INDIVIDUALIZING INSTRUCTION FOR HANDICAPPED STUDENTS AT THE SECONDARY LEVEL

by
Catherine Benson

for
State of Iowa Department of Public Instruction
Division of Special Education
Grimes State Office Building
Des Moines, Iowa

Sponsored by
The Midwest Regional Resource Center
Drake University
Des Moines, Iowa

June 1980

This project has been funded at least in part with Federal funds from the Department of Health, Education and Welfare under contract number 300-78-0023. The contents of this publication do not necessarily reflect the views or policies of the Department of Health, Education and Welfare, nor does mention of trade names, commercial products or organizations imply endorsement by the U.S. Government.

TABLE OF CONTENTS

Page

GENERAL INTRODUCTION

The Public Law 94-142, The Education for all Handicapped Children's Act, has mandated that all handicapped students be integrated into general education classrooms whenever appropriate. At the building level, this means that general and special educators will need to work closely together to individualize classroom instruction to provide appropriate educational experiences for handicapped individuals. This will entail, on the classroom teacher's part, becoming more knowledeable about various handicapping conditions and the limitations these handicaps place on students who are enrolled in general education classes. Together, the general and special educators will need to adapt the curriculum to meet the student's needs.

The purposes of this handbook are to (1) describe problems associated with selected handicapping conditions and provide alternative approaches to teaching the regular curriculum; (2) provide a systematic approach to adapting curriculum at the secondary level; and (3) list specific modifications in secondary content areas.

The handbook is organized into six units. The first unit includes the general introduction and six sections which describe these handicapping conditions: visual impairments, hearing impairments, physical handicaps, mental disabilities, learning disabilities, and emotional disabilities. Units two through five provide suggestions for adapting curriculum and teaching strategies for content area subjects: Language Arts, Science, Math and Social Studies. The sixth unit includes ideas for teachers to use in teaching students study skills and modifying testing procedures. Careful attention has been given to avoid duplicating many ideas among these units.

All units contain a "Helpful Hints" section where suggestions are listed for teachers to consider when planning and implementing instruction for students with specific learning problems. The strategies are recommended for general education teachers at the secondary level, grades 7-12. All units also contain a complete bibliography which includes reference and instructional materials which may be useful in developing an individualized program.

One should note that many of the ideas for modifying the curriculum and teaching adaptations are applicable to non-handicapped as well as handicapped students. The majority of suggestions are simply good teaching techniques which can be used with <u>all</u> students. Many of the ideas are those which are currently

in practice by teachers; the information has been compiled from discussions with teachers and from a search in literature. All of the ideas are ones which someone found successful in a general education classroom, based on his/her experience.

EMOTIONAL DISABILITIES

INTRODUCTION

According to Iowa law, students with emotional disabilities are those who exhibit behaviors which are inappropriate to their age level or situation. This inappropriate behavior significantly interferes with the learning process, interpersonal relationships or personal adjustment of the student. The determination of this handicap is largely based on the consistency, intensity, and duration of the behavior of concern (adapted from Rules of Special Education, State of Iowa, Department of Public Instruction).

This section includes suggestions which can be helpful to you when working with students with emotional problems. The "Helpful Hints" are listed in two parts: (1) the first section lists ideas to consider prior to working with the student in the classroom. Reviewing these tips will help the general education teacher feel more prepared for handling the student with emotional problems; (2) the second part includes strategies to implement during class.

If you are teaching a student with emotional disabilities, work closely with the resource teacher, parents, and other teachers in your building to coordinate a consistent and appropriate reinforcement and instructional program for the student. If necessary, contact the consultant for emotional disabilities at your Area Education Agency or Department of Public Instruction for additional ideas.

At the end of this unit is a bibliography of books and/or articles for your reference.

HELPFUL HINTS:

Before instruction begins

1. Involve parents and the student's other teachers in developing a reinforcement strategy; i.e., pinpoint what specific things are rewarding to a student, how frequently a student will be rewarded, and so forth. This procedure will help insure the consistent application of the behavior management plan. (By "behavior management plan" we are referring to the strategies teachers decide to use to change behaviors a student demonstrates.) For example, if the student "talks back" to teachers in several classes, those teachers use the same

strategy when this occurs in their classrooms. The consequences (or responses to the undesirable or unacceptable behavior) remain consistent.

2. Make sure the reinforcement you chose is really rewarding to the child. Tips for identifying appropriate reinforcers are:

   a. Ask the student what it is that he/she likes most as a reward. For example, what can a person say or do to/for the student that makes him/her "feel good"?

   b. Observe the student. What the student chooses as a free time activity may make a good reinforcer. For instance, what extracurricular activities are of interest to the student?

   c. Use what has worked in other situations with that student or others who had similar problems. For a student who has aspirations of playing on the basketball team, it may have proven successful for him/her to earn extra time in the gym to practice free throws or lay-ups if he/she had not talked out of turn in science class.

   d. Give the student choices. Provide the student with a list of possible reinforcers and have him/her check those that would be desirable.

   e. Remember, any single reinforcer tends to lose its reinforcing value after a period of time. "Winning" the opportunity to swim at the indoor school pool may not be so inviting after two weeks of having earned a daily swim.

   f. Vary the reinforcement schedule; i.e., gradually phase out the reinforcement as the student's behavior changes. Suppose a student is suspended because he has been involved in several fights where other students have been injured. The final incident is when the student sets off firecrackers in the boys' restroom which results in damage to school property. When the student returns to school (following the suspension), the principal and teachers reinforce the student at the end of each period for not having been involved in a disturbance. Gradually, the reinforcement is phased out to a daily interval. The student gradually replaces the unacceptable behavior with acceptable behavior; he/she comes closer to the goal of remaining in school for "X" weeks without trouble.

3. Sometimes students with emotional problems have difficulty replacing negative behaviors with positive behaviors. You may need to make certain the student clearly understands what the acceptable or positive behaviors are. Set up simulations where you ask the student how he/she could change the negative

behavior to a positive one. Inquire at your Area Education Agency about films that are available that show "blow-up" situations and then allow students to discuss how the problem might have been avoided.

4. Reduce or eliminate stressful situations in class. Because students with emotional problems often have less tolerance for frustration, it is important to try to anticipate potential problems:

   a. Prepare students in advance for changes in activity or a routine to make transition times easier.

   b. If the student is having problems dealing with confusion or a change in routine, give the student an errand to run, or assign him/her a specific duty.

   c. If the student with emotional problems cannot get along with another student, separate them. Do not assign them as lab partners or to complete projects together.

   d. When it is near test time or the due date for an assignment or project is approaching, ask the student how he is doing in regard to completing the task. Encourage the student to complete the task and offer assistance if it is needed.

5. Assist the student in identifying problem situations and developing strategies for avoiding blow-ups.

6. Recognize that students with emotional problems will not always perform consistently from day to day. Praise and positive reinforcement will be necessary at times when the student tries to comply and complete a task.

7. Recognize that students with emotional problems may exhibit poor academic skills. Therefore, tasks may need to be simplified or shortened to avoid frustration.

During class - consider implementing these strategies

1. Make sure students understand what behavior is appropriate in the classroom, on the school grounds, during assemblies, in the cafeteria, and so forth. Be very specific when explaining rules. Post the rules in a location where they can be read easily. Repeat the rules on a daily or weekly basis if necessary. Provide students with copies of the rules.

2. Remain consistent in demands, daily routines and in the use of positive and negative reinforcement.

3. Use the student's successful experiences as opportunities for acknowledging the student with praise. If the student came to class and sat down quietly without distracting others for three days consecutively, praise the student, call the parent, and indicate this to other teachers in the student's presence.

4. Allow students the opportunity to work in areas with minimal distraction. It may be helpful to set up an isolated area where a student is not visually or auditorially distracted or bothered by movements of other students. A coat closet off of a room, study carrels, or a desk faced away from the group toward a wall may be possible "quiet spots."

5. If a student becomes disinterested and/or restless during class:

   a. Ask students questions.

   b. Ask for opinions on a specific aspect of the topic or technique being discussed or practiced.

   Use a and b only if you are confident the student is prepared and can answer the questions; otherwise, these methods may trigger a potential "blow-up."

   c. Ask for a student (or students) to demonstrate the concept. (In other words, get them to actively participate.) For instance, if you are talking about diagramming sentences, put examples on the board or overhead projector and ask students to diagram them correctly.

   d. Stand, sit, or walk near the student who is having problems.

6. Develop a variety of signals that communicate to the student a feeling of disapproval and control (eye contact, hand gestures, snapping fingers, nodding the head). This is more effective at beginning stages of misbehavior.

7. If an activity or discussion topic creates problems for a student and he/she becomes hostile, angry, or "uncontrollable," have a preplanned alternate activity ready and immediately assign it to the student. The activity should involve motor activity and should be different from the task which caused the problem. The excitement, verbalization, hostility, or whatever negative behavior the student demonstrates is then channeled to a constructive activity. Another student can be assigned to assist the student in completing the alternate activity. Have instructions for the alternate activity prepared and required materials available to avoid need for supervision.

If the activity is well planned and requires few directions, it will not disrupt your class to focus your attention to the problem for a brief period of time. You may want to discuss the directions and procedure to another student who will be "assigned" to the problem student prior to class beginning.

The aim is not to punish but to help the student gain control over feelings of frustration, anger, uncontrollable laughter, or any other emotion which has gotten out of control.

8. Make sure students understand why their behavior is inappropriate by giving clear feedback as soon after the misbehavior as possible. Do this quietly, calmly, and privately. If the student is angry because he/she must complete an assignment and slams a book on the floor, which breaks the binding, act promptly and implement the consequence of the behavior immediately. For example, if the student is to be sent to the principal's office, then send him/her immediately with a note explaining why the student is being asked to leave class rather than waiting until the end of class and sending the student to the principal's office, saying, "I didn't like that."

9. When possible, ignore rather than punish misbehavior. Ignoring is more desirable because you are not drawing attention to the problem. For instance, a student scoots his desk little by little closer to a window. He/she is trying to get your attention. Rather than providing the attention for negative behavior, ignore it. Many times the behavior stops.

10. Listen to students when they have legitimate problems, and help them develop realistic solutions.

11. Defuse tension through humor. Use humor to clear the air and make students feel comfortable when problems arise or blow-ups occur. This demonstrates to the students that the teacher is secure and that he/she can be relied on during stressful periods.

HEARING IMPAIRED

INTRODUCTION

According to Iowa definitions, "impairment in hearing is a loss of auditory sensitivity ranging from mild to profound which may affect one's ability to communicate with others. 'Deaf' pupils include those individuals whose hearing impairment is so severe that they do not learn primarily by the auditory channel even with a hearing aid, and who need extensive specialized instruction in order to develop language, communicative and learning skills. 'Hard of hearing' pupils include those individuals whose level of communicative ability is adequate to allow them to acquire speech, language and to learn by auditory means although they may experience difficulty under certain circumstances, in oral communication, language and learning skills with or without amplification and who may need various classroom and instructional modifications in order to make full use of school experiences." (Rules of Special Education, State of Iowa, Department of Public Instruction)

The most noticeable difference between the student with a hearing loss and the student without one is in speech production and the acquisition of language. The degree and type of hearing loss will influence how well the student has developed language and speech skills.

A student who is hard of hearing may be able to use a hearing aid quite effectively and therefore speak understandably. The deaf student may need to find alternative methods to communicate such as fingerspelling, signing or lip reading.

It is helpful to the hearing impaired student if the teacher understands how a hearing aid operates so that the teacher realizes how well the student can hear using the device and can help with simple repairs in case of malfunction. See your Area Education Agency Consultant for the Hearing Impaired for this information.

This unit begins with a "Helpful Hints" section which identifies suggestions for a general education teacher to consider when planning, programming, and instructing a class which includes a hearing impaired student. The "Hints" are listed in order, beginning with those that require the least amount of modification on the teacher's part and ending with those that require the most.

Following the "Helpful Hints" is an interview with Debbie O'Donnell, a teacher for hearing impaired students at Callanan

Jr. High School in Des Moines, Iowa. She discusses some ideas which she has found helpful in integrating hearing impaired students in general education classrooms. At the end of this unit is a bibliography of books and articles for your reference.

If you are teaching a hearing impaired student, contact a consultant for the hearing impaired from your Area Education Agency or Department of Public Instruction for specific ideas which will be valuable to you, based on the student's individual needs.

Additional information for programming is listed in the content areas in separate units of this handbook. The strategies are appropriate for any student demonstrating learning problems at the secondary level.

HELPFUL HINTS:

Classroom Presentations

1. Talk normally. Don't exaggerate the mouth movements. Don't slow down and stretch out single words. That is just as hard to lipread as too rapid a rate. Speak distinctly, but not loudly.

2. As much as possible, face the hearing impaired student to facilitate lipreading. Allow students to change seating positions freely to increase their visibility of the teacher.

3. Do not expect a student to lipread if you are standing further than 8 to 10 feet from him/her.

4. Natural gestures are fine, but excessive motion of the head or arms, or pacing back and forth makes words difficult to catch.

5. If you want to get the attention of the deaf student and calling the student's name is not effective, gently tap or touch the shoulder, arm, or hand of the student. Try not to startle him/her.

6. When talking about something or someone in the room, glance, point or walk to the object.

7. Be consistent in the presentation of concepts (e.g., consistent use of the word "assignment" rather than interchanging it with the words "task," "activity," homework," and so forth).

8. Do not assume the hearing impaired student has understood everything you have carefully explained, even if he/she nods and acknowledges understanding. Ask the hearing impaired student to explain the point you made to make sure your message was received correctly. This is especially important to do with directions and key concepts. A peer could be assigned to "check" the student for understanding.

9. If a student does not understand you, it may have been because of phrases that were hard to lipread or a word which was unknown to him/her. If there is a misunderstanding, try rephrasing it yourself. However, don't oversimply and leave out meaningful words or phrases.

10. Alternate listening activities with other activities that require less attention. Because hearing impaired students become easily fatigued while listening, change the activity so a student can read or become a participant in a "hands-on" project.

11. Use visual aids such as diagrams, maps, charts, pictures, and so forth, that will assist in presenting ideas and concepts.

12. Use a "listening helper" or buddy to provide special help when it is needed (such as clarifying directions).

13. Arrange for several student volunteers in class to be note-takers. It is difficult for the hearing impaired student to take notes and watch the instructor at the same time without losing part of the message. In return, it may be possible for the hearing impaired student to do something special for the note-taker.

14. If the room needs to be darkened for slides or films, make sure there is enough light on the face of the instructor so the hearing impaired student can follow any commentary or questions.

15. Lighting is best if it hits the speaker's face. It is impossible to lipread a person who is standing with his back to a window because the glare is blinding.

16. By frequently using an overhead projector rather than a chalkboard, the teacher is able to face the classroom and facilitate lipreading.

17. Write assignments on the board or give written copies to the student.

18. If a lesson involves a spoken recording, provide a copy of the text.

19. Provide outlines of presentations for students to follow during class. The student not only has the "main idea" listed but he/she can jot notes pertaining to examples given.

Teaching Strategies

1. Hearing impaired students must often expend considerable energy to hear others and may become fatigued especially near the end of the day. This should not be interpreted as lack of interest.

2. Check with parents, the nurse, or special education teacher/ consultant about how a student's hearing aid functions.

3. If the student demonstrates an unusual loss in hearing, check to make sure his/her hearing aid is on and at correct volume, or send the student to the nurse for a hearing aid check and a check for ear infection. A hearing aid that is set too high can be equally as handicapping as one that is set too low.

4. Keep the noise level down, since most hearing aids amplify all sound and cannot sort out the important from the unimportant sounds. The hearing aid cannot completely normalize hearing; some distortion is inevitable and all sounds are amplified.

5. Provide feedback to students relative to their handicaps. For example, hearing impaired students may need to be told to speak more softly. This should be shared privately.

6. Encourage the hearing impaired student to respond orally even if speech is not good. Through sufficient exposure, the teacher will have progressively less difficulty in understanding him/her.

HEARING IMPAIRED

An interview with Debbie O'Donnell
Teacher for the Hearing Impaired
Callanan Jr. High School
Des Moines, Iowa

INTRODUCTION:

The most important point to keep in mind is that the term "hearing impaired" covers two distinct and very different groups of students. "Deaf" usually refers to a student who uses sign language, needs an interpreter, and may be mainstreamed less than the "hard of hearing" student, who functions more nearly like a hearing student. The teacher should know if his/her student is deaf or hard of hearing. It makes a big difference. (Refer to the chart Debbie developed which is at the end of the interview. It describes characteristics which help the teacher differentiate these two groups.)

In some schools there are deaf students who are responsible to their self-contained classroom teacher; in the same building hard of hearing students may report to a resource teacher. This can be very confusing for classroom teachers. It helps for everyone to know in what program a student is enrolled. The hearing program teachers should provide general education teachers with a list which tells what students are enrolled in specific programs so they know to whom the student is ultimately responsible. This is helpful also from the coordinating standpoint, so teachers can work together to provide a more appropriate program for each student.

HELPFUL HINTS:

1. Tests and assignments are not modified as a general rule. Hearing impaired students are expected to produce "on par" with other students and are graded equally (i.e., the same criterion applies).

2. One way the classroom teacher can assist the resource teacher is by providing outlines, vocabulary lists, pre-tests, and post-tests so the resource teacher can tutor the student.

3. It is the resource teacher's responsibility to check with the classroom teacher and make certain the student is handing in assignments. Some resource teachers do this themselves; others require the students to do the checking; i.e., they keep a chart or bring assignments and appropriate materials to the resource room to complete.

4. The classroom teacher can help the self-contained classroom teacher of deaf students by learning to use an interpreter in the classroom appropriately. In a nutshell: teachers must speak to the student, face him/her and direct comments to the student, not to the interpreter.

