \times 6 &= 36 & 7 \times 7 &= 49 & 8 \times 8 &= 64 \\
3 \times 4 &= 12 & 4 \times 6 &= 24 & 6 \times 7 &= 42 & 7 \times 8 &= 56 \\
3 \times 6 &= 18 & 4 \times 7 &= 28 & 6 \times 8 &= 48 \\
3 \times 7 &= 21 & 4 \times 8 &= 32 \\
3 \times 8 &= 24
\end{align*}
\]

Many teachers believe that these facts are learned faster by grouping the doubles (3 \times 3, 4 \times 4, etc.), thus leaving only 10 facts to be learned.

One practical method for applying multiplication to meaningful experiences is to structure the lessons around the kitchen. Ask the students to compute how many pieces of silverware are needed to set a table for four people if each uses a knife, fork, and spoon. How many slices of peaches would be left if the four people each ate six slices from a can which contained 30 slices (D’Zamko, 1985)?

The following game may be useful to help the children practice the multiplication and division facts.

**Multiplication and Division Facts Rummy**

**Materials:**
Forty to fifty-two cards which contain families of multiplication/division facts.

**Example:** 8 \times 6, 6 \times 8, \frac{48}{6}, \frac{48}{8}.

**Directions:**
Deal seven cards to each player. The player on the left of the dealer draws a card from the remaining cards. If the card matches two other cards in his hand which are in the same family, he lays down the book of cards and gives the answer to each fact. If he gives an incorrect answer, the cards must remain in his hand until his next turn. After the player lays down or is unable to do so, he must conclude his play by discarding one card from his hand. This card is placed face up beside the deck so that all the other discards can be seen. The next player may choose to draw a card from the stack or pick up the previous discard. He
cannot choose to pick up a discard unless he can match it with two cards in his hand. If there are two cards in the discard pile that match one in his hand, he may pick up both cards. He does not have to take the whole pack if he can give the correct answers to the cards between the two cards he wants. Also, during his turn another player may lay down one or more cards that match another player's books. When one player runs out of cards, he says, "Rummy," and wins the game.

Adaptation

Addition and subtraction facts may be written on the cards (Mercer and Mercer, 1981)

Money

If a child has had very little or no experience handling real money he may have difficulty with the concepts of money and making change. Children who handle real money in real or simulated situations will learn the names and values quickly. Therefore, whenever possible, children should have a small allowance or "jobs" to earn some money.

Real money or lifelike play money and a cash register are valuable tools to have when beginning to teach money concepts. Begin with the name and value of the penny, then the nickel, dime, quarter, etc. Be sure one coin name and value is learned before proceeding to the next. The following step, then, would be to evaluate the child's ability to count by 5's and 10's. When the child can demonstrate proficiency with 5's and 10's he is ready to be taught to count coins and make change.

Always create interest by discussing a life-like situation for needing to make change. Use the child's name when possible.
Example

Aaron wants to buy a baseball card from Jason. The card costs 88¢. How much money will Aaron receive if he gives Jason $1.00?

Place a baseball card on the table and say, "This is worth 88¢." Next tell the child to add coins to bring the amount to the nearest multiple of five. Ask the child to tell you what the next multiple of 5 will be after the number 88. In this case the child should answer 90. Point again to the baseball card and say, "88¢." Add a penny to the table and say, "89¢." Put another penny on the table and say, "90¢." Next, ask the child what coin he needs to add to the 90¢ to make one dollar. If he does not answer, put a dime on the table and say, "90¢ and 10¢ make $1.00." At this point explain to the child that he continues to have a dollar in value as he has the baseball card, two pennies, and a dime. Next ask him to count the coins and tell you the amount. Give assistance if needed. The last step is to write $1.00 and subtract 88¢ from it. This proves that his 12¢ change is correct.

Example:

$1.00

- .88 baseball card
- .12 change

The following game provides an interesting and challenging opportunity to practice counting money.

Counting Coins

Materials:
Paper, pencil, and timer.

Directions:
Using the fewest coins to make a given sum is the object of the game. The leader calls out an amount, such as 85 cents. Within a predetermined time limit, each player must write down or draw the coins that make that amount. Every player
who correctly sums the coins is given one point. The player or players who use
the fewest coins are given five points. The player who first reaches a score of 25
points wins the game (Mercer and Mercer, 1981).

Another interesting approach for practicing with money is the grocery store.
Ask the children to bring grocery bags, empty food cans, cereal boxes, etc. Let a
child take a grocery bag and fill it with items he would like to "buy." Next, have the
child list all the items he bought and the price of each item. After he totals the bill
he must draw the coins and/or bills he needs to pay for the items (Malish, 1974).

Variation: Each child can be given an amount of money to spend before he goes
shopping. Another child can be the cashier and give each shopper the proper
change after the purchases are made.

Measurement--Length

For a self-checking activity involving the use of a ruler, draw lines on blank
Language Master cards, then record the length of the lines in inches and in
centimeters on the tape. Number the cards then have the student write the
numbers on a sheet of notebook paper. Next, instruct the student to measure the
line on a card and record the length in both inches and centimeters. Then, to
check himself the student can insert the card in the Language Master and listen
for the correct measurement (Mercer and Mercer, 1981).