5. Teachers should not believe that nodding means the student understands what has been said.

6. No teacher should be required or even expected to learn sign language. It is great if the teacher wants to. If a teacher has a deaf student who can understand sign, then by law an interpreter should be utilized. If a teacher has a hard of hearing student in the classroom, an interpreter probably is not needed.

7. A hard of hearing student is expected to give oral reports and work in small groups without assistance.

Final Note:

Having a deaf or hard of hearing student in a general education classroom should not be a drain on the teacher. Support personnel are available to keep it from becoming so.

Hearing Impaired

Deaf	Hard of Hearing
May use hearing aid.	Usually uses hearing aid.
Uses sign language, lipreading and note reading to communicate in mainstreamed classes.	Uses speech and lipreading adequately.
Syntax will seem odd to general education teacher.	Normal syntax.
Speech largely unintelligible.	Understandable speech. Mistakes will be in word endings (-s, -ed, -ing). Will have words in right order.
Low vocabulary skills.	Some vocabulary gaps.
Needs interpreter is student uses sign language. (Almost all deaf people do.)	May use an interpreter if one is available, but it isn't considered necessary. Often doesn't know sign language.
Uses self-contained classroom teacher more hours per day and often is integrated fewer hours per day. Is in self-contained classroom for more academic classes.	Uses resource teacher for tutoring in regular classes, usually one hour per day.

Obviously, there are exceptions. Some hard of hearing students sign. Some deaf students are integrated for all classes. Some deaf students do not even sign! Use the above generalizations until you get to know the student.

Developed by Debbie O'Donnell, Teacher for the Hearing Impaired, Callanan Jr. High School, Des Moines, Iowa.

LEARNING DISABILITIES

INTRODUCTION

Students who have learning disabilities are those who have average or above average intelligence but are not achieving in the regular classroom according to their potential. The deficiencies are not due primarily to a visual or hearing loss, mental disabilities, severe emotional disabilities, a different language spoken at home or excessive absences (from Exceptional Children: A Shared Responsibility, An Educator's Guide, Des Moines Independent Community School District, Des Moines, Iowa).

This section provides "Helpful Hints" for secondary general education classroom teachers to consider when planning for and instructing students with learning disabilities. The suggestions are divided into two categories: (1) a section on "Teaching Strategies" which includes a number of ideas regarding the "how to" instruct students with learning problems, and (2) a section on "Modifying Assignments" which lists recommendations for adapting classroom and homework assignments for students with special needs. The suggestions are listed in order beginning with those that require the least amount of modification on the teacher's part and ending with those that require the most.

Many other ideas are listed in the subject units of this handbook (Language Arts, Science, Social Studies, Math, and Study Skills). Be sure to contact the resource teacher and/or consultant from your Area Education Agency or Department of Public Instruction for further ideas regarding available curriculum materials.

A bibliography is included for your reference at the end of this unit.

HELPFUL HINTS:

Teaching Strategies: General

1. Individualize a program based on knowledge of the student's strengths, weaknesses, levels of academic achievement, and emotional needs.

2. To determine what works best for the student:

   a. Ask him/her.

   b. Observe the student. He/she will tend to use the strategies which work best. For example, in deciding where a student

works best independently, seat the student in different locations of the room and observe where he/she is able to concentrate best. Some students need to be more isolated than others. Some students prefer working at a larger table rather than a desk.

c. Use what has worked best in other situations with that student. For instance, if you know that a student works effectively with a peer tutor in reading assignments in a social studies class, you may want to select a peer tutor to assist the student with reading in science.

d. Give the student choices or alternative methods of completing assignments or tests. Would your student prefer giving an oral report rather than writing one?

e. Confer with the learning disabilities teacher for recommendations.

3. Once goals are outlined for the student, divide them into smaller tasks or objectives which the student can achieve gradually and successfully. The resource teacher and you can coordinate these objectives.

4. A contract approach is very useful in helping the student with learning disabilities accomplish objectives. A contract is an agreement that a student will finish a specific task or change a certain behavior. The contract usually includes what the student will accomplish, the expected date of completion, and signatures of all persons responsible for the contract's implementation. It also may specify the reward to be given upon completion of the agreement.

5. Class rules should be specified and discussed. Consistency in following through with consequences is important and exceptions to the rules should be explained.

Teaching Strategies: Specific

1. Structure the day and establish a routine. Help the students develop strategies for organizing their time and materials by involving them in planning and scheduling. Specify how much time assignments should take to complete; possibly provide a chart where students can check off activities completed each day. Allow time for students to organize materials.

2. Inform the learning disabilities teacher, parents, and student if the student is beginning to fall significantly behind in course work. By doing so, it may be possible for adaptations to be implemented so the student does not "fail" the course.

3. Send notes home to parents stressing the student's positive accomplishments. Share the contents of the note with the student.

4. When the student is working at his seat and getting restless, stand near him/her. Touching also has a relaxing effect for some students. You might also provide the student with frequent opportunities for movement, such as distributing and collecting materials, erasing the blackboard, and running errands.

5. Make sure you have the student's attention before giving directions or instruction.

6. Present information and instructions in more than one way (e.g., written, verbal, demonstration, etc.).

7. If a student has difficulty in completing an assignment, check to make sure the directions are clearly understood by having the student repeat the instructions back to you.

8. Provide the student with a teacher-made "handbook" to be used in class. One prepared for Language Arts might contain a list of vocabulary words and their meanings or directions for preparing a topical outline. One for science could list the steps to follow in conducting an experiment and could provide "word banks" or words important to study for each unit. Other ideas are:

   a. special directions on reading and interpreting charts and graphs;

   b. proofreading tips;

   c. how to "set up" papers for assignments.

   The resource teacher can use the handbook to assist the student with specific problem areas.

9. Provide a list of course objectives and major requirements of the course, including specific dates for exams, types of assignments, outside reading sources and other pertinent information to the student, parents, and learning disabilities teacher. This can be used by them to monitor and assist the student to meet the class requirements.

10. Teach the student study skills. Refer to the Study Skills section of this handbook for specific ideas.

Modifying Assignments

1. If the student has difficulty completing written reports and assignments accurately because of spelling errors, incorrect sentence structure, and so forth, have students either tape record the report or have the written report edited by a volunteer or resource teacher before submitting it to the teacher.

2. Examine homework assignments to determine if they may be too lengthy. Either reduce the amount of homework for certain students or substitute study time in the resource room for homework.

   a. Teachers could agree to accept one report or paper that would satisfy a requirement for two classes. A student may write a biography about a famous scientist that might be accepted in both science and history.

3. Give the student textbooks that are less difficult to read, but cover the same content as a substitute for those texts usually used in your class. These texts may have a simpler format, easier vocabulary, and less material to cover.

4. If a student loses interest in an activity and becomes inattentive, reduce the length of the assignment. This will allow the student more success as well as exposing him/her to a variety of tasks which will stimulate his/her attentiveness. You may also want to modify the task so it is more "creative" or interesting/different for the student.

5. Directions may need to be recorded, so if you do not have time to explain them again, the student can listen to the instructions several times. A peer might be assigned to clarify confusing directions.

6. Provide a simple outline of the class lecture for each unit that can be used as a guide for the student during class presentations and discussions.

   a. The outline can also be a useful tool for preparing for a test.

   b. The resource teacher can use the outline when considering tutoring projects for specific students.

MENTAL DISABILITIES

INTRODUCTION

According to Iowa law, "mental disabilities" is a term describing students with significant deficits in adaptive behavior and subaverage general intellectual functioning. Adaptive behavior refers to the student's effectiveness in meeting the demands of his/her environment (such as taking responsibility for a job or knowing what to do in emergency situations). Subaverage general intellectual functioning is evidenced by performance of greater than one standard deviation below the mean on a reliable individual test of general intelligence valid for the student (adapted from Rules of Special Education, State of Iowa, Department of Public Instruction).

This section describes teaching strategies for secondary teachers to consider when programming for and instructing students with mental disabilities who are enrolled in general education classes. The "Helpful Hints" are divided into two categories: (1) the first category lists recommendations for the teacher to consider before he/she implements a program; (2) the second section lists suggestions for the teacher to use during instruction. Other "Helpful Hints" are described in the subject units of this handbook: Language Arts, Science, Math, Social Studies, and Study Skills. At the end of this unit is a bibliography for reference purposes.

For further recommendations contact the special education teacher or consultant for mental disabilities from your Area Education Agency or Department of Public Instruction.

HELPFUL HINTS:

Before instruction begins

1. Meet with the special education teacher to pinpoint learning strengths and weaknesses and to outline expected levels of performance.

2. Analyze tasks before instruction begins to determine prerequisite skills the student needs to complete the tasks. For example, if the student will be introduced to simple division, check to be sure the student knows the multiplication facts or can use a multiplication chart.

3. Sequence learning activities so that you first review a skill or concept with the student which is familiar to him/her or one previously mastered. Continue the sequence with skills which gradually become more difficult. By using the sequence and beginning instruction at a level where the student meets with success, you avoid frustrating the student with tasks which are too difficult. For example, in teaching a student to give correct change, first start with adding groups of coins, then as each skill is mastered, move to using dollar bills, and then finally paying for items and making change.

4. Scan all materials for new words. On worksheets change the wording so it is understandable; in texts underline new words which the student may need to have defined. Teach new vocabulary prior to a lesson being taught.

5. Prepare or obtain simplified materials with concise, easy-to-understand definitions of technical vocabulary, sentence structure and step-by-step instructions. It is helpful if the material also contains simple diagrams or pictures which describe the content. Caution: Be sure the vocabulary and pictures are not too elementary. Replace inappropriate pictures for those more appealing to secondary students.

6. Important facts in an assignment or book may need to be underlined or highlighted with a magic marker. Another student, volunteer or aide could do this for you.

7. Instructions, assignments, or tests may need to be written at a lower reading level.

8. Concentrate on teaching employable skills and providing on-the-job training experiences in the community. Work closely with the counselor and resource teacher in coordinating a program where the student can practice skills developed in school by working in the community.

During instruction

1. To minimize confusion, present only one concept at a time. In Language Arts, for example, it would be very confusing for a student with a mental disability to be introduced to adverbs and adjectives in the same lesson.

2. Provide concrete, practical application of skills taught. Relate the present learning to future situations. For instance, when teaching budgeting skills, use a checkbook or ledger and show how budgeting is needed to save money for shop tools the student wants to purchase. If necessary, provide experience using role-playing, films, slides, and pictures to make concepts more realistic to students.

3. Incorporate constant practice into the learning experience. "Overlearning" of skills is essential for retention. Providing many situations and examples where a student can practice the skill reinforces the concepts taught and will help the student generalize the skills to many situations.

4. When introducing an activity, show as well as explain to the student what is to be done. For example, when conducting an experiment, demonstrate to the student exactly how to do each of the steps of the experiment. Ask the student to read the steps to you, so you are certain he understands the directions. A "multi-sensory" approach is useful because students have many ways of learning and remembering the concepts presented.

5. Reduce the pace at which new skills are introduced. When teaching multiplication, rather than introducing 2 digit x 2 digit multiplication the day after you have introduced 2 digit x 1 digit multiplication, wait a week, allowing the student the opportunity to practice and master the first skill introduced.

6. Allow additional time for the student to complete work.

7. Structure activities and materials which are similar in appearance and content to those used by other students. Students are very "sensitive" to looking different; i.e., having specialized materials, tests, and so forth. For instance, when giving a three page single-spaced typewritten test to the class, give the student with learning problems a three page typewritten test that is double or triple spaced. Everyone sees the three pages stapled together and may think there is no difference. You may also wish to have the same length of test only use simpler vocabulary for particular students.

8. Assignments can vary within the class so that many students complete the requirements in different ways. In this manner, the student with learning problems does not appear to have a "different" program from the rest of the class.

9. Expect the student with mental disabilities to work at his/her potential and to produce the best he/she can. Challenge and praise the student for work done well.

PHYSICAL DISABILITIES

INTRODUCTION

Students who have physical disabilities are those with orthopedic conditions and chronic health problems. A physical disability is a physical impairment which substantially limits one or more major life activities. The term includes such diseases or conditions as orthopedic impairments, cerebral palsy, epilepsy, muscular dystrophy, multiple sclerosis, cancer, diabetes, and heart disease. Physical impairments do not constitute a handicap, however, unless they are severe enough to substantially limit one or more of the major life functions (adapted from Rules of Special Education, State of Iowa, Department of Public Instruction).

This section lists "Helpful Hints" for secondary teachers to consider if a physically disabled student is enrolled in his/her class. The suggestions are divided into two categories: (1) the first part describes general considerations for making the school building accessible for the handicapped; (2) the second section lists ideas for modifying equipment and making instruction appropriate for a handicapped student.

At the end of this unit a bibliography is included which lists references and articles which may be helpful to you.

Contact the consultant in your school district, Area Education Agency, or Department of Public Instruction for further recommendations.

HELPFUL HINTS:

General Considerations

1. Seek information from the parents, nurse, therapists and student regarding the student's condition and limitations it imposes. Can the student climb stairs without assistance, dress himself before/after P.E. class, and so forth?

2. Schools must comply with Section 504 of the Rehabilitation Act of 1973 in providing programs which are accessible for wheelchairs and crutches. Assess the building and classroom for architectural barriers and work with administrators to eliminate them. Ask the physically disabled student for suggestions in making modifications.

   a. Provide curb breaks on drives and parking lots and entries.

b. Install ramps or elevators for multi-level buildings.

c. Restroom stalls should be at least 36" wide.

d. Check to see that floors are non-skid.

e. Make switches accessible to operate.

f. Lower mirrors, telephones and water fountains.

g. Attach head or mouth controls for machinery, if needed.

h. Attach hand and foot controls on automated machines and equipment, if needed.

i. Provide handrails in restrooms.

j. Replace knobs with handles on cabinets and doors for amputees or weak hands.

k. Provide guard rails on power equipment.

3. Make specific plans for evacuating the physically disabled student during fire or storm drills.

4. Consult with a physical or occupational therapist regarding adaptations which can be made and how to make use of special prosthetic equipment. Become familiar with the function of the equipment; learn how to make simple repairs. Learn what signs to watch for which indicate the malfunction of the special equipment. For example, an electric wheelchair may be slowing down because its battery needs charging.

Considerations for the classroom

1. Many physically disabled students display a wide range of ability in academic skills. Just because a student has a physical impairment does not mean that he/she also has a mental disability. To determine each student's academic ability:

   a. Check records and gather information from the student's former teachers.

   b. Assess each student's skills using informal tests and observation.

   c. Make no assumption about the student's ability based on the degree of physical impairment. Intelligence cannot be determined by the degree of physical disability. Severely physically disabled students can be very intelligent and vice versa.

d. Review the sections on learning disabilities and mental disabilities if the student exhibits learning problems or sub-average intellectual functioning.

e. Contact the resource teacher or consultant for the physically disabled for further suggestions regarding assessment of academic ability.

2. Work with other students in the class to create an accepting climate for the physically disabled student.

   a. Show films or slides which discuss stereotypes and attitudes people have toward the handicapped.

   b. Invite guest speakers from the community who are physically disabled to discuss concerns and experiences.

   c. Provide simulations for nonhandicapped students to "feel" what it is like to be handicapped.

3. Provide assistance only when absolutely necessary. Use other students for help but encourage the physically disabled student to seek help independently when it is required.

4. Arrange classroom work areas and acquire special equipment to facilitate hands-on training experience.

   a. Use a lap board for making a work table on a wheelchair.

   b. If needed, use electric equipment to eliminate the need for strength to operate scissors, staplers, and so forth.

   c. Adjustable chalkboards, book-holders, and page-turners may be helpful.

   d. Tape papers to desks and use small balls of clay on pencils to help hold the pencil securely.

   e. Use a revolving shelf for tools and equipment.

   f. Provide work equipment (in shop) with adjustable heights.

   g. Use light-weight tools and equipment when possible.

   h. Suction cups can be placed under materials or equipment to keep them stable.

   i. Use an electric typewriter with a plate over the keys so the student's fingers or headstick does not get stuck between the keys.

   j. In home economics, use an electric mixer with lever controls rather than dial controls.

5. Assign the student a specific storage space near work areas to reduce the need for carrying materials, and so forth. Expect the student to store prosthetic devices in a safe place when not in use to avoid injury to other students.

6. Be aware of the student's endurance level and be observant of signs of fatigue. It may be very laborious for a student to sit and type a report for an hour straight; provide a change of activity and position for the student.

   a. Assess the student's work stamina in a variety of tasks. (Consult with the occupational therapist also.)

   b. Analyze tasks to determine essential manipulative requirements, the stamina required, and how frequently and how long the tasks will be presented.

   c. Encourage the physically disabled student to break physical tasks into segments that can be accomplished at different times or in different settings.

   d. Allow rest periods, if needed.

VISUALLY IMPAIRED

INTRODUCTION

In the State of Iowa, students with visual impairments are those "whose vision deviates from the normal to such an extent that they, in the combined opinion of an educator qualified in the education of the visually impaired and an eye specialist, require special education programs, facilities or services. Visual acuity and educational functioning are used in determining needs of partially sighted and blind pupils." (Rules of Special Education, State of Iowa, Department of Public Instruction)

As a secondary general education teacher, you probably have had little or no specialized training in working with students with visual impairments. This section provides you with some strategies to consider when teaching visually impaired students. The techniques in the "Helpful Hints" section which follows are listed in order starting with those that require the least amount of modification on the teacher's part to those that require the most. There are two categories of suggestions: (1) ideas for making modifications in the room/environment and (2) teaching strategies.

After the "Helpful Hints" we have added an article titled "Suggestions for Teaching the Child with a Visual Disability" by Doris Willoughby. This article, as well as the interview which follows, outlines many useful ideas for general and special education teachers to consider when planning and programming for students with visual impairments. In the interview and article specific suggestions are recommended for certain content areas. More helpful hints are available in other sources; review the bibliography at the end of this unit for references you may want to locate.

It is very important that the general education teacher, the special education teacher and/or consultant, the visually impaired student, and his/her parents work together to ensure that a well coordinated program, tailored to meet individual needs of the student, is developed. It will be because of the joint efforts of this team that the handicapped student will feel comfortable and accepted in the general education classroom.

For more information on teaching the visually impaired, contact the teacher or consultant in your school district, Area Education Agency or Department of Public Instruction.

HELPFUL HINTS:

Room Environment/Materials

1. If the room arrangement is changed, provide the opportunity for the student to familiarize himself/herself with the new layout.

2. Encourage the visually impaired student to move about the classroom to obtain materials. The student knows his/her own needs and a method of compensating soon becomes a part of the classroom routine.

3. The same disciplinary rules that apply to the rest of the class should apply to the visually impaired student.

4. The visually impaired student may bring adaptive aids into the classroom, such as magnifiers. Encourage the student to use the aids as needed and to answer any questions that others have about the aids. You may want the student to discuss their use with the class.

5. Felt tip pens, preferably black, are recommended for preparing written work. Using different colored markers will help a student to emphasize sections of his/her notes when scanning would otherwise be difficult.

6. Check availability of talking books or large-type books relevant to the topic of study. Contact the consultant at your Area Education Agency or Department of Public Instruction to assist you in locating adaptive materials.

7. Include the visually impaired student in classroom games. Give verbal directions or close-up demonstrations if necessary.

8. Whenever possible provide study aids which can be physically manipulated.

9. Bookstands are useful in reducing fatigue because they bring the work closer to the reader's eye. When a bookstand is not available, one may be improvised by placing other books beneath the one that is to be read.

10. Provide a typewriter, tape recorder, and raised-lined paper whenever necessary.

11. Use the language master machine for spelling, math, giving directions, and so forth.

Teaching Strategies

1. Include the visually impaired student in all activities.

2. Feel comfortable using such words as "see" and "look." These words are as much a part of the vocabulary of the student with a visual handicap as anyone else's.

3. Sometimes it is assumed that because a student cannot see he/she also cannot hear. Do not raise your voice on the assumption the student is deaf.

4. When in doubt as to whether a student with a visual impairment needs assistance -- ask.

5. In addition to verbal praise, physical contact such as a touch or pat on the arm may be used to show approval.

6. The visually impaired student may not be aware of events occurring at a distance from him/her. Verbal cues may be necessary to bring them to his/her attention.

7. Avoid standing with your back to the windows, since looking into glare and light make it difficult for the visually impaired student to see your facial expressions and gestures. You may appear only as a silhouette.

8. Encourage the student to face in the direction of the person with whom he/she is speaking. If the student is facing away or mumbling unclearly, remind him/her politely and privately.

9. When initiating conversation with a visually impaired student, call the student by his name so he will know you are talking to him and not to someone else. Teach other students in the class to use this technique also. In some cases the student initiating the conversation may need to identify himself.

10. Encourage the visually impaired student to verbalize his/her ideas during class discussions.

11. Present material orally whenever possible.

12. Read written directions aloud if the student does not have them in a form he can read.

13. If necessary, when writing on a blackboard or overhead transparency, be sure to read aloud what you are writing.

14. Read assignments or tests aloud to the visually impaired student. An aide, volunteer, or peer (using a "buddy system") might be available to do so.

SUGGESTIONS FOR TEACHING THE CHILD WITH A VISUAL DISABILITY

Doris Willoughby

Educationally, a partially seeing child may be defined as a child who has a significant visual disability but who can use vision satisfactorily as a chief channel for learning. He can function efficiently in the regular classroom with a minimum of special services; however, when special service or consultation is in order, it should be available. We hope that this list of suggestions will be helpful, and that you will call on the resource teachers if problems or questions do arise.

All situations are different, and no suggestions would work for everyone. The most important factors in success probably are (1) the understanding that this is a normal child, with the same needs as any other child, but with a particular physical disability; (2) expectation of success; (3) flexibility and imagination.

Including a partially-sighted child in the class should not mean a significant amount of extra work for the busy classroom teacher. If the child does take up a disproportionate amount of attention, we encourage you to ask the resource teachers for more assistance.

It may also be mentioned that a fully-sighted child can often serve as an aide to the partially sighted. For example, he might trace over faint lines to make them darker, or describe details of a puppet show which is too far away for the nearsighted child to see clearly.

It is often difficult to distinguish problems which are due to a visual disability from those which are not; but it is important that we try to do this, so as to work in reference to the true cause. Careful observation and analysis will often give us enough clues; for example, if a child does well in all phases of arithmetic but poorly in all phases of reading, we know that the trouble is not entirely with his eyes. Erratic, inconsistent behavior is also an important clue that a problem exists apart from vision. Signs which may, when considered along with other factors, point out a true vision problem, include: holding material at an unusual distance or angle; unusual preferences in regard to lighting; squinting; rubbing the eyes; tiring easily when using the eyes extensively; difficulty in copying; skipping words or lines. It is strongly recommended that a child showing any sign of possible visual problems be referred for both medical examination and educational evaluation.

There are two general ways to solve a problem arising from loss of vision: (1) use an alternative technique (one which could be used by a totally blind person); (2) maximize use of existing vision. One of the most important things a person with a substantial visual loss should learn is that his sight is not efficient for certain things, and that an alternative technique is more efficient or safer in those instances. In elementary school, an example might be asking a friend to describe a building which is too far away for the nearsighted child to see well. For the older student, it would probably include using public transportation instead of trying to drive with poor eyesight.

Concurrently, the student and his associates should realize (especially if vision is likely to deteriorate in the future) that today even total blindness should not keep a person from leading a normal life: with proper education, any visually disabled person will expect to hold a good job, marry, and raise a family, as a responsible member of society.

The child who is considered partially sighted will rely on vision in many, if not most, situations and, therefore, this paper is mainly concerned with methods in which vision is utilized.

At one time, the medical profession believed that the eyes were injured by too much use, poor lighting, and holding reading matter too close. It has been found that this is not correct; the most that could happen is simple temporary strain, comparable to aches after too much tennis. Therefore, unless special individual factors enter in, we need not worry about anything except simple fatigue when the partially sighted child uses his eyes. Also, we should allow him (even encourage him) to hold material close to the eyes or at an unusual angle if he can see better that way.

Unless there is a special individual restriction, the partially seeing child will certainly take part in all activities of the regular school day, including physical education, art, etc. If a problem does arise, an adaptation of some kind will enable him to succeed. For example, if it is difficult for him to see to catch a ball, we might use a very bright colored ball, or we might let him play beside a partner in some situations.

Since we now know that sight is developed rather than harmed by use, we should encourage a child to use the sight which he has. If this is overemphasized, however, the child may come to feel that better vision necessarily means more competence (as, of course, it need not, since totally blind people lead normal and productive lives if they are well-trained in alternative techniques). We, therefore, suggest that the strongest emphasis be placed on the basic skill or knowledge involved: for example, we can say "I'm glad you know that word" instead of "I'm glad you can see that word."

Large print books are provided in some instances. However, since large type size reduces the span that can be seen with each fixation of the eye, often the net effect is to slow reading. Therefore, we generally encourage children to use regular print if possible. Books at the early levels have relatively large print anyway; and most children learn to read smaller print as they grow older, even if vision is limited. Also, bringing the book closer to the eyes can often bring about satisfactory reading conditions, with fewer disadvantages that exist with enlargement of the print.

We suggest that a partially sighted child not rest a book down on his lap; he might hold it up, or perhaps he would be more comfortable using a desk or lapboard. Holding the material up nearer to the eyes is considered preferable to bending over, for reasons of posture. A reading rack may be used. Magnifiers are also available (perhaps to be used only with the smallest type or the most difficult format, rather than all the time).

The resource teachers will be glad to help evaluate which aids and arrangements help a particular child most. Usually, however, it is a matter of trial and error, with judgment as to what is most helpful. The classroom teacher who knows the child well is often the most competent to do this. Also, the child himself will often work out methods which are helpful for him.

Below are some suggestions and information which may prove helpful in the arrangement of optimum conditions for reading:

The Dazor is a large magnifier which includes fluorescent bulbs. There is a desk model as well as a floor-stand model; both swing over the material and are adjustable. The child is usually the best judge of the optimum position for him; often very precise positioning is necessary. As the child reads along, encourage him to move the material, if necessary, rather than moving the magnifier.

A few children are bothered by the light in the Dazor. It is possible to remove one or more tubes. It is not desirable for the child to stare directly at the lights.

There are many kinds of smaller magnifiers. Each one has its own advantages and disadvantages.

No tool is a panacea that will in itself solve a problem. Teaching methods and attitudes are the really important factors.

Problems of acceptance sometimes arise. Peers may tease the child for being "different." The child himself may continually complain about his disability. Or, he may refuse to use a certain appliance or technique because he believes it makes him "different."

The classroom teacher will know best what will help with his own children, but the following ideas may be useful:

A matter-of-fact, realistic attitude is vital. All involved should realize that visual disability (including total blindness) is neither terrible nor shameful. It is a physical limitation and nothing more; and it does not affect anything except the eyes. Sometimes a bit of humor in pointing out the child's "fine muscles, good ears, and energetic brain," for example, can help to keep things in their proper perspective.

Explain the cause of the disability, in simple terms. Perhaps compare it with a hearing loss. Teach the child to explain his disability to others in matter-of-fact terms.

Remind children that we are all different, and that it is rude to overemphasize <u>any</u> characteristic (as freckles, weight, etc.). All of us have some limitations.

Help the partially sighted child improve his general self-concept and self-confidence, and to develop a pleasing personality. Help him contribute to the group in worthwhile ways. Help him to determine when he does and does not need help, and to accept or refuse help pleasantly. Insist that he never "use" his disability to escape work or responsibility. Do not allow him to blame all difficulties on poor vision.

Arrange for the child (perhaps the class) to meet an older child or an adult who is successful in handling a disability.

If the child resists using a particular aid (such as a magnifier or book rack) we should carefully evaluate whether it really is helpful to him, and if it is being used properly. If it is, some suggestions in addition to the above include:

Demonstrate the value in ways that matter to the child. (For example, time his reading with and without the aid.)

Encourage the other children's interest in and acceptance of the aid. They may enjoy trying it out themselves.

Ask someone whom the child admires, such as the coach, to mention how helpful the aid can be.

Quietly but firmly insist that the child use the aid. Have him use the aid for a brief daily period at first, and gradually increase the time.

The partially sighted child may read and write rather slowly, and/or tire quickly. It may be necessary to allow him extra time and/or shorten some assignments; however, we should insist that he come up to a reasonable standard. As he moves along in school he should learn typing and other techniques which will enable him to do the same quantity and quality of work as the others.

A short, quick check as to whether a child can see a given item (such as the chalkboard) from a given distance is helpful, but not always reliable. His eyes may tire quickly so that in a few minutes he can no longer see it well. Also, vision may fluctuate from time to time.

It will usually be necessary to seat the child close to the front. If he copies or reads from the chalkboard, he may need to move his desk or walk up to the board occasionally. Also, some children can see better to one side or the other, and should be seated accordingly.

He may tend to skip parts of work due to eye difficulties. Ideas which may help include: use a marker; keep a finger on the place during copying; move the material closer.

Avoid having a partially seeing child face light, such as a window. Usually he will prefer to have plenty of light, but without shadows or glare. (There are exceptions, however, which the nurse or other specialist would interpret.)

Determine when a child should wear his glasses, and insist that he do so.

It is often helpful to increase the effective size of letters or pictures (by bringing the material closer to the eyes, enlarging the material itself, or using magnification). Clarity of lines, contrast of color, and spacing, however, can be equally important. Suggestions include:

1. Avoid using faint ditto stencils. If some copies are less than optimum, give the partially seeing child the best copy. If necessary, someone might go over a weak copy carefully with black pencil or ink; a child with good coordination could do this.

2. In presentations made by the teacher, avoid crowding letters, words, or lines close together.

3. A complex, detailed map or similar item may present difficulty. It may be desirable to use two or more simpler maps instead. If a wall chart or map is used, the partially seeing child may benefit from using a desk copy in addition.

4. If the child has difficulty in writing, we can provide alternate types of writing paper (such as white with heavy black lines), pencils, and pens.

5. It is sometimes helpful to trace over lines, as in a picture to be colored, with a black pencil or felt-tip pen.

6. The resource teachers will often be able to provide special materials (such as maps) and services (such as recopying important items into larger print).

Library service from the Iowa Commission for the Blind is available to anyone who has a physical disability which interferes with reading regular print. Examples of the use of this service would include large-print library books for the child of any age, and recordings of books to supplement print reading in the case of an older student who tires easily.

We suggest that you speak openly and truthfully about the disability and its implications, with the child in question present; this helps everyone to understand and accept the problem without feeling that it is something fearful or shameful which should not be talked about. However, we would not want to over-emphasize the disability by talking about it continually.

Emphasize good posture, with a positive approach. (However, as previously noted, if a child really sees a book better by holding it in an unusual position, we should allow him to do so and make sure the other children understand the reason.)

Be alert for situations where a child has lost out on information due to inadequate sight; he may not recognize that is is missing something, or he may attempt to "cover up" for his loss in one way or another.

Listening skills are important for the child to develop. He will sometimes gain information through hearing when his sight is not sufficient for the situation.

If the child appears clumsy in walking, he may not be seeing obstacles clearly. If this becomes a substantial problem, it would be desirable to contact the resource teachers or consultants about orientation and mobility instruction.

Again, if <u>any</u> area of the partially-sighted child's success and adjustment remains a substantial problem, we urge you to contact the resource teachers, nurses, and others who may have had experience with the particular problem. It should not be necessary for the child with a visual disability to absorb a disproportionate amount of the busy classroom teacher's time.

Although this paper is oriented toward teachers, parents may find it helpful also. We might add that the resource teachers will be glad to have conferences with parents if requested, whether or not a resource teacher has worked directly with the child.

In conslusion: the child with a visual disability is like other children in all important respects. One of his individual characteristics is a visual loss, and because of this he will use some methods and techniques which are different from those of his classmates. As educators and parents, we can guide him toward responsible adulthood by helping him to accept his disability and view it in proper perspective.

Reprinted by permission from a paper by Doris M. Willoughby of Des Moines, Iowa.

VISUALLY IMPAIRED

An interview with Doris Willoughby
Heartland Area Education Agency
Ankeny, Iowa

GENERAL:

1. Think consciously that blindness doesn't mean the student is slow. Talking more loudly or slowly to the student is not necessary unless the student has another handicap besides blindness.

2. Contact your Area Education Agency consultant for materials, and so forth. The amount of help and consultation needed depends on the student. If a student is reasonably well adjusted and knows braille, then it may not be necessary to have a great deal of help. However, a first grader just beginning to read in braille will need considerable specialized attention, as will the older student who has suddenly lost his sight.

3. Expect blind students to be normal; don't overprotect, fear, or pity them.

4. The visually impaired student can take notes in handwriting or braille, depending on the student's vision and experience.

5. Expect the blind student to do everything normal students can. Don't decrease expectations; change or modify methods and materials.

6. Do not decrease the amount of work. Try not to shorten assignments.

7. Students and teachers should talk together to decide modifications. There's always a way if people work together.

8. For some written assignments it may be appropriate to let the student tape-record his report. However, typing usually is more suitable.

9. In using the chalkboard, read to the class what you put on the board. If you have too much on the board to read it all, let the blind student get a copy of what was on the board from

a sighted student. The sighted student can copy the board work using a carbon and give the carbon, or Xeroxed copy, to the blind student. Or, at the end of the class or day, the blind student can have someone read to him what is on the board. Also, consider how important the topic is. You may not need to read it to him at all.

10. Don't assume a blind student can't go on a field trip, conduct outside interviews, and so forth.

11. Assume a blind student can get around. If he cannot, get someone to teach him cane travel.

12. Don't assume every problem is due to blindness. If the student is disorganized and blind, don't assume he is disorganized <u>because</u> he is blind. Think, "What would I do to teach this student organization--even if he weren't blind?" Do this for behavior problems also.

13. Speak openly about blindness. Don't be afraid of using words like "see" or explaining to sighted students what a white cane is.

14. Grade blind students objectively. For example, if you mark spelling errors on a sighted student's paper, do so for the blind student.

15. Lack of knowledge about blindness is really a lesser problem than false assumptions that blind students can't do things.

16. If you can't see how a blind student could complete a certain activity, don't automatically omit it. Figure out a way, or at least, substitute an activity that is reasonably equal.

17. With behavior, make expectations the same as for other students. If the student chats all the time and is blind, follow through with the same consequences as you would if he/she were sighted.

SCIENCE:

1. In science, much of the time students work with partners. This is ideal for dividing the work. Let the sighted person do the delicate mixing job that requires sight to tell "when it has turned green." Let the blind student do the computations, weighing, etc.

2. The dials on many machines can be adapted so the student can touch them and know the temperature, and so forth.

3. The blind student should do his/her half of the work and learn the concepts. The blind student can easily direct someone else to "mix the solution until it bubbles."

4. In using the microscope with a partially sighted student, you might want to use pictures rather than slides. The student can learn to describe how a thing should look. To test the student, ask him/her to verbalize what the "amoeba" looks like, or give him/her a list of items to match. With partially sighted students, show them pictures which they must identify.

MATH:

1. The student can use an adapted abacus for computation.

2. The student can figure on paper using braille. Anything that is written can be put into braille--formulas, equations, and so forth.