An activity which gives the student some practical measurement activities
involves giving him a box of objects to measure. The objects might include a
popsicle stick, paper clips of various sizes, comb, straw, etc. Next, give the
student a worksheet with the objects listed. As the student measures the objects
he can record their lengths in inches and centimeters on the worksheet. This
activity can also be used for weighing objects (Mercer and Mercer, 1981).
Measurement—Time

To increase the child's awareness, interest, and understanding of time use phrases such as "in five minutes," "earlier today," "after noon," and "yesterday." Holidays and special events are useful for increasing awareness of calendar time (D'Zamko, 1985).

Three effective ways for the special child to learn to tell time are as follows:

Vitale (1982) supports the idea of making time become a very personal concept for the special child by combining visualization, body image, physical movement, and bringing the entire environment to the child. This is accomplished by having the child close his eyes, pretend he is a clock, then put both arms directly above his head in the position of twelve o'clock. Next, have the child practice the one o'clock position, two o'clock position, and so forth. It is often helpful for the child to have a visual model. Two types of models may be provided: (1) A real clock may be taken apart so that the hands can be moved manually. (2) The teacher's own body may be the model, however, be aware of the need to face the same direction the children are facing.

After the hours have been taught teach the half hours and the quarter-hours or the minutes. Whichever is chosen to be taught first, have the children use their arms to demonstrate the positions of the clock hands. It will be less awkward for the children if they are taught to switch arms when they reach the half-hour. Have them do this with their eyes open following a model, and also with their eyes closed.

The next step is to have the children make a clock face out of a paper plate with cardboard hands. Call out various times or write them on the board and have the children place the clock hands in the correct position. Next, have the children transfer this to paper by drawing the hands in the proper places on clock faces that appear on worksheets.

For the next method of teaching children to tell time, a real clock or a clock with easily moveable hands is needed. Set the long hand on the twelve, then tell the children to watch the short hand because it tells the hour. Move the short
hand randomly to several numerals and read the hours to the children. Next, have the children read the hour to you as you move the short hand to different locations. Later tell the children they are going to learn to write the time. Then make the clock face show 3:00.

Tell the children to look at the short hand first and write what it says. Tell them that the long hand pointing to the twelve means "no" minutes after three o'clock. Next, tell them to put a colon after the three and to write two zeros. Let the children practice writing all the different hours of the clock as the short hand is randomly moved to different locations. Each time an hour is written have the children read it two ways. Example: 5:00 would be read "five o'clock and no minutes after five." Practice until the children are confident with this skill.

During the next session review what was previously learned then move the long hand from the 12 to the 1. Have the children count the little minute markings between the twelve and the one. Counting in this manner will help them conceptualize the five minute interval. Next have the children write the time of this clock:
Remind them to always begin with the hour (short hand), then write the minutes after the hour. In this case write 3:05. Next, have them read it two ways, three-o-five and five minutes after three. Remind the children of the fact that they wrote the three first, then afterwards they wrote the five. Therefore, the five came after the three and is read five after three. Let the children practice writing and then reading five after each hour around the clock until they become confident with this step. (Note: Always write the time first and then read it two ways.)

During the next session review writing and reading the hour and five after the hour before moving to ten after the hour. Again have the children count the minute marks between the twelve and the two.

Have the children write this time, again beginning with the hour first (in this case a six) and then write the minutes after it (in this case a ten). After they have written 6:10 have them read it as six ten and ten minutes after six. Let them practice writing and reading ten after each hour around the clock until they become confident with it. Follow this method with a review of random hours with a mixture of time on the hour, five after the hour, and ten after the hour.

During the next session review all the previous lessons, then proceed to the fifteen minutes after-the-hour position. After each succeeding five-minute interval be sure to review all the previously taught intervals.

When the thirty-five minute interval is reached, teach that point on the clock in the following manner:
Instruct the children to write 4:35 in the previous manner (hour first, then 35 minutes after), then read it as four thirty-five and thirty-five minutes after four. Next, direct the children to the hour (short) hand. Tell them that it has moved more than halfway between the four and the five. It is now closer to the five than to the four. Since the short hand is moving to the five the time can now be read a third way. At this point have the children help count by fives from the numeral twelve (counter-clockwise) to the numeral seven, then read the time as twenty-five minutes before five o'clock. Let the children take turns reading this time on the clock as four thirty-five, thirty-five minutes after four, and as twenty-five minutes before five o'clock. Proceed in this same manner until the children work all the five minute intervals around the clock.

A third method of teaching time developed by Krustchinsky and Larner (1988) initially uses a clock without hands. The only prerequisite to this method is that the children must know how to count to 60 by 1's and 5's.

First, ask the children to look at a number line, then help them to see that a clock is simply a number line that goes around in a circle. Next, show the children a clock without hands:
Have the children practice counting the minute marks around the clock. Call attention to the fact that the five-minute marks are heavier or blacker than the other marks. Use an arrow to mark the starting place (0). For several days have the children practice counting the minutes. After a day or two ask someone to count the "quick way" (by 5's) by counting all the darker marks. Practice this for several days.