3. Let blind students use talking calculators if other students are using them also. If other students are figuring by hand, then the blind student should also.

4. Many geometry books for the blind have raised diagrams.

5. In elementary school, the blind students may need models of spheres, and so forth, but by high school the students usually don't need these kinds of models.

ENGLISH:

1. All papers should be typed, since it is assumed spelling is considered in grading.

2. You could allow the blind student to tape record papers, but don't always do this. Many are capable of typing.

SOCIAL STUDIES:

1. Sometimes raised maps are used; judge if the student really needs them. If you can explain the concept verbally, there's no need to obtain a raised map.

STUDY SKILLS, TESTS:

1. Tests may be tape recorded, brailled, produced in large print or read aloud to the student.

2. Depending on the circumstances, the student may mark an answer sheet, type his/her answers, or give them orally.

3. A peer, volunteer, or aide could read the test to the blind student; then he/she can write or type the answers.

4. In using an aide, volunteer, or peer to read for the blind student be sure to ask yourself: Why am I using the reader? What is the purpose? Make the distinction between reading and tutoring.

5. The students may be allowed to finish the test after school or during a study hall. Time extensions for tests should be allowed; a blind student may have thirty pages of braille to read versus the ten pages a sighted student reads.

GENERAL BIBLIOGRAPHY

Implementation of the Individualized Education Program, a Teacher's Perspective, Mid-East Regional Resource Center, George Washington University, Washington, D.C.

Individualizing Educational Materials for Special Children in the Mainstream, University Park Press, Baltimore, Maryland.

Learning Disability Quarterly, Vol. I, Number 4, Fall 1978, Journal of the Division for Children with Learning Disabilities, Council for Exceptional Children, 1920 Association Drive, Reston, Virginia 22091.

The Learning Disabled Adolescent, The C. V. Mosby Company, Saint Louis, Missouri.

Mainstreaming Handicapped Students: A Guide for the Classroom Teacher, Allyn and Bacon, Inc., Boston, Massachusetts.

"Modifying Course Content for Mildly Handicapped Students at the Secondary Level," Teaching Exceptional Children, Fall 1979, Council for Exceptional Children, 1920 Association Drive, Reston, Virginia 22091.

Outreach, Box 114, The Model Secondary School for the Deaf, Galludet College, Kendall Green, Washington, D.C. 20002.

Reading Strategies for Middle and Secondary School Teachers, Addison-Wesley Publishing Co., Reading, Massachusetts.

Regular Educators and the IEP, National Learning Resource Center of Pennsylvania, King of Prussia, Pennsylvania.

A Resource Guide for Parents and Educators of Blind Children, National Federation of the Blind, Baltimore, Maryland.

Teaching Reading in Content Areas, Prentice-Hall, Inc., Englewood Cliffs, New Jersey.

Understanding Handicapping Conditions: Strategies for Improving Awareness and Acceptance of Handicapped Students in the Regular Classroom, California Regional Resource Center, Los Angeles, California.

Vocational Education Inservice Training, Department of Special Education, School of Education, The University of Kansas.

Your School Includes a Blind Student, National Federation of the Blind, Baltimore, Maryland.

Credit

Many of the "Helpful Hints" were obtained or adapted from the following sources:

"Adaptations for Teaching Handicapped Students"
Developed by Madge Regan
Vocational Education Inservice Project
Inservice Training Modules, Special Considerations Sections
University of Kansas

"Implementation of the Individualized Education Program:
A Teacher's Perspective"
The Mid-East Regional Resource Center
George Washington University

"Regular Educators and the IEP"
The National Learning Resource Center of Pennsylvania
King of Prussia, Pennsylvania

"Understanding Handicapping Conditions: Strategies for Improving Awareness and Acceptance of Handicapped Students in the Regular Classroom"
California Regional Resource Center
Los Angeles, California

LANGUAGE ARTS

INTRODUCTION

The strategies for secondary general education classroom teachers to use in modifying curriculum in language arts for handicapped students are divided into four sections:

1. Written Expression
2. Reading
3. Spelling
4. Handwriting

Although spelling and handwriting may be considered to be a part of written expression, we have separated these areas in order that specific suggestions may be presented clearly. Undoubtedly, handwriting and spelling are components of written expression, but our intent is to describe procedures which a teacher can read with ease and little confusion.

Each section opens with a vignette, or a description of a student who experiences difficulty in language arts. A brief summary of observations about students with this kind of problem follows. After each problem is described, "Helpful Hints" are listed which the teacher may use in making the experience of a handicapped student in a general classroom more successful. The "Helpful Hints" in each section are listed in order, starting with those that require the least amount of modification on the teacher's part and ending with those that require the most. For specific suggestions regarding how to adapt and obtain curriculum for visually or hearing impaired students, contact a consultant from your Area Education Agency or Department of Public Instruction.

After the sections in Written Expression, Reading, Spelling and Handwriting you will find practical teaching suggestions obtained from interviewing two secondary English teachers in Iowa. These teachers have described many excellent teaching techniques which apply to Language Arts. A Bibliography is also included for your reference.

Generally, keep in mind the following when teaching students having difficulty in language arts:

1. Give clear, concise directions which involve following few steps.

2. Simplify or define the language in the directions.

3. Check to see that the student demonstrates appropriate listening and study skills to perform the assigned tasks.

LANGUAGE ARTS

WRITTEN EXPRESSION

PROBLEM:

> Elaine has difficulty remembering how to form letters. Her handwriting is legible, but she is extremely slow in completing a writing task. Sometimes Elaine begins an assignment five or six times. Her sentence structure is very simple. She often writes sentence fragments, misspells words and omits punctuation. These written language problems are compounded because she is sixteen years of age and in the third year of high school.

OBSERVATIONS:

Students with written language difficulties often devise methods for compensating for deficits or simply avoid all written activities. Difficulties include the inability to organize thoughts for written communication, to express thoughts in correct syntactical and grammatical order, and to utilize correct punctuation and capitalization. The adaptive strategies below may assist the student with written language difficulties.

HELPFUL HINTS:

1. For note taking during a lecture, be sure to repeat key words or phrases. List these on the blackboard also.

2. Allow the student to write about his/her own experiences. This facilitates organization of thoughts.

3. When using an overhead projector as an aid during a lecture, remember that a student may not be able to copy from the transparency as fast as you are talking. The advantage in using a blackboard and writing as you talk is that you will not move too quickly for the students.

4. Provide the students with visual aids, such as pictures, to stimulate ideas.

5. Try using the sentence as a unit of composition rather than lengthy essays. All grammar and style can be taught via this short, easy-to-grade assignment. The

teacher can easily individualize sentence beginnings he/she supplies, first orally, then in writing.

6. Encourage self-correction of grammatical mistakes.

   a. The student may read his composition to another student.

   b. The student may read his composition into a tape recorder and listen to it.

7. Pair students to proofread each other's work for punctuation and capitalization.

8. In correcting papers, mark an "X" at the beginning of the line where the student has made a punctuation or capitalization error. Then have the student locate the error in the line or sentence.

9. Provide a checklist, either personal or for the entire class, for punctuation and capitalization.

10. Structure writing assignments so that the student knows exactly what to do. Provide: (a) an outline (or encourage formulation of an outline), (b) a title, and (c) a list of words to use in a story.

11. Have the student dictate thoughts or a story to the teacher or a peer before writing. The teacher or peer can write phrases in the order the student dictates. This can then be used by the student as a guide for writing.

12. Have the student complete sentence beginnings supplied by the teacher, first orally, then in writing.

13. Provide model sentences for the student to imitate. Having the student generate many sentences with the same structure will help him/her internalize this structure. Begin sentence imitation with simple sentences, such as: "The blanket was soft and fluffy." As students gain mastery, move on to more and more complex sentence structure.

14. Have students combine two or three simple sentences into one to facilitate development of syntax. Since the teacher provides the sentences, students do not have to worry so much about "what to say" and can concentrate on sentence structure.

15. Permit the student to dictate thoughts into a tape recorder, listen to the recorder and write the story while listening.

16. Do the same as 15 only have the student dictate to the teacher directly (without the recorder).

17. When testing, use this sequence from beginning of year to end:

    a. Ask questions and have students respond orally or in a group discussion

    b. Use multiple-choice and true-false answers

    c. Use sentence completion (fill-in-the-blanks)

    d. Ask for short answers

    e. Require sentences

    f. Require paragraphs

    g. Have student write essay exams

    That is, move from regurgitation-type test responses to responses which require more thinking and problem-solving of an abstract nature.

18. When assigning research papers:

    a. Assume no previous knowledge of writing mechanics.

    b. Emphasize that you <u>do</u> care and that mechanics are important.

    c. Teach writing mechanics as review as you go along; e.g., "Most of you already know this, but...."

    d. State at beginning of each week one goal for that week; e.g., margin and spacing, capitalization, punctuation, complete sentences, legibility, etc. (Can even have students write at top of paper as reminder.) Make goals cumulative from week to week.

    e. Give double grade, one for composition and one for content.

- Can use point count with 1 point deducted from 100 for each mechanical error or give +5 for extra credit if paper is done well.

- Comment whenever possible (avoid value judgments, however) rather than just giving paper a grade.

f. Encourage students to save papers so they can remember the format for writing a research paper.

LANGUAGE ARTS

READING

PROBLEM:

Jim is a fourteen-year-old seventh grader who has had difficulty with reading since his first year in school. Although Jim was taught to read by a phonics approach, he is unable to discriminate among various sounds. Jim knows all of the letter sounds in isolation, but he cannot blend the sounds into words. He relies heavily upon an excellent sight vocabulary. Jim also uses contextual clues whenever possible.

The factual books utilized in junior high school have become exceedingly difficult for Jim to read. He struggles to complete individual assignments satisfactorily. Unfortunately, reading is not taught as a separate subject at the school Jim attends, nor are special teachers available for individual remedial work.

OBSERVATIONS:

Reading problems experienced in the general education classroom may have to do with word recognition and/or comprehension skills. These problems may interfere with a student's ability to read and understand texts, complete tasks in the given amount of time, understand written questions and worksheets, take written tests, etc. The student may be slow to complete assignments, tire and become frustrated when attempting to complete an assignment, and may complain about the work which is being required. Following are some strategies that may assist the student with such problems in the general education classroom.

HELPFUL HINTS:

1. Allow the student to use reading "aids" (e.g., a marker or finger to keep his place, quiet reading during a silent reading period, etc.).

2. Allow the student who, with time, is able to use the regular text, to have additional time to read. Provide him with the opportunity to take the assignment home or to study hall. In this way, the student is not penalized for his lack of reading speed.

3. Encourage pleasure reading. One way to accomplish this is to set aside a certain amount of time during the day or week during which everyone (including the teacher) will read something of his/her own choosing.

4. Check all texts for reading level. Be sure the reading level matches the student's reading level. Have the student read from the text and you can be certain whether or not the student is able to use the text independently.

5. Provide books which are uncluttered and do not present too much information on a page. Examine format to be sure pictures do not distract rather than reinforce content.

6. Go slowly. Do not introduce a new skill until the old one is completely mastered. Provide many examples of a new skill so a student can generalize and will be able to apply this usage of the skill in different contexts.

7. Use peers to read with/for students.

8. Utilize Recordings for the Blind. To obtain cassettes or recordings of texts, books, etc., contact your Area Education Agency Consultant for the Visually Impaired and this person will locate them for you through the Iowa Department of Public Instruction.

9. Make sure students have sufficient background of information before beginning to read. The average person picking up a technical article on atomic physics would have a great deal of difficulty in understanding what was read due to insufficient knowledge of the subject. The same is true of a student beginning a new language unit. A certain amount of background must be given (including vocabulary) if reading is to be meaningful.

10. Introduce new vocabulary prior to having students read. New words should always become part of the student's oral language vocabulary prior to reading or writing.

11. Send new vocabulary home ahead of new units so that the student learns unfamiliar words.

12. Provide drill and repetition using supplementary materials (e.g., language master, reading games, tachistoscopes, peer tutoring, dittos, etc.).

13. When possible, underline the important words or ideas. In this way, the student is visually aware that this item is something he should know about, and, therefore, he attends to it.

14. Break down a reading assignment into parts, perhaps as small as one or two paragraphs/pages, and have the student concentrate on reading each of these small sections. Provide a purpose for reading, such as introductory questions.

15. For lengthy books a student might read, have the student write brief statements which summarize what has been read, after each chapter. Discuss these with the student before he proceeds to the next chapter.

16. Tape record passages from the text and have the student listen and follow along in the text. (Another student or volunteer can make the tape.) The technique of following along in the text reinforces the words the student already knows and immediately gives him those that he does not.

17. Utilize an individual conference system in the following manner:

    a. The student selects a book to read.

    b. He is required to read no less than 50 pages per week.

    c. The student and teacher meet weekly for approximately 15 minutes and the student tells the teacher, in an organized fashion, about the book: the who, what, where, when, and how. The student frequently makes notes prior to the conference to be used as a guide when talking to the teacher.

    d. When the student finishes the book, he evaluates and analyzes it during the last student/teacher conference.

18. The individual conference can be used on a more frequent basis (possibly daily) to assist the student with word attack skills and vocabulary. A suggested procedure is:

    a. Work on pronouncing unfamiliar or troublesome words (word attack).

    b. Discuss the meanings of words. The student not only gives a dictionary definition but also synonyms.

    c. Have the student use the word in a sentence and in composition.

    d. Set a specific number of new words to be learned in a quarter and in a semester.

    e. Give the student extra credit if he is able to locate the vocabulary words in the reading book.

LANGUAGE ARTS

SPELLING

PROBLEM:

> Doug is a fifteen-year-old boy with writing and spelling difficulties. He is creative in his thinking and oral expression, but often sequences letters incorrectly in words and does not apply spelling patterns well.
>
> Doug has extremely poor recall ability and some difficulty in retaining visual impressions. For example, in spelling the word, "class," he will write "claim" or "calm," for "school" he might write "spool." Doug cannot rely on his visual recall of spelling patterns, so he will write "frend" for "friend," "thay" for "they," and "candie" for "candy." Doug's shortcomings in written language cause him much anxiety and have resulted in continued frustration with other academic subjects.

OBSERVATIONS:

Usually, students who have difficulty in reading have difficulty in spelling. Students can usually spell only the words they can read. However, a student may be a good reader but a poor speller, possibly due to an inability to visually remember the sequence of letters within words or problems isolating sounds in the correct order in words. Poor language or study skills may also cause spelling difficulties. Sometimes, students with spelling problems also have poor handwriting skills. Specific adaptive strategies listed below may prove helpful for students with spelling difficulties.

HELPFUL HINTS:

1. Communite your expectations and that <u>you do care</u> about spelling.

2. Reduce the number of words to be learned.

3. Know that the student must be able to understand and read the word before he can spell it.

4. If you do not spell well, admit it to the class and you can learn together.

5. Have available for student use:

   a. Dictionaries

   b. Instant Spelling Dictionary, Dept. 501-52, Sherman Turnpike, Danbury, Conn. 06816

   c. Spellex Word Finder, Curriculum Assoc. Inc., Woodbury, Massachusetts 01801

6. Provide short lists of words to practice frequently rather than one long list which is learned over a long period of time. (E.g., have two word lists each week of eight words each rather than a list of sixteen words distributed Monday which is student tested on Friday.)

7. Have the student trace the word while sounding out the word and looking at it.

8. Write new and/or difficult words on the chalkboard as you talk.

9. If a student frequently asks you how to spell words, write the requested word on a slip of paper, in the margin of the paper, or in a special notebook the student may be keeping of "troublesome" words. These methods will not distract other students and will provide the visual presentation which will help the student remember the words.

10. Provide opportunities for practice using various materials (e.g., spelling games, typewriter, language master, oral drills, boardwork, etc.).

11. List presentation is more effective than presentation of words in context. Students are not visually distracted by other words in the paragraph or sentence when words are presented in isolation in the list.

12. Use word lists from sources other than the spelling book (e.g., math words, student-selected words, seasonal words, vocabulary words, etc.).

13. Test the student in different ways:

    a. If the student has problems writing the words, let him take the tests orally; that is, let him spell the words to the teacher, peer, or volunteer.

    b. Reduce the number of words per test.

    c. Test more frequently.

    d. Give tests slowly.

14. Give the student the list of words to take home and study. Have the parent sign a note that states he/she checked the words the student was practicing at home.

15. On written work which the student completes, mark an "X" at the beginning of a line which contains a misspelled word. Then have the student locate the word and correct it.

LANGUAGE ARTS

HANDWRITING

PROBLEM:

> Roger, a fifteen-year-old junior high student of average build, was referred to the guidance department because he refused to dress for his physical education class. Informal assessments revealed that Roger was pigeon-toed, stoop shouldered, and so poorly coordinated that he could not skip, jump rope, or walk the balance beam. Roger also had some difficulty throwing and catching a ball.
>
> Roger's motor difficulties also affect his academic work. His slow and often bizarre formation of letters is marked by frequent erasures, which are often rubbed until holes appear in the paper. The pace of his work often affects the completion of his assignments. Some teachers have labeled Roger as "lazy and unresponsive."

OBSERVATIONS:

Both "good" and "poor" students may have difficulties with handwriting. These students may be unable to copy accurately from the blackboard, hold a pencil, produce work in the amount of time given, or even keep the paper on the desk. Sometimes, these students may even require alternatives to written assignments. Some adaptive strategies for the student with such problems are listed below.

HELPFUL HINTS:

1. Have the student tape the paper to the desk if he has difficulty keeping it stabilized.

2. Have the student experiment with a variety of writing implements or aids--thick pencils, felt-tip pens, pencil grips, etc.--to determine which will be most comfortable for the student to use.

3. Allow writing to be on larger paper with clearly marked lines for guides. Strips of tagboard may also be used as a guide.

4. If spacing between words is a problem, have the student "finger space" (i.e., place a finger between words as a guide when writing).

5. Accept either manuscript or cursive handwriting.

6. For students who have difficulty using margins, knowing where to start writing on the page, etc., color code the writing paper so they can clearly see margin lines, starting points, etc.

7. Allow oral responses to tests using a tape recorder or peer tutor.

8. If possible, teach poor writers to type and allow them to type assignments and tests.

9. Provide true-false or multiple choice test formats.

10. If copying from the board is a problem,

    a. allow the student first to copy from a second sheet of paper at his desk, and

    b. gradually move the paper further from his copy.

11. Require less copying. Provide an outline of the lecture or discussion content where the student can insert brief additions. If duplicated material is used, provide ample space for the student to make notes.

Credit

The vignettes and many of the "Helpful Hints" in the Language Arts sections were adapted or obtained from:

"Regular Educators and the IEP"
The National Learning Resource Center of Pennsylvania
King of Prussia, Pennsylvania

LANGUAGE ARTS

An interview with: Dr. Jona Mann
Hoover High School
Des Moines, Iowa

PHILOSOPHY:

I do not change my expectations for handicapped students. I feel expecting less of a handicapped student is being disrespectful of human potential. I do modify my expectations. I do not ask for lesser academic achievement from handicapped students, but I allow them to produce the work in different forms. My basic objective is to get students intensely involved in unlocking the language.

STRATEGIES:

Vocabulary

1. Students must have control over their vocabulary--written, reading, and speaking. I really work on vocabulary with each student. The number of words they work on and the words they learn, they decide. They get their words from their reading, T.V., another class; they use words from their experiences. They choose words they want to learn; I do not give them the words and they cannot get them from a dictionary. How many words they work on depends on the students. I try to have them work on five new words per week.

2. I work with each student by having individual conferences with them. We work on pronouncing the words (word attack); on the meaning of each word (they cannot just give a dictionary definition; they give synonyms); and they use the word in a sentence and in their compositions if they are in my writing class. They learn 45 words in a quarter and 90 in a semester.

3. This year, for the first time, students receive extra credit if they show me one of the words they are studying in their reading; i.e., the student finds the word in the reading context.

Reading

1. The students select what they want to read. Usually they select something not found in the school or room library. Students who are in the Resource Room sometimes use the Resource Room library. I do not encourage them to rely on me to select their books. I want them to select their own. I will assist them if they will not find a book, if there is no other way.

2. Each student is asked to read no less than 50 pages per week in his book. Some read more--it depends on their speed, comprehension, and retention. If they cannot read 50 pages, their book is either boring or too hard. They sit in class and read.

3. Each student meets with me weekly to discuss the book. Our meetings last about 15 minutes. They talk to me. I do not ask questions. They tell me, in an organized fashion, about the book--the who, what, where, when, how. It took me several years of teaching to figure this out, but I realized if I asked the questions I was doing all the talking and the student soon realized he did not have to be prepared for the conference. When the teacher asks questions, she ends up organizing the student's responses instead of the student doing it. If I end up doing a lot of the talking during the 15 minutes, then the student and I know the student was not well prepared.

4. When the student finishes the book, he evaluates and analyzes it during our last conference. How deeply he does so depends on him--some are not as able as others to go into evaluation and analysis in depth. I never ask the student to write anything on the book.

The objective is to get students to comprehend, analyze and appreciate what they read. I never put the student down for the type of book he reads. I can work with them on comprehension, analysis, etc., if the book is on a 4th or 12th grade level--the procedure is the same.

5. I encourage the students to take notes beforehand and use them during the individual conferences.

If you implement the individual conference system, it means the teacher must have read all the books the students are reading. At first, that means a lot of reading, because you are letting the students choose their own books. But after awhile there are many repeats, so the teacher's reading load lessens.

6. Grading: An "A" conference differs from a "C" based on the student's knowledge of the book. The standards for conferencing are:

a. the student must have read the 50 or more pages;

b. he must present the information in an organized fashion;

c. at the last conference on the book, he must analyze and evaluate it (i.e., discuss the relationship among characters, etc.).

The students do fail if they do not do their work. They are rewarded if they do. Just because students are in a one-to-one situation does not mean they will all pass. Some students have failed the class two or three times, but then have come back and passed. "They failed not because they couldn't do it [the work] but because they didn't do it. It was their choice to fail. So it is a different kind of failure and doesn't seem to bother them as much. They chose not to do it--it is always a choice."

Comment: I have used this technique in New Jersey and two different high schools in Des Moines. I have also used it on the junior high level. In no situation have I had to police students. They know I am serious about the class. If they are not, they are counseled out. They cooperate; I am embroiled in the conferences.

"Books work their magic."

Writing

1. Again, the expectations do not change--they are modified. Each student writes papers using correct form. Each paper must have an introductory sentence, a long sentence (the body) and a concluding sentence.

2. I do not use writing books. I do not teach just writing. I teach reading and writing together in a one-year course called "Focus."

3. There are a minimum of four papers due per quarter. I give students a purpose for each paper: Purpose Papers. They can negotiate with me if they do not like the purpose I suggest.

4. I have individual conferences with the students on their papers once a week. (There are at most 20 students in a class.) We do vocabulary and reading for half the quarter and reading the other half. In this manner, students do not continually have writing.

5. I suggest the topic or purpose and talk to the student about the topic so he gets some ideas. I will help him develop an outline for the paper if he needs assistance.

6. I work with the student on paragraph development, fragmented and run-on sentences.

7. There is no length requirement on papers. No reading (research) is required. Paper topics are on things from their experience; ideas may be to persuade people or they may be descriptive narratives.

8. The students have folders in which they keep their papers. They can then compare them and/or keep track of the number of books they have read. It helps the student realize how much easier the reading/writing has become.

9. Students must write a rough draft of each paper. They must turn them in, but I do not necessarily read them. The final paper is written in pen. I do not care if some words are crossed out. I am not a stickler for neat copy. I am a stickler for the student editing the paper before giving it to me.

Spelling

1. I do not circle misspelled words; I put an "X" at the beginning of the line where it occurs. The student must find the errors and correct them. (I follow the same procedure for punctuation.)

2. For a sophomore, if there are more than 8 spelling errors in one and one-half pages of writing, I consider it a problem. (For juniors, 6 errors and for seniors, 4 errors.)

3. Multiple spelling errors (using criteria of 8, etc.) drop the grade. I will raise the grade if they are corrected.

4. The student may rewrite the paper if he gets a low grade because of content. There is no reason to fail. Only one grade is given, not two grades for content and structure.

Handwriting

If I can read it, I take it. I have not had students whose motor problems were so severe that they could not write. If I did, I would have them type.

Final Miscellaneous Points

Not all teachers are suited to teaching on a one-to-one basis with students with learning problems. Either they fascinate you or they do not. We need to realize there are many ways to survive and be successful without being an outstanding English student. These students may be outstanding in other areas--especially with their hands--mechanics, etc.

If you can help them reach a level so that if they pursue an academic career or go to tech school they feel they can do English at some level, that is the most important thing.

A sense of humor is needed (on the teacher's part). You have to believe they can read and write at some level. Expect structure, comprehension, evaluation and analysis of what they read/write at their level.

I have a luxury--only 15-20 students per class. Not all students want one-to-one instruction. They do not want to be self-directed. They find it boring. Some may need a more directed classroom situation. There is not just one way to teach them. It depends on the student and the teacher. What is needed is a strongly committed teacher: one who is able to take the hassle and who is sure of what he/she is doing.

LANGUAGE ARTS

An interview with: Mrs. Lorraine Young
Clarion High School
Clarion, Iowa

PHILOSOPHY:

I think we often fail to challenge handicapped students in our secondary general education classrooms. We need to modify the types of response modes that they use and find ways to adapt our presentations, but our expectations of these students can be the same as for other students.

STRATEGIES:

General

1. I use outlining extensively in my classes. I emphasize key words and topic words as stepping stones to help the student recall the content of lectures. I also try to reinforce my presentations with film, so students have both an auditory and a visual input.

2. I try to increase the student's skills in recalling information. I do this through techniques outlined in the David Roth memory course and by underlining and repeating key words in lectures. Students are able to recall information best through association.

3. "Teach students to write!" All students should be taught to express themselves in written form.

4. I never use an overhead projector; I use the blackboard exclusively. The students write as I write on the board. If transparencies are made prior to class, the students have difficulty copying and listening to my presentation simultaneously. This requires a double track mind. I think the chalkboard is a vital tool, a very "primitive" one, and is an excellent model for writing. The words are clear on a blackboard and easier for students to read. Again, I repeat and underline on the board key words and phrases which will help students remember the content.

5. All of the papers in my room are marked with green, not red, ink. I give many comments, especially positive ones, but the corrections have to be indicated if they are to learn. Also, I believe RED automatically means STOP, WRONG, DANGER, and gives them a negative feeling before they even begin to read. If there are a lot of major corrections, I ask for an individual appointment and give those comments verbally and privately along with the grade. If the paper is unusually bad, there is NO grade; it simply must be done over, and then graded. Thus I can avoid failure and still demand high standards.

6. Time limits are set for all work, and late students have good REASONS, not excuses.

7. I also break some modern rules and run a teacher-centered class. The students have great participation, but under my control. They give many individual presentations, and the creativity is astonishing. By praising an especially novel approach, I find that students compete with each other for that praise, and the ever-important grade.

8. At the beginning of each semester I distribute a hand-out explaining that students must come properly prepared with correct materials. If they forget a text or a pen or pencil, I rent them one for that class period ONLY (they must return it at the end of class) with a charge of 5¢. If they do not have paper, I sell it to them. I tell them at the beginning that the money will be used to buy treats at the end of the semester, and you would think they were getting gold bricks instead of candy bars. I constantly remind students who are remiss to keep up the good contributions to the candy fund, which works wonders in avoiding that very thing. By the last two weeks of the semester, I give them slight moans because I have not collected much money, and I will have to pay for the treats myself.

If students have no money, I write the name and amount in a small notebook called my "You Owe Me" book. They must have their bill paid before they can receive their report card.

9. I demand punctuality, and an even slightly-late student must go to the office for an admit. I begin promptly, and if there is conversation, I have learned NEVER to try to out-talk it. On the contrary, I begin to cover salient points in a quieter-than-normal voice, and the students soon begin to shush each other. I refuse to repeat. They may ask each other at the end of class, but not before. It takes less than a week to have them on time, ready to work.

Spelling, Reading, and Writing

I work closely with the resource teacher, who uses E.C.R.I. (Exemplary Center for Reading Instruction) methods. These methods are taught by Dr. Ethna Reid of Salt Lake City, Utah. The method is remedial, but is used widely in our school system as a method of mastery learning. I use it extensively but have reservations about attempting to use it for all students in all classes.

These methods assist students in improving not only reading skills, but spelling and writing skills also. Tracing, spelling words aloud, and repetition help to increase spelling skills and speed in writing. (Included is a sample writing page with the methodology.)

Learning Styles

At a State Convention for the Gifted and Talented I discovered a program of Dr. Anthony Gregorc's which describes learning styles. Its first premise is that all people are talented and gifted in some areas, which is certainly true. The main thrust is that we have four different orientations in learning styles. Some of us like concrete things; some like abstract ideas. Some of us learn best (or perhaps ONLY) in a sequential pattern, while others learn better in a random fashion. Each individual is a combination of these methods, in various proportions.

I am strongly concrete-sequential, and when I discovered this I was thankful for such excellent and extensive media courses at Iowa State. If it had not been for the way I used film, other visual aids, and lots of activities in my own classroom, I fear I would have completely missed my abstract-random students. I knew they learned differently, but had never had it defined for me before.

Dr. Gregorc had a testing instrument which I use at the beginning of each new class. I learn which students learn in which way, and accommodate myself much better to individual learning styles. Dr. Gregorc constantly emphasizes indivi----dual: We are all one person, with dual capabilities, IF we train them.

He also demonstrated the mistakes we make. If a student is a poor reader, we get a lower-level book, with bigger letters, and drill more on words, phonics, and high-interest reading. If the student still doed not read, we get bigger print, lower-level books, drill more, and eventually perhaps give up and label that student. The actual problem is one of a DIFFERENT learning style, which is NOT related to reading.

Reading ability is necessary for all, and that is where the E.C.R.I. techniques and the resource room are vital. But this is

also where Dr. Gregorc's knowledge was an "open sesame" for me. Often the abstract-random students are my very sharpest, and they are certainly the ones that make the world go 'round! So now I love working with them, rather than worrying and feeling inadequate and frightened.

E.C.R.I. Method

1. The student:

   a. says the word, then traces it as he says each letter;

   b. says the word, writes it beside the original word as he says each letter, repeats the word and this process to the end of the line.

2. Repeat on a second page at a faster rate of speed, using good penmanship.

3. Ultimately the exercise is done with a stop watch.

LANGUAGE ARTS BIBLIOGRAPHY INDEX

PART 1

Basic Grammar Skills

Building Basic English Programs
Coordinated Vocational Education and Training: English
English Essentials
English Exercises
Form Class Words
Guidebook to Better English
Our Living Language
Pedagogic Color 'n Learn
Troubleshooter Series
Vocational English
Voices in Literature, Language and Composition

Listening Skills

Communications Kit
Language Arts (Sound Page Material)
Language With a Purpose
Spoken Arts Cassette Libraries
Words, Media and You

Literature

The Bible As Literature: In the Beginning Was the Word
Our Living Language
Spoken Arts Cassette Libraries
Voices in Literature, Language and Composition
Words, Media and You

Reading: See Bibliography, Part 2

Reference

The American Heritage Dictionary

Consumer Education Learning Activity Packages

English Essentials

Find It

Language Communication Program

Modern Century Illustrated Encyclopedia

Our Living Language

Perfect Speller

Turner-Livingston Communication Series

Use the News

Vocational English

Spelling

Alpha Mazes

Common Words

Coordinated Vocational Education and Training: English

Noble's Adult Basic Education Series

People and Places in the U.S.A.

Perfect Speller

Spelling Progress Laboratory - Spell Tapes

Vocational English

Teacher Resource Books

Basic Skills Sequence in English

Communicating With the Classics

Crosscurrents: A Prescriptive Teaching Handbook

I Used to Could Spell WEON-- WENES-- WENSDAY

Mainstreaming Language Arts and Social Studies: Special Ideas and Activities for the Whole Class

Parallel Alternate Curriculum (PAC)

Resource Materials for Teaching the Handicapped: Primary and Intermediate

The M and M* Book

Vocabulary Development

Alpha Mazes
Building Basic English Programs
Communications Kit
Flash X Cards
Grope 'n Group
Noble's Adult Basic Education Series
People and Places in the U.S.A.
Solving Secret Mysteries
Use the News

Writing Skills

Coordinated Vocational Education and Training: English
Double Action Series
English Exercises
Exciting Writing
Form Class Words
Guidebook to Better English
Language Communication Program
Noble's Adult Basic Education Series
People and Places in the U.S.A.
Report Writing Skills
Sentence Patterns
Story Starters
Title-Twister
Trackdown
Troubleshooter Series
Turner-Livingston Communication Series
Use the News
The Writing Center

LANGUAGE ARTS BIBLIOGRAPHY

PART 1

Alpha Mazes (I.E.S.S.) Workbook. Price Range: Under $10.

A series of puzzles that help to reinforce the concept of alphabetical ordering.

The American Heritage Dictionary (Houghton-Mifflin) Price Range: Under $10.

This dictionary includes several thousand illustrations, both in the line drawings and photography.

Antonym, Synonym, Homonyn Activity Cards (Teachers Exchange of San Francisco) Price Range: Under $10.

A collection of 5-1/2" x 8-1/2" activity cards containing reusable, reproducible, self-directing activities for improvement of antonyms, synonyms, homonym knowledge.

Basic Skills Sequence in English (Vermont State Department of Education, Division of Special Educational and Personnel Services in cooperation with Local School District Personnel and the Vermont Association of Special Education Teachers, 1979).

This resource contains task analyses of objectives in reading, writing, speaking and listening competency areas. A second section describes the student behaviors in "clusters" which are related to the objectives. Also included is a list of teaching resources and sample learning packets which can be used to teach the skills outlined in the objectives.

The Bible As Literature: In the Beginning Was the Word (The Center for Humanities) Sound filmstrips. Price Range: $100-$150.

The Bible is the most influential work in western civilization. Its words and ideas echo through every element of our culture.

It is a collection of many different types of literature, histories, fables, poems, letters, proverbs, and it tells of memorable characters. More importantly, it deals with fundamental, universal themes, evident in the very first accounts, that are carried throughout the Bible.

Building Basic English Programs (Bell and Howell) Language Master - 200 pre-recorded cards. Price Range: $100-$150.

Materials in these programs may be used effectively in virtually any grade level and in a variety of subject matter areas. Building Basic English, Set A contains the complete 200 card Nouns and Everyday Things card set from the Word-Picture Program and a Usage Manual and blank cards. Set B contains the complete 600-card basic phonics series, with series including sound blending and phonetic skills, consonant blends, and irregular phonetic elements; word building and word analysis techniques. This set also includes 90 blank cards in two sizes, a usage manual and a program organizer file.

Common Words - Revised (Merrill Publishing Company) Hardcover books and Answer Key. Price Range: Under $10.

These have been planned as an integral part of a high school English program. Used alone, these skilltexts provide a comprehensive, well-balanced course of study in spelling with a linguistic orientation and an emphasis on mnemonic spelling. Grades 9-12.