Next, have the children practice counting by 5’s and by 1’s to arrive at numbers which were not always multiples of 5 (12, 15, 34, 10, 56, 35, 47, etc.) Following this step, have the children draw in a hand on the clock. Stress that the hand must be long in order to reach to the outer edge of the clock.

After this step is practiced explain that a clock has an outer circle (minutes) and an inner circle with numbers from 1 to 12, indicating the hours (see clock above). The minutes are on the outer circle, therefore it takes a long hand to
reach them. The inner circle has numbers written for the hours. A short hand will
reach the numbers which tell the hour of the clock. The long hand must touch all
60 of the minutes before 1 hour goes past.

Next, ask the children which hour the short hand is pointing toward. Then,
ask how many minutes have gone past the hour. On the following clock it is 3:07.
or 7 minutes have gone past the hour of 3:00.

The last concept that needs an explanation is that when the hour hand is
between two numbers it belongs to the lower number. The children may need the
reminder or cue: "Remember the clock tells us two things—hours written on the
inner circle and minutes written on the outer circle."

After the children learn to tell time, meaningful practice may be provided by
giving the students a worksheet with several blank clock faces and a variety of
schedules (such as those for TV, movies, or a bus). Have them record schedule
times on the clock faces (Mercer and Mercer, 1981).

Story Problems

To help children identify which mathematical operation is needed to solve
story problems, discuss and list clue words and phrases for the students to watch
for when they read the problem. For example:
First, have the students underline these key words and phrases (Aiello, 1984). Next, have them decide what type of problem it is, then, write the number sentence for the problem. For example:

John has 6 kittens. He gives 4 of them away. How many kittens does he have left? 6 - 4 - ___ (Mercer and Mercer, 1981).

For the auditory learner, story problems may require vocalization. Let this child read the story orally and then plan aloud his method for solving it (Hayes, 1975).

To help children understand story problems have them write some problems using some of their own experiences. Begin this activity in a group situation with the children dictating the problem, while the teacher writes it on the board, a chart, or with an overhead projector. Let the group decide the operation then appoint a child to write the number sentence and work the problem. After practicing this process in a group have the children write their own story problems. If the students are sports fans suggest that they write problems based on game scores. The sports section from the daily newspaper could be used to acquire the facts (Ganschow, Weber, and Davis, 1984).

Fractions

To help children understand the relationships of a fraction to 1 and to other fractions, make several fraction charts such as the example that follows.
These charts may be used to determine equivalent fractions, greater-than and less-than values, and finding the lowest common denominator (Mercer and Mercer, 1981).

Have the children look at the denominators on one card, then discuss the size of the denominator and the size of the piece on the chart. Help them to see that a larger denominator means a smaller piece.

The following method helps children understand the relationship of the denominator and the size of the fraction. First, draw four circles then tell the children that these circles represent pies. Divide the second pie into halves, the third into fourths, and the fourth one into eighths.

Direct the children to look at the pie which is divided into eighths. Explain to them that the denominator 8 means the pie has been divided into 8 pieces and that the numerator 1 means one of the eight pieces of the pie. Discuss 1/4 as being one of four pieces of the pie, and 1/2 as one of two pieces of the pie. Next, ask the children: "Would you prefer to eat 1/8 of the pie or 1/2 of the pie?" "Would you prefer to eat 1/4 or 1/8 of the pie?" "Would you prefer to eat 1 whole pie or 1/8 of the pie?" The children quickly learn which piece of the pie is the largest.

Fraction bars may be made from tongue depressors, popsicle sticks, or construction paper. Write the multiples of a single-digit number on each bar.
When one bar is placed over another bar fractions are formed. The two numbers on the extreme left indicate the fraction formed, such as $\frac{3}{4}$. The remaining fractions are equivalent fractions (such as $\frac{3}{4}$, $\frac{6}{8}$, $\frac{9}{12}$, etc.) The fraction $\frac{3}{5}$ and its equivalents are formed by putting the 3 bar over the 5 bar.

Activities with the bars include reading the equivalent fractions, forming fractions with other bars, and making new bars.

Four bars may be used to add fractions, such as $\frac{2}{3} + \frac{2}{5}$:

1. First, form the fractions $\frac{2}{3}$ by placing a 2 bar over a 3 bar.

2. Next, form the fraction $\frac{2}{5}$ with two other bars.
3. Look at the bars which form the denominator of each fraction and locate the lowest number that is the same on each denominator bar. In this example it is 15.

4. Slide the 2/5 over until 6/15 is directly under 10/15.

\[
\begin{array}{c|c|c|c|c|c|c|c|c|c|c}
2 & 4 & 6 & 8 & 10 & 12 & 14 & 16 & 18 \\
3 & 6 & 9 & 12 & 15 & 18 & 21 & 24 & 27 \\
\end{array}
\]

5. Next, add the numbers on the numerator bars: \(10 + 6 = 16\), thus, the sum 16/15.

6. To subtract, simply subtract one numerator from the other: \(10 - 6 = 4\) or \(4/15\) (Mercer and Mercer, 1981).

A short cut for finding a common denominator before adding or subtracting fractions is shown in the following method. The student should draw three rays and multiply along these rays.