Communicating with the Classics (CAP-P Project, Room 117, Roosevelt High School, Des Moines, Iowa 50312)

This is a mini-course which contains activities that acquaint the student with classics in literature in various forms; i.e., short stories, novels, poetry. There are three other mini-courses available in the language arts content area: Words Are Like Puzzles: Prefixes, Suffixes, and Root Words; You and Your Emotions: Getting It All Together; and Walking in This World: Survival Vocabulary. Each mini-course is designed around concepts and activities. The CONCEPTS comprise the basic content of similar courses taught in secondary schools. The ACTIVITIES found under each concept are designed to assist the teacher teach that concept. A list of SUPPLEMENTAL ACTIVITIES and RESOURCES is usually offered with each activity. These include materials such as films, texts, filmstrips, cassettes, and other pertinent items.

Communications Kit (Scholastic Book Service) 35 books, 35 logbooks, 1 teacher's manual, 1 filmstrip, 1 record, 4 posters. Price range: $100-$150.

After working with this unit, students will be aware of the many ways to communicate, their own communication problems and ways in which to overcome them. (Recommended for use with students reading on the 4th-6th grade level.)

Coordinated Vocational Education and Training: English (State Department of Vocational and Technical Education, Stillwater, Oklahoma) Looseleaf notebook. Student and teacher's book available. Price Range: Under $10.

This notebook of English activities relates units in writing sentences, using a dictionary, word usage, writing a business letter, application forms, etc. (General vocational material.)

Crosscurrents: A Prescriptive Teaching Handbook (by Max Rudd and Deb Evers. Available through the Oklahoma Child Service Demonstration Center, Developer Demonstrator Project, Learning Disabilities Program, Secondary Level, Route 3, Hillside School, Cushing, Oklahoma 74023).

This resource book coordinates objectives and materials in four major categories: Reading, Math, Funcational Skills and Affect. The section in Reading describes weaknesses which may be identified by diagnostic tests, observations of student

behavior which might characterize these weaknesses and a diagnostic profile. Remediation techniques and materials are then listed which may be appropriate to teach a child with the described problems.

English Essentials (Steck-Vaughn) Workbooks. Price Range: Under $10 per copy.

This workbook briefly covers basic English facts. Topics include sentences, capitalization, grammar, punctuation, vocabulary and spelling. A workbook format is used to provide practice in each skill. A mastery test is also included.

English Exercises (Milliken Publishing Company) Duplicating Masters. Readability: 4th grade. Price Range: Under $10.

Skills: recognizing different kinds of sentences; making complete sentences; beginning and ending sentences correctly; using capitals for proper names; to separate words in a series.

Exciting Writing (Teachers Exchange of San Francisco) Activity Cards. Price Range: Under $10.

A paperback containing 43 illustrated ideas for making writing activities interesting and relevent. Example subjects include: "A New Germ," "The Underwater City," "House of the Future." May be torn out for use as task cards.

Find It (I.E.S.S.) Workbook. Price Range: Under $10.

Student activities for the development of research skills. These skills are prerequisites for effective use of reference books such as telephone, cookbooks, store catalogues.

Form Class Words (Coronet) 6 filmstrips and 6 cassettes with filmstrip guide. Price Range: $50-$100.

For intermediate, junior and senior high students. Titles are: Nouns, Verbs, Adjectives and Adverbs, What They Are.

Grope 'n Group (Teachers Exchange of San Francisco) Language Arts Task. Price Range: Under $10.

These 16 cards consist of words used in readers from basic text series. Sorting the words can be an individual or group task. Categorizing is the skill emphasized.

Guidebook to Better English (Economy Company) Workbooks. Readability: 2.0-4.0. Price Range: Under $10.

This is designed for intermediate and junior-high school students whose reading ability is below their grade level. Thirty structured lessons. The student learns to associate sounds with the letters that represent them, to decode words, to use principles of phonics and word structure in word analysis and to interpret what he reads. The program includes evaluative exercises and recreational reading.

I Used to Could Spell WEON-- WENES-- WENSDAY (Oklahoma Child Service Demonstration Center, "Alternate Paths to Learning," Learning Disabilities Programs, Secondary Level, Hillside School, Cushing, Oklahoma 74023).

This handbook includes a variety of student- and teacher-made activities appropriate for secondary level (grades 6-12) adolescents. Although it is designed especially for the student with a learning disability, a general education teacher would find the suggested activities appropriate for many other students having difficulty in language arts, math, reading, social studies, and life skills. Materials and explicit procedures for completing each task are included in the description of each activity.

Language Arts - Sound Page System (R. K. Black 3M Company) Price Range: Under $10.

The above material is to be used with the Sound Page Talking Machine. Visuals and Narratives to be recorded on machine. Phonics is major emphasis.

Language Communication Program (Bowmar) 10 books, 38 softcover workbooks, teacher's guide and 2 cassettes in each set. Readability: 4.0 and up. Price Range: $10-$50 per set.

Three fully illustrated technical dictionaries called Pix. Pix develops reading, language, dictionary and research skills. The books are written in a delightful, informal style, and the entries provide accurate, practical information of special interest to students. Well suited for both reference and recreational reading. Titles include: Horse Trophy - 3rd; Drag Racing Trophy - 4th; Motorcycle Tech Log - 4th and up.

Listening With a Purpose (Coronet) 12 cassettes, manual and response books. Price Range: $50-$100.

Designed to sharpen listening skills, this program emphasizes auditory acuity and reception, language facility, critical listening and transferences of listening skills to active self-expression. For intermediate grades.

Mainstreaming Language Arts and Social Studies: Special Ideas and Activities for the Whole Class (Adams, Coble, and Hounshell, Goodyear Publishing Company, Inc., Santa Monica, California).

Included in this resource are a number of teaching activities which can be used in the general education classes to teach specific skills in language arts and social studies. Each skill area contains a general overview, a learning objective, teacher preparation notes and activities to be used on a weekly basis. The directions for activities are specific and easy to understand. These would be excellent as supplements to the regular curriculum.

The M and M* Book *(Methods and Materials) For the Special Education Curriculum Resource Consultants (Michigan Department of Education, Special Education Services, P. O. Box 3008, Lansing, Michigan 48909).

Although many of the activities described in this resource are designed for elementary students, teaching strategies are presented which apply to secondary level instruction. The manual includes activities in academic areas, communication skills, handwriting, auditory and perceptual-motor skills. It is a compilation of activities which can supplement the curriculum and provides techniques to improve skills in specific areas of difficulty.

Modern Century Illustrated Encyclopedia (Scholastic) Price Range: $10-$50.

Suitable for Junior and Senior high levels. Twenty-four colorful volumes, 1972 copyright, 96 page paperbacks that are easy to handle and carry.

The Newspaper (Teachers Exchange of San Francisco) Activity Cards. Price Range: Under $10.

Forty-eight activity cards which encourage students to explore the newspaper and to use it in practical ways. Some unique ideas include: Writing to an advice column, composing a want ad, proof reading news stories, selecting headlines, and illustrating a comic strip.

Noble's Adult Basic Education Series (Noble and Noble) Workbooks (2 titles per set). Price Range: Under $10 per book.

This series is designed to provide a basic list of essential English words that will prove useful for adults in reading, writing, spelling and conversation. It has a basic vocabulary plus many additional words for enrichment. Titles: Everyday English and Basic Word List for Adults, Write It Down.

Our Living Language (Milliken Publishing Company) Transparencies and duplicating pages, teacher's guide. Price Range: $10-$50 per set.

This covers learning to read a newspaper effectively; learning the 5 W's of reporting; generating topic sentences; recognizing subjects and predicates in simple and compound sentences; recognizing nouns, verbs, adjectives, adverbs, prepositions, conjunctions, interjections. Twelve transparencies, 29 duplicating masters. Suitable for grade 6 and above remediation.

Parallel Alternate Curriculum (PAC) (Child Service Demonstration Center, Department of Special Education, Arizona State University, Tempe, Arizona).

The PAC program teaches required high school courses in a non-reading format, using such methods as taped books, videotaped materials, movies, slides, lectures, and

various forms of discussion. It is designed to allow students who are non-readers or poor readers to substitute or supplement their reading and information gathering requirements with a variety of other communication vehicles. Contact the Child Service Demonstration Center for more information regarding content PACs available.

Pedagogic Color 'n Learn (I.E.S.S.) Workbook. Price Range: Under $10.

A language arts skill book for intermediate and remedial students grouped into three main areas: nouns, adjectives and verbs.

People and Places in the U.S.A. (I.E.S.S.) Workbook. Price Range: Under $10.

Worksheets and activity cards designed to assist teachers, in motivating students as they learn about the United States. Students become involved in research, writing, alphabetizing, spelling and other skills learned through the use of mazes, puzzles and other exciting teaching techniques.

The Perfect Speller (Grossett and Dunlap) Paperback book. Price Range: Under $10.

This reference book contains thousands of words that are listed in alphabetical order. In addition to correct spellings, phonetic spellings are also listed alphabetically.

Reading Comprehension Activity Cards (Teachers Exchange of San Francisco) Activity Cards. Price Range: Under $10.

An original collection of reusable, self-directing, challenging reading comprehension activities on heavy 5-1/2 x 8-1/2 inch cards. Ideas presented on the cards may be utilized in a creative writing program as well.

Report Writing Skills (Coronet) 8 cassettes, manual and response books. Price Range: $50-$100.

Sample lessons are: Choosing a Topic, The Research Riddle, Make a Note of It, Picking an Overall Plan, Paragraph Magic, etc. Provides a fun-filled "listen and do" approach to the basics of formal report writing. Students receive guidance step-by-step on their own and at their own pace. Suitable for intermediate grades, 7-12.

Resource Materials for Teaching the Handicapped: Primary and Intermediate (Diagnosis and Programming Remediation Strategies, Thomas L. Little, Ed.D., University of Nothern Iowa, Cedar Falls, Iowa).

This sourcebook is divided into three sections: Diagnosis and Programming, Remediation Strategies and Selected Readings-Bibliography. Academic areas which are addressed are Reading and Language, Spelling and Writing, and Arithmetic. Examples of diagnostic tools are provided as well as activities designed to teach skills in the content areas.

Sentence Patterns (Coronet) 8 filmstrips, 8 cassettes and a guide. Suitable for intermediate grades. Price Range: $50-$100.

It presents a linguistic approach to sentence structure using "kernel" sentences as blueprints for building complete thoughts, artwork, photography and personalized communication between student-viewer and narrator to clarify the elements of good sentences.

Solving Secret Mysteries (I.E.S.S.) Workbook. Price Range: Under $10.

Mystery stories which include 200 words selected from the Durrell-Sullivan list of basic words. Each story contains 20 vocabulary words and may be used to promote and stimulate vocabulary growth to meet the needs of the individual child.

Spelling Progress Laboratory - Spell Tapes (Educational Progress) 80 cassette tapes. Readability: 2-6. Price Range: above $200.

This set enables the student to practice spelling in all three learning modes; auditory, visual and kinesthetic.

Spoken Art's Cassette Libraries (Bell and Howell) Audio-cassettes. Price Range: above $200.

Cassette recording of selections made from the classical and great masterpieces of literature. Suitable for grades 7-9. Also includes classic speeches and outstanding documentary materials. Available in several different collections.

Story Starters (Teacher's Exchange of San Francisco) Task Cards. Price Range: Under $10.

A collection of 50 ideas for motivating creative expression in the classroom. Developed over 10 years, these task cards provide story stimulation and also give several vocabulary words for possible use in the story.

Title-Twister (Teachers Exchange of San Francisco) Wheel. Price Range: Under $10.

Over 400 innovative ideas for writing assignments can be generated by using this simple, cardboard wheel with fun titles. Some example title twisters are: "A Space Trip with an Ant named _____," "My Buddy; My Dog," "A Surprise for Dear Old Dad." Available in two levels.

Trackdown (Scholastic Book Service) Workbook. Readability: 4.0-6.0. Price Range: Under $10 per book.

Trackdown is a language skills development book. Thirty-three lessons, in the form of mystery stories, focus on language usage problems. They also strengthen reasoning skills and encourage logical thinking. Eight additional picture mysteries and a mystery radio play for fun.

Troubleshooter (Houghton Mifflin Company) 1 class answer book, 1 box of 81 duplicating masters. Workbooks 1-7 with teaching guide. Price Range: $10-$50 per set.

> Troubleshooter is a nongraded basic language skills program. It consists of seven consumable workbooks which are primarily self-teaching, self-correcting, and self-directing tools for individualized English Skills development at the student's own pace. The seven student texts are: Spelling Skill, Spelling Action, Word Attack, Word Mastery, Sentence Strength, Punctuation Poser and English Achievement.

Turner-Livingston Communication Series (Follett Publishing Company) Books (6 titles), teacher's guide. Readability: 5.0-6.0. Price Range: Under $10 per book.

> This series is based on stories designed to establish contact between the school and the disadvantaged students. Combining a high interest level with a low reading level, they help students understand themselves and the world around them.

Use the News (I.E.S.S.) Workbook. Price Range: Under $10.

> Designed to provide teachers with ideas for using the newspaper for every grade level. Grade levels 6, 7, 8.

Vocational English (Globe Book Company) Paperback Books (3 per set). Price Range: Under $10 per book.

> This is a 3 volume set designed to teach basic English skills in conjunction with job-related skills. The emphasis is on such skills as filling out application forms, interviewing, writing a business letter, and being concerned with "how you sound." Readability level is approximately 6.0.

Voices in Literature, Language and Composition (Ginn and Company) 6 sets; each set includes 1 teacher's notebook, 1 text, 1 media guide, 1 media worksheet. Price Range: Under $10 per book.

> This is an organization of material primarily attempting to draw together the various aspects of the English curriculum so that the student will be able to find meaningful relationships among them. A year's basic program combining literature, language and composition is offered in a single, coordinated book, consisting of 30 lessons.

Words, Media and You (Coronet) 6 filmstrips, 6 cassettes with teaching guide. Price Range: $50-$100.

> Words, Media and You is a series of six incisive filmstrips that explore today's symbolic environment in authentic detail. The overview (Mass Media--Servant or Master?) is followed by separate filmstrips on advertising, news, politics, entertainment and literature. The series asks the student to search causes and personal meanings.

The Writing Center (Winston Press) Activity Cards. Price Range: $10-$50.

Forty-nine idea generators, designed around five interest areas to provide pupils with basic notions for plot and content, rhythms and rhyme. The major divisions in the kit are: Mystery, Adventure, Animals, Fantasy, and Poetry. The 49 picture cards with questions help initiate the student's imagination.

Reading for Concepts
Reading Schedules
Real Life Reading Skills
Right to Read Program
Scholastic Literature of the Screen
Scope Activity Kits
Scope Skills Book
Scope Visuals
Score Reading Improvement Series
Specific Skills Series
Springboards Reading Labs
Sprint Library
Sports-Action-Skills Kits
Survival Reading Task Cards
Target Reading

Enrichment

Be Informed Series
Consumer Education Learning Activity Packets
Guiness World Records
The Newspaper
Now-Age Illustrated Classics
People and the City Program
Perma-Bound Paperbacks
Phoenix Reading Series
Play the Game Series
Practice in Survival Reading
Reading Incentive Language Program
Reading Schedules
Right to Read Program
Scholastic Paperbacks
Sprint Libraries
Using the Want Ads
Young Adventurers Series

LANGUAGE ARTS BIBLIOGRAPHY INDEX

PART 2, READING

Comprehension

Vocabulary

Action Series

Basic Reading Vocabulary

Be Informed Series

Checkered Flag Classroom Reading Kit

Clothing Language

Cross-Up

Drugstore Language

Entertainment Language

Highway Holidays Series

Kaleidoscope Readers

Merrill Linguistic Reading Program

Motorcycle, Motocross, Horse Trail Ride

Perquackey

Phoenix Reading Series

Probe

PRS Program

Reach

Reader's Digest New Reading Skill Builders

Reading Attainment System

Reading for Mathematics

Reading Schedules

Real Life Reading Skills

Restaurant Language

Right to Read Program

Scrabble Crossword Game

Sign Language

Sports-Action-Skills Kit

Supermarket Language

Target Reading

Using the Want Ads

Vocabulary Builder Program

Words and Phrases

Rate

Action Series
Controlled Reader Study Guides and Filmstrips
Double Action
Guidebook to Better Reading
Projection Reading Series
Radio Reading Series
Reader's Digest New Reading Skill Builders
Scope Visuals

Word Attack Skills

Action Libraries
Action Series
Building Basic English Programs
Clues to Reading Progress
Double Action Series
Edmark Reading Program
Glass Analysis for Decoding Only
Guidebook to Better Reading
Highway Holidays Series
Kaleidoscope Readers
Merrill Linguistic Reading Program
Multi-Level Reading Training Filmstrip
Perquackery
Phonics Program-Word Building & Analysis Set III
Play the Game Series
Point 31
Probe
Projection Reading Series
PRS Program
Reach
Reader's Digest New Reading Skill Builders
Reading Achievement Program (RAP)
Reading Attainment Systems
Reading Incentive Language Program
Right to Read

Score Reading Improvement Series
Specific Skills Series
Sports-Action-Skills Kit
Target Reading
Troubleshooter Series
Words & Phrases

Developmental Reading

Action Series
Breakthrough Series
Checkered Flag Classroom Reading Kit
Go/Reading in the Content Areas
Highway Holidays Series
Kaleidoscope Readers
New Practice Readers
Play the Game Series
Radio Reading Series
Reading Achievement Program (RAP)
Reading for Concepts
Reading Incentive Language Program
Springboards Reading Labs

Situational Reading

Clothing Language
Drugstore Language
Entertainment Language
Everyday Reading and Writing
Finding a Good Used Car
Getting Ready to Drive
Practice in Survival Reading
Reading a Newspaper
Reading and Following Directions
Reading Schedules
Restaurant Language
Scope Visuals
Sign Language

Supermarket Language
Survival Reading Task Cards
Using the Want Ads

Content Area

Driving
Finding a Good Used Car
Getting Ready to Drive
Go/Reading in the Content Areas
Life Skills: Reading in the Content Areas
Now Age Illustrated Classics
Reading for Mathematics
Reading in the Content Fields

LANGUAGE ARTS

READING INSTRUCTIONAL MATERIALS

PART 2

Action Libraries, I, IA, II, IIA, III, and IV (Scholastic Book Service) 5 books (4 copies of each) 1 teaching guide and 1 set of spirit masters in each of the four libraries. Readability 2.0-4.0. Price Range: $10-$50.