Example:

\[
\begin{array}{c|c|c|c|c|c|c|c|c|c|c}
3 & 4 & 2 & 6 \\
\end{array}
\]

Next, the student writes a new fraction for the pair \((3/6 + 2/6)\). The numerator is formed by performing the correct operation on the products of the diagonal ray multiplications. The new denominator for both fractions is the product of the horizontal ray multiplication. In this case \(3/6 + 2/6 = 5/6\).

For subtraction follow the same pattern but subtract for the last step.
Example \[ \frac{16}{4} \times 32 = \frac{16}{32} - \frac{4}{32} = \frac{12}{32} \text{ or } \frac{3}{8} \]

Success with math concepts should be the objective that the teacher sets as her goal. Student success should be immediate and continuous. The following guidelines are suggested by Mercer and Mercer (1981) as the basis for effective instruction to bring success for students with arithmetic problems:

1. Include student participation when setting instructional goals in math.
2. Urge the student to express his understanding of math concepts.
3. Provide practice that gives immediate feedback.
4. Use various instructional methods and activities.
5. Use charts, checklists, and graphs to trace student progress.
6. Encourage the student to use visual, auditory, or tactile-kinesthetic instructional aids when they are helpful.
7. When possible, give the student choices of materials which will improve specific math skills.
SPELLING

The special child often has problems in the area of spelling. Reading is a prerequisite step of spelling, however, frequently the child cannot recognize or read the words he is asked to spell. Being able to read a word keeps the word as a whole and increases its meaning to the student. Therefore, the first step when teaching spelling is to teach the child to read the words (Dangle, 1987).

The next step is to structure the child's work in such a way that it will insure success. If the child is successful he will have pride in his work and in himself. If learning to spell fifteen words is an impossible task, let him begin with five words. Discuss the sound of each letter then ask him to circle the vowels, difficult sounds, or silent letters. Tracing the word might also be helpful (Grabow, 1978).

D'Zamko and Hedyes (1985) report research that reveals the following practices as effective when teaching spelling:

1. Supervise the child while he corrects his test.
2. Use the pretest-study-test method of instruction.
3. The single column print is the most effective method for presenting spelling words. (This method is better than presenting words in context.)
4. Learning to spell words by the synthetic word approach is more effective than by using the syllable approach.
5. Spelling achievement is improved by teaching proofreading skills.
6. Retention is improved by consistent review and/or reteaching.
7. Teach a systematic technique for studying unknown spelling words.

Several systematic techniques follow:

A. Dangle (1987) suggest giving a pretest, then letting the student use the results to decide which words are hard and which are easy. The student can then
sort his words into stacks so study efforts can be focused where needed. The act of sorting words into hard/easy stacks provides a physical separation between words requiring intensive study and those requiring less effort.

To practice phonetically regular words the student should:

1. Look at the word and say it slowly.
2. Trace the word and again say it slowly, listening to each sound.
3. Cover the word and write it from memory while saying it.
4. Check the spelling against the model, note any errors, and repeat the procedure.

For phonetically irregular words the student should practice using the following method:

1. Look at the word and say it slowly.
2. Trace each word and say the name of each letter.
3. Cover the word and write it from memory while saying the name of each letter.
4. Check the spelling against the model word and repeat the procedure (Dangle, 1987).

The above trace/cover/write strategy is based on the principle that because students must spell words from memory to use them, their practice should be based on writing words from memory. Since letters consistently correspond to sounds in regular words, the best trace/cover/write procedure for phonetically regular words is to have the student say the word as it is being traced. However, for phonetically irregular words the student should say the letter names while tracing rather than saying the letter sounds. This will help the student to focus his attention on the irregularities such as the silent “t” in listen and the “ph” which sounds /f/ in telephone (Dangle, 1987).

B. Mercer and Mercer (1981) describe a multisensory approach to spelling which was developed by G. Fernald. Fernald’s method involves four sensory modalities: visual, auditory, kinesthetic, and tactile (VAKT). Since the special child needs to have all his senses involved during the learning process, Fernald’s
method may prove to be very helpful. It includes the following steps in learning to spell a word:

(a) The student watches and listens while the teacher writes and pronounces the word. (b) The student traces the word while simultaneously pronouncing it. (c) Next, the student writes the word from memory. If the word is incorrect, the second step is repeated. If the word is correctly spelled it is put in a file box. Later the student uses the words in his file box to write stories. (d) During later stages the tracing method for learning is not always needed. The student may be able to learn the word by observing the teacher write and pronounce it and then by saying it himself. The student may eventually be able to learn the word by looking at it in print and writing it, and finally, merely by looking at it.

C. Backward chaining is a method which can be used to teach spelling words through sequencing the letters. Teaching begins with the last step and progresses toward the beginning of the chain (Snell, 1978).

First, introduce a spelling word to the student. Have him say the word and spell it while looking at each letter. Next, spell the word while directing the student to look at the last letter of the word. Spell all of the word except the last letter. Pause to let the student supply that last letter. Give some type of reinforcement then ask the student to look at the last two letters of the word. Cover the word and spell all of the word except the last two letters. Pause to let the student supply those last two letters. After reinforcement is given, proceed through the remaining letters until all the word has been learned. It may be necessary to prompt the student as he is guided through the steps. However, prompt only on the target step and expect the student to perform on all the remaining steps in the chain without aid.

The following is an example for teaching the word purple:

Teacher: Purple. P-u-r-p-l-e
Teacher: Purple. P-u-r-p-l-
Child: e
Teacher: Purple. P-u-r-p-
Child: l-e
Teacher: Purple P-u-r
Child: p-l-e
Teacher: Purple. P-u
Child: r-p-l-e
Teacher: Purple. P
Child: u-r-l-p-e
Teacher: Purple.
Child: P-u-r-p-l-e

Motivating the student is a key element in learning to spell. Games and puzzles are good motivators and are useful for practice but should not take the place of direct instruction. The following ideas have been found to be helpful for building student interest in spelling.

The Language Master may be used to provide visual, auditory, tactile and kinesthetic experiences for the student. Blank cards can be reused by laminating the top portion of the card. Use a permanent marker to write the words on the cards, then after the words have been learned they may be erased by using a cotton ball soaked in nail polish remover. Pictures or letters written in yarn may also be used on the blank cards. After the card has been run through the recorder, the student can trace the word with his fingers (Mercer and Mercer, 1981).

Ghosting is another tactile-kinesthetic procedure for practicing spelling words. Have the child write a word on the chalkboard and then trace it with his fingers until it disappears. Only the “ghost” of the word remains. The child receives internal feedback (the “feel” of the word) with this method (D’Zamko and Hedges, 1985).

If the child wants to provide more massive kinesthetic clues for himself he may enjoy “walking” out his spelling words or “riding” them with his bicycle. A penlight may even be used to “write” the words on a blank wall in a dark room (Hayes, 1975).

To provide a neurological impression of the spelling words have the child “write” the words with his finger in a salt box. The salt box is made by lining the bottom of a flat box with black construction paper. Cover the black paper with a one-fourth inch layer of salt. The black and white image the child sees after
writing a word is representative of the black and white impressions he gets when using a pencil to write on white paper. The salt box is also helpful for teaching the letters of the alphabet, vocabulary, and handwriting.

To stimulate visualization, memory, and gross motor skills, let the child water paint his spelling words. Give him a paint brush with half-inch to three-inch bristles and a small container such as a margarine tub or cottage cheese carton filled with water. After dipping the brush into the water, let him paint the spelling words on the chalkboard. Water painting is also useful for practicing the letters of the alphabet, vocabulary, math facts, and handwriting (Vitale, 1982).

For the tactile-kinesthetic learner write a spelling word on plain paper and place the paper under a piece of screening. Have the child trace the word with his pointing finger, first with his eyes open, and then with his eyes closed. Any heavily textured material may be used to provide the sensory stimuli. (Vitale, 1982)

Color cues used for each vowel help cue children to the different vowel sounds. These colors also help eliminate the omission of middle syllables in words. (Example: "Novber," "Octber") The color forces the child to attend to the middle part of the word (D'Zamko and Hedges, 1985).

Another highly stimulating method for practicing spelling words involves body movement. First, write the words on large flashcards so they can be seen easily. Next, take the child outside or to the gym to practice the words. Jumping jacks, hopping, jumping, toe-touching, clapping, or any type of body movement may be used. Hold a card up in front of the child and instruct him to say and spell the word before he does any moving. Last of all, have him do as many jumping jacks as required to spell the word letter by letter. The word "later" will require seven jumping jacks movements, as follows:

```
  l a t e r
  l a t e r
  l a t e r
  l a t e r
  l a t e r
  l a t e r
  l a t e r
```

(Vitale, 1982)
Word searches, computer-generated crossword puzzles, and games can be used with phonetically irregular words. Plastic letters and the Language Master are also helpful (Dangle 1987).

Since proofreading can improve spelling performance, the following ideas are suggested by D'Zamko and Hedges (1985):

A. Have the student choose the correct spelling from several alternative spellings.

B. Prepare sentences which have one misspelled word in each sentence. Let the student circle each misspelled word.

C. The dictionary should then be used by the student to verify the suspected error.

Crossword puzzles will motivate some students to become better spellers. Charting individual progress by allowing one point for each letter in the correct position may also be motivational (D'Zamko and Hedges, 1985).

Mercer and Mercer (1981) propose the following spelling activity to help the student with troublesome words. Each word that causes the child some difficulty should be kept in a file box. The cards should also contain definitions and/or pictures and should be arranged alphabetically. Encourage the child to study his cards and to practice writing them from memory. Add new words and delete others as he progresses. According to the authors most spelling programs present a fixed list of words each week. After the list has been studied, a test is given (usually on Friday). This method seldom results in mastery of all the words by all the students, since misspelled words on the test are usually ignored or left for the child to learn on his own.

Another procedure, using a flow list of spelling words, has been proclaimed as a method in which students learned words more quickly and also showed similar or superior retention of learned words. A fixed list of words are given to the child to practice at his own rate until he is able to spell them all correctly on a certain number of tests. Each word is dropped when it has been correctly spelled on two consecutive days. When a word is dropped from the list a new
(unpracticed) word is added. The list is individualized so that the child does not spend time practicing known words (Mercer and Mercer, 1981).