The Action Library books are excellent resources for those students who cannot handle materials above 4th grade reading level. Some of those included are: Wade's Place, Cop's Son, A New Life for Sarita, etc.

Action Series (Scholastic) 20 play books and 20 short story books, 2 teaching guides, 1 LP record, Unit Book 1, 2, 3. Readability 2.0-4.0. Price Range: $50-$100.

A systematic program based on material relevant to teenage interest. It is accessible to the most limited reading vocabulary and structured to build confidence along with skills. A program that develops basic word attack and reading comprehension skills in 18 intensive and highly structured weeks of reading, role-playing, discussion and writing.

Basic Reading Vocabulary Levels A and B (Psychotechnics) Filmstrips, consumable notebooks, teacher's education. Price Range: $10-$50 per set.

Level A presents 119 words necessary for reading skill achievement of 1.9. Level B presents 149 words necessary for reading skill achievement of 2.9. Each word is used in a number of sentences to develop word meaning.

Breakthrough Series (Allyn & Bacon) 25 books. Price Range: $50-$100.

This series consists of short paperbacks containing a selection of modern stories, articles, biographies and poetry. Some are broken up into smaller books for those who need the feeling of achievement of completing a book. Teacher's manual with suggested skill exercises is included. For remedial - high interest/low vocabulary. Interest level - 7-12 grades.

The Checkered Flag Classroom Reading Kit (Field Educational Publications) Kit with 4 cassettes, 4 filmstrips, 1 teaching guide, Part I and II with 24 books and teaching guide in each. Readability: 2.4-4.5. Price Range: $50-$100.

Each title in the series deals with a different type of car in a different racing format. The books are prepared to appeal to pupils of all ages. Exercises that will aid the pupil in developing comprehension, vocabulary and critical thinking skills are included.

Clothing Language (Janus) Workbook, teacher's guide. Readability: approximately 3.0. Price Range: Below $10.

> Clothing Language is designed to help poor readers master 160 words and phrases that are commonly encountered while shopping. The workbook is written in controlled vocabulary that disabled learners can understand.

Clues to Reading Progress (Educational Progress Corporation) Cassettes and workbooks, 3 sets of cassettes; 1 teacher's guide (plus orientation tape); 3 Clue magazines - consumable. Readability: 2.0-5.0. Price Range: Above $200.

> This series is a program for students in grades 5 and above who have not yet mastered their primary-grade reading skills. These skills include phonetic and structural word analysis, as well as the comprehension of words in the context of whole sentences.

Controlled Reader Study Guides and Filmstrip Set (Dowlings - Educational Developmental Laboratories) Study guides with filmstrips. Readability: 1-6. Price Range: $50-$100.

> Six sets of filmstrips plus study guides for use with the Controlled Reader rate machines. Levels AA, BA, CA, DA, EA, and FA, respectively, grade levels 1-6.

Double Action Series (Scholastic) Two teaching guides, 1 record, unit books 1 and 2 (20 copies each), 20 play books, 20 short story books. Readability: 3.4-5.0. Price Range: $50-$100.

> This eighteen week reading program contains: Unit book I, Unit book II, play books, short story books and an LP album. Before and after each story in the unit books, exercises introduce and guide students through comprehension, new vocabulary and word attack skills. The beginning exercises help students to re-establish self-confidence and a sense of accomplishment with reading.

Drugstore Language (Janus) Workbook, teacher's guide. Readability: approximately 2.5. Price Range: Under $10. Flashcards are available.

> Drugstore Language is designed to help poor readers master words and phrases commonly encountered when shopping in a drugstore. The student learns only 5 words at a time, moving at his own rate.

Edmark Reading Program (Edmark Associates) Kit. Readability: non-reader 3.5. Price Range: Above $200.

> The Edmark Reading Program teaches a 150 word vocabulary, comprehension and the use of those words. There are 227 separate lessons of four different kinds. Those are: Word Recognition, Direction Books, Picture/Phrase Matching, Story-book. Recommended for extremely low readers and suitable for non-readers.

Entertainment Language (Janus) Workbook, teacher's guide. Readability: approximately 3.0. Price Range: Below $10.

Entertainment Language is designed to help poor readers master 160 words and phrases that are commonly encountered during leisure-time activities. The workbook is written using a controlled vocabulary that disabled learners can easily understand.

Everyday Reading and Writing (New Reader's Press) Student book (272 pages), teacher's guide (64 pages). Readability: approximately 4.0. Price Range: Under $10 for each.

This book is designed to aid the student in functional reading. Reading signs, labels, application forms, etc. It would be appropriate at the Junior high, Senior high, or adult levels. Book is divided into 14 units.

Finding a Good Used Car (Janus) Workbook, teacher's guide. Readability: approximately 3.0. Price Range: Under $10.

Functional skills and wise shopping are stressed in this workbook. The readability level is approximately 3rd grade. It includes tips on choosing a car, checking mileage and age, things to look for during a road test, and how to talk to a mechanic.

Flash X Cards - blank cards (Dowlings, Inc.) - 1 set

This set consists of 12 blank cards to be used with the Flash-X tachistoscope. These cards are useful for teacher-made math or reading activities.

Getting Ready to Drive (Frank E. Richards) Workbook. Readability: approximately 3.0. Price Range: Under $10 per book.

This book is designed to help the non-academic student prepare for a driver's examination. Information is taken from all fifty states. Many pictures are used to aid in understanding.

Glass Analysis for Decoding Only (Dowlings, Inc.) 4 kits to each set. Price Range: $150-$200 per set.

The Glass Analysis for Decoding Only is a reading program that combines components of many different approaches. The approach uses many sound-symbol activities related to the whole word. One hundred nineteen sound-symbol clusters are illustrated by 2300 words. Follow-through Practice Books and Easy Starts kits are included.

GO/Series - Reading in the Content Area (Scholastic Book Service) Series 4, 5, 6 and 7. Each series consists of 1 teaching guide, 1 pack of 50 ditto masters and 10 skills texts. Readability: 2.0-6.0. Price Range: $10-$50 per series.

GO is a program designed for use in grades 4-7 to teach techniques for reading in the areas of literature, social studies, math and science.

Guidebooks to Better Reading (Economy) 20 workbooks with 4 teaching guides (Duplicating masters available). Price Range: $50-$100.

Guidebook to Better Reading is an instructional workbook intended for older students who read below fourth grade level. Such a student must be taught to discriminate sounds and the letters that represent them, to sound words, to analyze unknown words by using principles of phonics and word structure, and to interpret the meaning of what he reads.

Guidebook to Better Reading - Supplementary Readers (Economy) 12 readers and a teacher's manual. Readability: 2.0-6.0. Price Range: $50-$100.

This series provides supplementary readers containing material which is interesting to the older student but written at a level well within the ability of the student with reading problems. Included in the series are novelettes, anthologies, and graphic readers.

Guiness World Records (Singer/SVE) Audio-visual kit. Readability: 2.4. Price Range: $150-$200.

This multi-media kit is a high-interest remedial tool for students in junior high who are reading at 2nd to 4th grade levels. Exercises are based on entries from the Guiness Book of World Records. Four filmstrips and four cassettes are included along with a teacher's manual and a current copy of the Guiness Book of World Records.

Highway Holiday Series (Bowmar) 6 student texts, 6 student practice books and 2 teacher's guides. Readability: 2.5-6.0. Price Range: Under $10 per book.

This series uses a child's experiences traveling in another country as a basis for developing word recognition and comprehension skills. Interest level not appropriate for high school students.

Titles are: Wrong Way Camper, Pablo the Bullfighter, Driving Through the Clouds, A Wild Bus Ride, Watch Out for Alligators, Out at Home Plate.

How to Read A (Eyegate Instructional Materials) 6 filmstrips with 3 corresponding cassettes. Price Range: $50-$100.

Different reading materials require an adjustment of reading rates and skills of comprehension, yet students are inclined to read all material at the same rate and in the same way. This set of six color filmstrips describes the special techniques students must use in order to cope with the variety of heavy reading demands confronting them.

The Kaleidoscope Readers (Field Educational Publications) 8 different books with 5 copies of each and a teaching guide for each. Price Range: $50-$100.

There are eight books in the series, ranging from a reading difficulty level of second grade to ninth grade. All materials reflect the interest and concerns of young people. Development of skills include: Word Attack, Vocabulary Skills, Comprehension Skills, Study Skills, etc.

Life Skills: Reading in Content Areas (Singer SVE) Audio-visual kits, teacher's guide, spirit masters. Readability: approximately 4. Price Range: $50-$100.

Filmstrips and activities are given to help the student read texts in Literature, Mathematics, Science, and Social Studies. The filmstrips are colorful and modern. The activities are very specific and could be very helpful to the students.

Merrill Linguistic Reading Program (Merrill Publishing Co.) Reader, Teacher's Guide, Skills Book and Teacher's Guide to Skills Book. Spirit masters are available. Readability: non-reader to 6.0. Price Range: Above $200.

A complete basal reading program combining linguistic principles with practical reading skills. Guides the students to minimize visual and aural contrasts between words. The core of the program is composed of eleven readers, each with corresponding skills books, mastery tests, and teacher's guides.

Merrill Mainstream Expanded Cassette Library (Merrill Publishing Company) 5 teacher's guides, 5 copies of each title, 28 tapes, 90 study sheet booklets. Readability: 4-7.5. Price Range: Above $200.

This set is designed to meet the students' needs directly by treating the acquisition of reading, writing, listening and thinking skills as ends rather than means.

Titles are: In New Directions, Courage Under Fire, People Like You, Against the Odds, They Were First.

Morgan Bay Mystery Series (Field Ed. Publ.) 8 hardcover mystery books, teaching guide. Readability: 2.3-4.0. Price Range: $10-$50.

A series of mystery novelettes with carefully controlled vocabulary and high interest levels. May serve as supplementary readers or can be used for individualized reading instruction. Some titles are: The Mystery of Morgan Castle, The Mystery of the Midnight Visitor, the Mystery of the Musical Ghost and Mystery of the Marauder's Gold.

Motorcycle, Motocross, Horses Trail Ride, Dune Buggy Rally (Bowmar) Games, two of each. Price Range: $10-$50.

Games to use with the Reading Incentive Program to reinforce vocabulary. Two to six players.

Multi-level Reading Training (Psychotechnics) 20 filmstrips. Readability: 2.0-8.0. Price Range: $50-$100 per set.

These filmstrips are designed to reinforce specific reading subskills which may retard reading development. Some titles are: Word Reversals, Phonetic Irregularities, Homophonous Words.

New Practice Readers (McGraw Hill Book Company) Softbound readers. 7 levels. Readability: 3-8. Price Range: $10-$50. Cassettes are available.

The New Practice Readers include seven high interest, low vocabulary readers. Each book contains short reading selections on a variety of topics. A vocabulary exercise precedes each selection. Comprehension questions covering a variety of comprehension skills are found at the end of each selection.

Now Age Illustrated Classics (Pendulum Press). 24 titles (4 copies of each), teacher's guide. Cassettes are available. Readability: 4.5-5. Price Range: $50-$100 per set without cassettes.

This series contains 24 titles of classic literature. Each book is written in comic book format with readability levels that are approximately 4.5-5. Teacher's manual provides vocabulary study, pre-reading exercises and comprehension questions for each title.

People and the City Program: Spectra (Scott Foresman) 9 student booklets, 2 teacher's guides. Readability: 5.0-6.0. Price Range: Under $10.

This program is for low achievers in grades 9 through 11. Each booklet focuses on one aspect of life in the city.

Titles are: Crime and Safety, Buyers Beware, Housing Conflicts, Moving In, Speaking Up, Getting a Job, You've Been Arrested, Can Earth Survive?, Who Needs School?

Phoenix Reading Series (Prentice-Hall, Inc.) Readers. Readability: 2.75-3.75. Price Range: Not available.

A reading program designed for students who have reached the middle grades without learning how to read. Two components, Photo Reader and Action Reader, have equal importance in the program. The Photo Reader presents ideas, information and concepts developed around a single theme. The Action Reader provides further short reading selections relating to the Photo Reader theme.

The Phonics Program: Word Building and Analysis Set III - Language Master (Bell and Howell) 200 prerecorded cards. Readability: 4-6. Price Range: $10-$50.

Set III, Word Building and Analysis Techniques, presents voiced and unvoiced "th" sounds, soft and hard "g" and "c" sounds, compound words, suffixes, prefixes, syllabication, irregular consonants and homonyms. The program is useful to students of all ages.

Play the Game Series (Bowmar) 4 cassette tapes, 4 books and teacher's guide. Readability: 2.5-4.0. Price Range: $10-$50.

A total of thirty-two stories about significant events in the lives of famous athletes such as Lee Trevino, Peggy Fleming, Willie Davis, etc. The series emphasizes courage, humility and sportsmanship. Recordings of each of the four books are available in cassette.

Titles are: Forty for Sixty, Viva Gonzales, Chief Cloud of Dust, Bull on Ice.

Point 31 (Reader's Digest) At each of 4 levels: 20 student workbooks, 20 magazine readers, complete audio program, teacher manuals, testing masters. Readability: Decode level to 1.9; Level 1: 1.5-2.9; Level 2: 2.5-3.9; Level 3: 3.5-4.9. Price Range: Over $200.

Designed specifically for secondary students, Point 31 is a total reading program stressing common word patterns. All materials are self-pacing and suitable for individual or group assignment. The many components of this program make it complex and difficult to handle.

Practice in Survival Reading Series (New Readers Press) Workbooks. Readability: 4-6. Price Range: $10-$50 for complete set.

A series of high interest workbooks which gives the student practice in basic survival reading skills. Sample titles include: Machine-Age Riddles, Signs Around Town, Label Talk, Read the Instructions First, Let's Look It Up, Telephone and Telegraph, Letters and Announcements, How to Read and Write Business Letters. Appropriate for secondary and intermediate levels.

Projection Reading Series (Singer) 25 filmstrips, 1 study guide per set. Readability: 1-6. Price Range: $150-$200 per set.

This series of filmstrip stories combines a key word vocabulary list and a complete story in each of the 125 filmstrips in the group. The filmstrips are excellent for rate work while the study guides stress vocabulary development and comprehension.

The Proud Heritage Series (Charles E. Merrill Publishing Company) 1 teacher's guide, 1 study and outline sheet, 5 booklets each on Frederick Douglass, Harriet Tubman, Robert Smalls, Matthew Henson and Charles Drew. Readability: 4.5. Price Range: $10-$50.

This is a high-interest, controlled-vocabulary program developed primarily for urban students with reading difficulties. The stories contain biographies of 5 great Black Americans who made important contributions.

PRS Program (Psychotechnics, Inc.) 20 filmstrips, vocabulary notebook, teacher's edition. Price Range: $100-$150.

The PRS Word Building Program is an approach to building vocabulary using Latin and Greek prefixes, roots and suffixes.

The films combine a tachistoscopic format with a program of structural analysis to help the student unlock the meaning of thousands of words.

Radio Reading Series (Psychotechnics, Inc.) Levels I (Readability: 3, 4, and 5) and II (Readability: 6-8). Essay story printouts, audio cassettes, story cards, student booklets, and steel file cabinet. Price Range: above $200. (Film lessons are available.) Price Range: $100-$150.

This program is designed to attract reluctant readers and to encourage the formation of good reading and listening habits. Subjects dealt with are varied: sports, music, science, the sea, aviation, etc.

RAP - Reading Achievement Program (Acoustifone). Audio-visual kits (each kit: 10 exercises, one filmstrip with audio cassette, a printed essay, and a student answer sheet). Readability: 2-5. Price Range: $100-$150 per unit.

This program stresses development of vocabulary, reading, critical listening, comprehension, spelling and word attack skills. Specifically written for under-achieving students 11-18 years of age.

Reach Series (The Economy Company) Pacetapes and student books. Readability: 2.0-4.0. Teacher's guide available. Price Range: $100-$150.

Reach is a reading program for intermediate students who are reading below grade level. It is individualized, success-oriented and self-paced. The student makes independent progress in word-attack skills, vocabulary expansion and comprehension development. Tapes must be used with specially designed Pacer tape player.

Reader's Digest New Reading Skill Builder (Reader's Digest) Books and cassettes. Readability: Primary, Intermediate (2-6), Advanced (4-10). Price Range: $50-$100 per set.

Each skill builder contains controlled readability selections followed by exercises and questions. The exercises measure comprehension and interpretation, critical and creative reading, word-study, vocabulary and other skills appropriate to grade level.

Reading and Following Directions (Janus) Workbook, teacher's guide. Readability: approximately 2.5. Price Range: Under $10.

Reading and Following Directions is geared to the needs of students reading below a 3.0 level. The workbook focuses on the recognition and understanding of words and phrases commonly used in directions found on packages, appliances, and other things. Lessons, exercises, and games develop reading comprehension and help students learn to follow and give directions.

Reading a Newspaper (Janus) Workbook, teacher's guide. Readability: approximately 2.5. Price Range: Under $10.