It is important that the spelling words be corrected immediately following the test. the teacher and the pupil analyzing the errors and making the corrections together. In this procedure the teacher spells the word aloud, emphasizing each letter as the student points to the letter. As the student touches each letter he notes the errors and then rewrites the word correctly (Graham and Miller, 1979).

A good visual spelling activity requires the student to complete words in sentences by filling in omitted letters. Reusable work sheets or dittos may be constructed by using words from basal stories or spelling textbooks. For example, The _og and ca_ play with a bi_ _all (Mercer and Mercer, 1981).

Present several words and their configurations to the child. Have him match each word with its configuration (Mercer and Mercer, 1981).

![Diagram](image-url)

The hidden word format may be used to provide practice in letter sequence of spelling words. Give the student a puzzle and a list of spelling words. Ask him to locate each hidden spelling word and circle it (Mercer and Mercer, 1981)
Give the child a familiar list of spelling words, then describe one of the words phonetically. For example, the word *across* may be described as a two-syllable word beginning with a vowel and ending with a double consonant. After the child identifies the word give him a turn to describe a word. Other ways of describing words might include rhyming words, definitions or descriptive clues. A game can be played by having one child describe a word. The other classmates are given one minute to guess the word. The first person to say the correct word goes to the chalkboard and writes it. If he spells it correctly, he gets to describe the next word (Mercer and Mercer, 1981).

Some students may be motivated by practicing the spelling words on a typewriter. The letters can be pronounced as each one is typed, thus combining sight, sound and touch.

Vitale (1982) suggests air writing for practicing spelling words. This provides a good visual model. First, write a word on the chalkboard and have the child read it aloud. Next, have him close his eyes and visualize the word. Spell the word for the child. As the word is being spelled, have him write it in the air with his index finger while keeping his eyes closed. While he continues to have his eyes closed, ask him to spell the word as he writes it in the air. Next, ask him to see and say the word inside his head while writing it in the air. Finally, ask him to open his eyes and write the word on paper. (Letters and numbers may also be taught with the use of air writing.)
Hayes (1975) advocates the use of acronyms and mnemonic devices for teaching lists of words or difficult spelling words. The nonsense words will cue the child to the order of the list of the correct letters in the word to be spelled.

Spelling words may be sung to familiar tunes or the music scale. The children can practice singing the words as a group or individually with teacher direction. During a spelling test the child can be taught to sing the words internally (Vitale, 1982).

Crossword puzzles built from spelling words provide practice in writing the words and learning the definitions. Students can also write their own crossword puzzles by using new and review spelling words along with everyday words (Mercer and Mercer, 1981).

The old fashioned spelling bee continues to be a favorite for review of words. Two other motivational games follow.

**Spell It - - Keep It Card Game**

**Materials:**
Cards with spelling words written on them and placed on the chalkboard tray with backs to the class.

**Directions:**
Divide the class into two teams. A student from one team selects a card and reads the word. A student from the other team must spell the word. If he spells the word correctly he gets to keep the card. If the word is misspelled a child from the first team has a chance to spell it and get the card. Then a student from the second team selects and reads a card. The process is repeated until all the cards are gone from the tray. The winning team is the one having the most cards (Mercer and Mercer, 1981).
Telegraph Spelling

Materials:
Two sets of 4" X 6" cards with letters from the spelling words printed on them.

Directions:
The class is divided into two teams and each child is given a card. The teacher
pronounces a spelling word and the members of each team arrange themselves
in the proper order at the front of the room. The team that correctly spells the
word the quickest wins a point. The team with the most points, at the end of a
specified time, is the winner.

Being able to spell correctly is essential since it enables others to read what
has been written. The almost correct spelling is not good enough as this gives
others an unfavorable impression and thus the speller may be considered
uneducated or careless (Mercer and Mercer, 1981). Therefore, it is important for
the teacher to motivate each child to use all his abilities, including auditory
discrimination, visual discrimination, sequential memory, and knowledge of
spelling rules, to gain competence in his spelling skills.
HANDWRITING

The teacher may find that writing problems fall into two categories—poor penmanship and/or deficits in written expression. Pennmanship or handwriting involves the visual-motor tasks of copying, tracing, and writing from dictation. Written expression is a higher form of communication which demonstrates how an individual organizes his ideas to convey a message. "The skill of written expression usually is not acquired until an individual has had extensive experience with reading, spelling, and verbal expression. Problems in written expression may not be diagnosed until the upper elementary school years" (Mercer and Mercer, 1985, p. 435). Therefore, the ideas and comments in this chapter will be directed primarily in the area of handwriting since the information in this literature is principally for primary teachers in the elementary school and since problems with written expression may not become apparent until later years.

Writing and reading compliment or parallel each other inasmuch as both require knowledge of the alphabet, distinguishing one letter from another, sound-letter correspondence, spelling, punctuation, and capitalization. Writing as a means of self-expression involves and integrates visual, motor, and conceptual abilities (Mercer and Mercer, 1985).

Many special children have poor handwriting which may be caused by poor fine motor control, poor visual discrimination and memory, and/or spatial difficulties.

To strengthen muscles and improve motor control permit the child to perform manipulative exercises such as cutting with scissors, squeezing and molding clay, playing games that require clipping clothespins, and manipulating small objects such as nuts and bolts, cubes, buttons, and bottle caps. Also, providing
activities for the child to write on the chalkboard will strengthen the larger muscles of his shoulder, arm, and hand. For the young child this should be practiced before permitting him to use pencil and paper. Geometric shapes, lines, letters, numbers, and dot-to-dot drawings on the chalkboard can be effective and also fun for the child. Some children who have poor motor control may need to use a primary-size pencil, a large crayon, or a pencil grip. A rubber band or tape around the pencil can be as effective as the pencil grip (D'Zamko and Hedges, 1985).

For the child who has poor visual discrimination it may be necessary to use tactile-kineesthetic exercises and materials. Potpourri of Ideas (chapter one) contains ideas on reversals and Reading Readiness (in chapter two) contains ideas on the use of tactile-kineesthetic materials, each of which may be effectively adapted to the problems of visual discrimination as related to handwriting problems.

The use of colored directional cues such as green arrows and red dots may be used to help children learn where to begin and end movements when making both manuscript and cursive letters (D'Zamko and Hedges, 1985).

Some children may respond best to color coding the strokes, such as green for the first stroke, orange for the second, blue for the third, and red for the last. Green, as on the traffic light, signals go and red signals stop.
The use of a different crayon for making the various strokes helps the child become aware of the direction of the strokes, the formation of the strokes, and gives him an awareness of the visual image of each letter.

Another method to help children develop visual discrimination is to provide the child with pictures that contain hidden manuscript letters (upper and/or lower case). Encourage the child to locate all the hidden letters or ask him to search for specific ones. Also, ask the child to look for or to think of things that resemble a specific letter (Mercer and Mercer, 1985).

D'Zamko and Hadges (1985) suggest the following exercises for developing visual discrimination:

1. Tape large alphabet forms to the floor and have pupils walk or hop around the form.

2. Use yarn and glue to form the letters on construction paper.

3. Have the pupils use a stick (yardstick, broom handle, etc.) and their bodies to form each letter.

4. Use a red marker to write a letter in a paper plate. Cover the letter with corn meal or other granular material then have the pupils write the letters with their fingers. The red mark will provide feedback when the child makes the correct formation.

5. As the child forms the letter have him orally describe his movements. This provides auditory cues.

6. To encourage left to right progression teach the child to make manuscript letters which are oval and slanted slightly to the right. This also facilitates the transition to cursive writing.

If a child is having spatial difficulties special writing paper may be needed. For the student who is having difficulty with the proper placement of letters paper with raised lines or color-coded lines may be used. Graph paper is also often...
useful when teaching children with spatial difficulties (D'Zamko and Hedges, 1985).

For the child who has problems with letter size and/or staying on the baseline, make a cardboard frame with a rectangular piece cut out. The child writes in the window area with the cardboard providing a barrier for his downward strokes. Frames will be needed for one-line, two-line, and three-line letters. Tape may also be used on the writing paper to mark the baseline and the margins (Mercer and Mercer, 1985).

If the student is having difficulty with spacing letters within a single word, and/or between words, an overlay sheet may be helpful. Take a piece of notebook paper and trace over the lines with a felt-tip pen. Next, draw vertical lines which are one-letter distance apart. These lines will make squares that are the appropriate size for the letters. Have the student place his notebook paper on top of this overlay sheet and use the felt-tip lines as a guide for proper spacing -- a letter in each square and skip one square for the space between words.

Another method to use with the student who has difficulty remembering to space between words is to give him a pencil that has blue lead on one end and red lead on the other end. Each time he writes a word he turns the pencil over and writes with a new color thus alternating blue and red. Changing the color for each word becomes the cue to space properly. An additional method to help the student with spacing between words is to have him place the index finger of his
nonwriting hand at the end of each word. The finger prevents the words from running together (Mercer and Mercer, 1985).

A child who has a problem in writing should have a copy of the upper and lower case letters (cursive and/or manuscript) taped on his desk. Often the distance from the letters on the wall chart to the paper on his desk offers too many distractions. Having his own copy of the letters will make it easier for him to see how the letters are formed and also having a copy of both types of letters, manuscript and cursive, will help him make the transition from manuscript to cursive (Grabow, 1978).

As was mentioned earlier in the exercises for developing visual discrimination, D'Zamko and Hedges (1985) suggest a method of teaching manuscript which encourages left to right progression and facilitates the transition from manuscript to cursive. This method involves teaching manuscript letter forms that are oval and slanted slightly to the right.

To help children become more aware of the proper formation of the cursive letters have them glue yarn or string on a pattern card that contains a cursive letter or word (Hayes, 1975). Another cursive writing method which may improve penmanship is to encourage the students to start all cursive lower case letters from the line. This method will help make the student aware of the differences between the upper and lower case letters which are similar (Aa, Cc). Mercer and Mercer (1985) suggest having the student practice letters with similar movement patterns at the same time.

A child who has visual learning problems may experience the following types of writing problems: 1. He may leave out words or phrases when writing. 2. He may have trouble copying. 3. He may have trouble writing words he knows well. To remediate these problems the student can be taught to "talk to himself" while writing. He should repeat over and over to himself the words that he has read from the board. While repeating the words he should write them on his paper. He may begin by talking aloud to himself then later he can learn to "talk" silently to himself (Hayes, 1975, p. 48).
The following activity is useful in helping students become aware of the use of capital letters in a sentence. As a sentence is read have the children act in a specified way to indicate when the capital letter is needed. Children might be asked to stand up, wave arms, jump, etc. Individual children could create sentences and direct movements (Feinberg, 1976). This idea could also be adapted to include commas, periods, question marks, and exclamation marks.

The dominant factors for the successful use of the ideas presented in this chapter are summed up in the following six key statements to successful handwriting instruction.

1. Closely supervise handwriting practice while skills are being formed.
2. Give immediate feedback to correct errors.
3. Emphasize student analysis of errors.
4. Provide close-range models of correct letter formation.
5. Repeated use of drill on correct letter formation.
6. Emphasize only the activities which have value toward proper penmanship (Mercer and Mercer, 1985).
Each child is unique in the fact that he has his own preferences, desires, abilities, and learning styles. When a teacher looks for methods to instruct the special child she needs to consider the child's uniqueness. Does he learn best by methods that are auditory, visual, tactile-kinesthetic or by a combination of these methods? The teacher does not need a new curriculum for the special student, however, she may need to modify or adapt the curriculum, her methods and materials. Therefore, she needs to capitalize on the child's uniqueness by using his strengths to help remediate his weaknesses, by giving the student choices through the use of a variety of methods, materials, and strategies, and then relating these new experiences to skills and ideas the child already knows. When the child can relate the new information to his previously learned information, he is more likely to remember and assimilate the new. The teacher's job is to help the child value his uniqueness by building on his self concepts. If he can feel good about himself he will want to learn.

Since all children are different and all have varying needs, it is an impossible task to give teachers answers to all the problems of special children. However, it is hoped that these Special Ideas will give the teacher some keys to stimulate her expertise and talents so that she may adapt her own ideas for the special children in her classroom.
GLOSSARY

Adaptive Education: A process of altering the educational programs to accommodate the integration of exceptional children in the regular classroom to include: the identification of educationally relevant characteristics of gifted children and those with intellectual, emotional, physical, speech, language, auditory, and visual disabilities; utilization of relevant special education methods and materials; modification of the curriculum and classroom environment; and utilization of supportive services and personnel, including resource teachers.

Choral Reading: "Reading done orally by two or more pupils from the same passage at the same time" (Ekwall, 1970, p. 3).

Disruptive Classroom Behavior: Any action which interferes with instruction or activities of an individual student or a group of students. This includes: out-of-seat actions, talking-out inappropriately, the use of sarcasm, swear words, and temper tantrums.

Handicapped: Having a deficiency, especially an anatomical, physiological, or mental deficiency, that prevents or restricts normal achievement.

Individual Differences: The rate at which children learn and the mode with which they learn best.

Integrated Classroom: An act or process of bringing together the handicapped students with the students in the regular classroom for instructions.
Learning Disabled: One whose learning pattern deviates from the norm to such a degree that it is difficult for the child to acquire academic skills through ordinary classroom instruction. For this child there is a discrepancy between achievement and intelligence. In other words there is a significant difference between what the child is judged capable of learning and what he has actually achieved.

Least Restrictive Environment: The action of educating the handicapped child with nonhandicapped children to the maximum extent appropriate to that child.

Mainstreamed: The process of integrating handicapped pupils into regular classrooms.

Phonics: The use of letter sound relationships to gain pronunciation of words. They include learning the consonant sounds (initial, final and medial), consonant blends, vowel sounds, vowel rules, and rules for the various sounds of g, c, and x. Some authorities consider word families and syllabication rules a part of phonics (Ekwall, 1970).

Sight Word: "Any word that a reader has seen enough times in the past to enable him to recognize it instantly..." (Ekwall, 1970, p. 4).

Slow Learner: The dull normal or dull average child, or one who is borderline in intellectual functioning and is somewhere between the mentally retarded and the average child. These children generally have an IQ range roughly below 85 and above 68. They are among those found at the lower end of their class in academic achievement. They are not equally slow in all activities or abnormal in all their characteristics.
Special Children: A term used to refer to the learning disabled, slow learner and/or underachiever.

Special Education: Specially designed instructions, at no cost to the parent, to meet the needs of the handicapped child.

Structural Analysis: “An individual’s analysis of words through the study of roots, prefixes, suffixes, word beginnings, word endings, possessives, plurals, word families, compound words, accent rules, syllabication rules” (Ekwall, 1970, p. 4).

Underachiever: The student who does not reach his potential as a result of his disadvantaged environment.

Word Analysis: “The ability to derive the pronunciation and/or meaning of a word through phonics, structural analysis, or context clues” (Ekwall, 1970, p. 4).

Word Recognition: “A reader’s ability to read a word which he has come into contact with previously. It may be through a process of associating it with its context, its configuration, or any other means that enables him to recognize a word” (Ekwall, 1970, p. 4).
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