In Reading a Newspaper students are introduced to news articles, features, comics, editorials and more. They are given guidelines about how to find and read each of these. At the end of each unit, exercises direct them in the exploration of the same elements in their local newspaper.

Reading Attainment System (Grolier Educational Corporation) Reading selections. Readability: 3.0-4.7. Price Range: $100-$150.

The Reading Attainment System is a set of 120 reading selections which have been divided into 6 color-keyed groupings of 20 selections each. Each color group represents a slight increase in reading level over the preceding group. The Reading Attainment System was specifically written to attract and hold the interest of the older student with underdeveloped reading skills.

Reading Comprehension Books (Scholastic) Workbooks (4 titles to each set), teacher's guide available. Readability: 4.6. Price Range: Under $10 per set.

These four workbooks are designed to stress comprehension on different levels of complexity. Practice is given in finding the main idea, important details, sequence, and vocabulary. Grade levels are: Match (3), Feedback (4), Challenge (5), and Spark (6).

Reading for Concepts (Webster/McGraw Hill) 8 books, 20 copies of each and 4 teaching guides. Readability: A-1.9, B-2.5, C-3.2, D-3.9, E-4.6, F-5.2, G-5.8, H-6.4. Price Range: $10-$50. Cassettes are available.

This eight book series offers light, contemporary non-fiction for remedial, corrective and developmental classes. The stories and narratives strengthen the reader's comprehension skills while increasing his awareness of people. Critical reading, drawing conclusions and making inferences are stressed.

Reading for Mathematics (Frank E. Richards) Workbook. Readability: approximately 3.0. Price Range: Under $10 per book.

This book clusters words in a series of units such as "direction words," "question words," etc. The objective is to present the words and familiarize the student with their meaning. The words are then presented in their mathematics context to reinforce their meaning and the math skills to which they apply.

Reading Incentive Language Program (Bowmar) 16 kits: 10 books, 1 filmstrip, 1 cassette and 1 teacher's guide in each kit. Readability: 3.0-5.0. Price Range: $10-$50 per kit.

A low vocabulary audio-visual program based on high interest themes to completely involve the "turned off" student and to provide sequential skill development. Interest level: grades 2-12.

Reading in the Content Fields (Jamestown) Booklet. (Cassettes are available.) Readability: 4-8. Price Range: Under $10 per booklet.

A series of five booklets intended to aid the student in flexible reading. It alerts the students to specific reading problems related to materials in English, Social Studies, Math, Science, and the Practical Arts. Readability levels range from grades 4 to 8, according to the Fry Formula for estimating readability.

Reading Schedules (Janus) Workbook, teacher's guide. Readability: 3.0. Price Range: Under $10.

This book is a high-interest, practically oriented study of schedules. Students are introduced to a variety of styles and types of schedules. Reading level is about 3rd grade.

Real Life Reading Skills (Scholastic) Workbook (25 copies per set). Readability: approximately 3.5. Price Range: $10-$50 per set.

Real Life Reading Skills is a workbook concentrating on "everyday" reading skills. It presents lists and definitions of necessary words for each topic. It seeks to help students understand basic reading situations by presenting them and assigning activities or questions based on the information given.

Restaurant Language (Janus) Workbook, teacher's guide. Readability: approximately 2.5. Price Range: Under $10. Flashcards are available.

Restaurant Language is designed to help poor readers master words and phrases commonly encountered when eating out. The student learns only five words at a time, moving at his own rate.

Right to Read Program (Hartford Publishing) Cassette, filmstrip, and text. Readability: approximately 3.0. Price Range: $10-$50 (library edition).

General objectives are to provide motivation, increase vocabulary, build listening skills. This series provides reading matter built around students' interests, and by providing a format or reading level they can handle in order to pursue their interests.

Scholastic's Literature of the Screen (Scholastic Book Service) 1 copy each: Identity, Power, Values in Conflict, Men and Women. Readability: approximately 5-6. Price Range: Under $10 per book.

This series is an attempt to link the content of popular, meaningful motion pictures to basic conceptual units of study in English, communications, humanities and social sciences. The editors have chosen several provocative film titles and grouped them together thematically. Each volume in the series consists of films which treat some fundamental human issue.

Scope Activity Kits (Scholastic Book Service) Set of 6, 5 copies each of Mystery, Advertising, Television, Love, Who Am I? plus 1 set containing 5 teacher's guides, 5 ditto masters, 1 mystery record, 1 advertising record. Readability: 4-6. Price Range: $10-$50.

These kits explore themes through a variety of non-fiction, fiction, poetry, games and activities. The student booklets are generally sequential in content. Students are motivated to interview a detective, research a real mystery, etc. These kits are designed to develop reading, reasoning and language skills as well as new levels of student expertise on the theme.

Score Reading Improvement Series (Fairview Audio-Visual) Audio-visual kits, teacher's guide. Readability: not known. Price Range: $10-$50 per module.

Score is an acronym for Skills and Challenges of Reading. Its purpose is to give middle-grade students interesting practice with basic comprehension and word-analysis skills and to challenge them to read for pleasure and information within the Score program and beyond it. It is a practice and reinforcement program rather than a program to teach new skills. Subjects covered include using basic phonics and structural-analysis skills; reading with improved comprehension; reading with greater fluency; reading for pleasure; and reading for information.

Sign Language (Janus) Booklets (flash cards available at $1.00 per set). Readability: approximately 3.0. Price Range: Under $10 per booklet.

This series of four booklets deals with the skill of word recognition in reading signs. Signs are grouped by function, such as signs that inform, signs that command, signs that warn, etc. Also available are flash cards of the signs.

Specific Skill Series (Barnell Loft, Inc.) Specimen set. Readability: 1.0-6.0; A: 1.0-2.0; B: 2.0; C: 3.0; D: 4.0; E: 5.0; F: 6.0; Advanced 7.0-8.0. Price Range: $50-$100 per set.

This series is a nonconsumable reading program designed to develop eight reading skills on the most basic reading levels. Each booklet is concerned with the development of

one reading sub-skill on one reading level. There are eight booklets written on each of the first six reading levels and two on an advanced level. Titles are: Detecting the Sequence, Getting the Main Idea, Using the Context, Working With Sounds, Following Directions, Getting the Facts, Drawing Conclusions, Locating the Answer.

Sport-Action-Skill Kits (Troll Associates) Audio-visual kits. Four kits for each sport. Total of 24 kits. Readability: 5-8. Price Range: $10-$50 per module.

Each kit contains 10 copies of a fully illustrated paperback book, a read-along cassette tape that follows the text of the book word for word, 10 student activity cards, a fully colored filmstrip and a copy of the teacher's manual. The kits provide a wide range of reading, writing, viewing and listening possibilities for reluctant, average and advanced readers. Ideal for independent and individualized reading.

Springboards Reading Labs I and II (Noble and Noble) Reading lab kits. Readability: 4-6 grade level. Price Range: $50-$100.

Springboards articles are keyed to the units of major texts in World History, American History and Black History. Many have an emphasis on the contributions of minority groups to our nation's heritage. Lab I contains 4 copies each of 80 titles in Social Studies, Biography, Fiction, Science and Language Arts. Lab II contains 4 copies each of 90 titles in American History, Women in America, Insights and Viewpoints.

Sprint Libraries (Scholastic) Paperback books (5 titles, 4 copies each), teacher's guide, ditto masters. Readability: approximately 2.0. Price Range: $10-$50.

Each Sprint Library consists of 5 high interest, low vocabulary booklets and a teacher's guide/duplicating masters manual. The readability level of the books is approximately 2.0.

Supermarket Language (Janus) Workbook, teacher's guide. Readability: approximately 2.5. Price Range: Under $10. (Flash cards are available.)

Supermarket Language is designed to help poor readers master words and phrases commonly encountered when grocery shopping. The student learns only five words at a time, moving at his own rate.

Supportive Reading Skills (Dexter and Westbrook, Ltd.) Booklets. Readability: A: 1-2; B: 2; C: 3, D: 4, E: 5; F: 6; Advanced 7-8. Price Range: $10-$50.

This is a series of nonconsumable booklets designed to develop and refine skills underlying reading. Titles are: Understanding Word Groups, Understanding Questions, Syllabication, Using an Index, Mastering Multiple Meanings, and Recognizing Word Relationships - Primary and Intermediate.

Survival Reading Task Cards (Teachers Exchange of San Francisco) Task cards. Price Range: Under $10.

Thirty-four self-directed tasks related to daily life skills make up this packet of innovative ideas. Cards are durable, reusable, practical, and fun to use.

Target Reading (Laidlaw Publishing) Paperback booklets. Readability: 1.0-6.0. Price Range: Unavailable.

Reading skills stressed include comprehension, dictionary skills, fun with words, paragraph study, sentence study, study skills and word study.

Using the Want Ads (Janus) Workbook, teacher's guide. Readability: approximately 3.0. Price Range: Under $10.

This book is a high-interest, practically oriented study of the functions of the want ads and how to use them. Reading level is about 3rd grade.

Vocabulary Builder Program - Sets I, II and III (Bell and Howell) 200 pre-recorded cards in each set. Price Range: $10-$50.

Basic, Intermediate and Advanced sets may be used from the fourth grade through college level. Each card contains the word to be learned, its definition and its correct pronunciation. Alternate dictionary pronunciations are printed on the front of the card. An extra strip of tape is provided on the back to record such special situations.

VX Word Study Program (Psychotechnics, Inc.) Boxed lesson books, student record booklets, answer booklets, placement tests, teacher's guide. Readability: 3-8. Price Range: $50-$100.

The VX Word Study Program is a self-instructional program designed to teach basic word attack skills in a sequential manner. It is adaptable for use with any other reading or language arts program. In a remedial setting, it can be highly effective for students of 9 years to adults.

Words and Phrases (Psychotechnics) Filmstrips and worksheets for reading levels 4-8. Price Range: $10-$50.

Tachistoscope materials--each word is flashed on the screen to help build a strong sight association. This tachistoscopic technique is important in commanding attention and stressing visual memory. Each word is reintroduced as part of a meaningful phrase. This provides the student with an opportunity to gain additional insight about the word by using the contextual framework of the phrase to help unlock the meaning.

Young Adventurers Series (Bowmar) 6 books, 2 copies of each. Readability: 4.0-6.0. Price Range: $50-$100.

These hard-bound books offer exciting plots, realistic content, and contemporary topics; they are excellent for independent reading. Each book contains 10" x 14" full color foldout illustrations of important incidents in the story.

NOTE

Many of the sources listed in the two parts of this bibliography were obtained from:

Multi-Media Materials Catalogue
Secondary Level Grades 7-12
Oklahoma Child Service Demonstration Center
Hillside School, Rt. 3
Cushing, Oklahoma 74023

MATHEMATICS

INTRODUCTION

Math concepts taught at the secondary level are based on prerequisite skills developed during elementary school. Students who have not mastered these prerequisites will experience difficulty with assignments in a general education math class at the secondary level. Therefore, emphasis for these students should be on practical application and math skills the student will need in order to "survive" after high school.

The mathematics section begins with a vignette describing a student who is placed in a secondary general education class. The "observations" include areas where the student may experience difficulty in class. The "Helpful Hints" section contains suggestions for modifying mathematics instruction. The "Helpful Hints" are divided into two categories: one category lists hints for modifying assignments, tests, and student response modes; the second category includes basic teaching strategies. The "Helpful Hints" in each section are listed in order, starting with those that require the least amount of modification on the teacher's part and ending with those that require the most. These hints are applicable to many math classes in which the student may be enrolled: geometry, business math, algebra, general math, and so forth. If you need specific suggestions for adapting or obtaining materials for the visually or hearing impaired, contact a consultant from your Area Education Agency or Department of Public Instruction.

Following the "Helpful Hints" section is an interview with a secondary math teacher in Iowa. Ms. Thune describes how she has adapted instruction to meet the needs of students with learning problems.

The final section is an annotated bibliography listing instructional materials and teacher references which may assist you in providing individualized instruction in your math class.

MATHEMATICS

PROBLEM:

Although a likeable and academically motivated child with above average intelligence, Mike, a seventh grader, has significant difficulty with math computational problems. He has excellent reading ability and a good grasp of logical reasoning and problem-solving principles.

Yet Mike's performance on tasks requiring computational skills is very poor. Mike's papers are disorganized, with problems and numbers written in haphazard fashion. When computing a multiplication problem, he often adds when he should multiply. Division problems are even more confusing. With a problem such as $4\overline{)128}$ he cannot remember if he is to figure how many ones are in four or how many groups of four are in twelve.

Because of Mike's inability to recall the correct steps involved in completing these computations, his work is frequently inaccurate. He becomes extremely frustrated and angry with himself when he is required to complete a page or worksheet of problems, particularly when division and multiplication problems are on the same page.

OBSERVATIONS:

Difficulties in math may be related to poor reading skills, poor concept development, poor organization skills or high distractibility, and/or poor memory skills. The results may be problems with: understanding written directions and comprehending word problems, understanding the concepts presented, losing the place on a page filled with problems, performing basic operations, remembering math facts or completing an assignment in the specified time period. The strategies listed below may assist the student with these problems.

HELPFUL HINTS:

Modifying Assignments, Tests, and Response Modes

1. Supply graph paper to assist the student in organizing and aligning computations.

2. Provide the student with concrete and/or manipulative materials when introducing new concepts (i.e., thermometer, check book, coins, scales, balances, geometric shapes).

3. Use discretion in selecting and assigning worksheets. Be sure the worksheets are legible and that ample space is provided to figure and answer problems. When worksheets are uncluttered and clearly printed, the student is not so distracted and is less likely to lose his/her place. This also allows more accurate problem solving and more rapid completion of the assignment.

4. Reduce the amount of material tested at one time. Rather than administering a test on several concepts of measurement such as area, perimeter, and volume, separate these concepts and test the student on each one individually.

5. Select a math book containing easier reading vocabulary. (It also may have more emphasis on computation.)

6. Provide alternative methods for accomplishing a task, such as taking tests orally or tape recording worksheet answers rather than writing them.

7. For a student who has difficulty copying math assignments from the text, ask a peer to use a carbon when he writes the problems. The carbon copy is then given to the student who has the writing or organization deficit.

8. Color code important words or symbols to show a change in operation on a worksheet.

9. Box or circle a figure or problem to set it apart from others on the page.

10. Underline key words in the directions for a worksheet or test.

11. When a worksheet or test has several kinds of problems on the same page, group problems of the same process together for the student who has difficulty paying attention to sign changes.

12. Cut apart a test or worksheet so the student is required to complete groups of similar problems. This also is an advantage because the assigned task will be completed in shorter time periods. Some students experience difficulty in attending to the task for one hour, but can successfully complete two assignments which are separate half-hour segments.

13. Rather than open-ended questions, use fill-in questions that have space provided for each letter in the required word (e.g., "A figure with four equal sides and four equal angles is called a _ _ _ _ _ _ _"). The first letter of the missing word can be provided as an added clue.

14. Provide multiple choice, matching, and true-false tests rather than open-ended and/or computational tests.

Teaching Strategies:

1. Use consistent terms when referring to math concepts. For example, do not refer to "borrowing" one day and "regrouping" the next unless you are certain the student knows the terms are synonymous.

2. Allow the student to use computational aids such as a calculator, multiplication table, number lines, and charts. For example, many students understand the process required to solve a multiplication problem but have not mastered the facts. Providing the student with a calculator or multiplication table will prevent undue frustration the student may experience in trying to compute the answer, and you still help him practice the process.

3. Mark all correct responses on completed work rather than those that are incorrect.

4. Develop a grading system which awards points for homework, tests, class discussions, and special projects. Many students, because they are slower to complete assignments in class, might be penalized for handing in unfinished work. Encourage these students to earn extra credit by: (1) taking the assignment home and handing it in completed the following day, (2) participating more in class discussions or (3) completing a shorter assignment with accuracy during the class period.

5. Use concrete and/or manipulative materials to demonstrate concepts (i.e., thermometer, geometric shapes, coins, scales, balances, etc.).

6. Assign smaller quantities of work:

   a. The student completes only the problems the teacher has starred or circled.

   b. The student completes only a specific number of problems, starting at the beginning of the assignment.

7. Allow the student a longer period of time to complete an assignment; as stated in #4, the student is not penalized because he works slowly.

8. Wherever possible, relate problems to real-life situations, such as making change, computing salary, sales tax or credit liabilities.

9. In teaching basic operations, use real-life situations, such as income tax forms or a check book.

10. Review and reinforce previously taught concepts. For instance, many students are unable to recall how to compute division problems; they forget the process. Periodically provide practice in these skills so students can better retain them.

11. Define new terms. Provide visual and/or concrete examples of new vocabulary. Give the student examples of new terms and their applications which can be studied at home.

12. Provide frequent drills, utilizing the language master, flash-cards, math games, tapes, peer-tutors, and LAPs (Learning Activity Packets). Peer-tutors can be used to assist a student in writing answers, reading story problems, reading directions, drawing geometric shapes, or measuring angles. Learning Activity Packets provide the student with extended practice in a particular skill area which may include listening to a tape, completing additional worksheets, watching a film, etc.

13. Help the student analyze his errors. Have the student tell you how he solved a problem. When a student explains the steps he often finds the mistake himself.

14. Provide additional preparation before a student begins working in the textbook. For instance, the division process may be presented in a confusing manner in the text, so give the student adequate practice on a worksheet, the board, or a LAP (Learning Activity Packet) first.

15. Give examples of problems and procedures before the student begins completing a task. This eliminates the possible confusion over what the student is expected to do.

16. Have the student show you he understands the math concept or process by completing a sample problem correctly independently before he continues with the assignment.

17. For visually impaired students or for students with severe reading problems, utilize Tape Recordings for the Blind. Contact your Area Education Agency Consultant for the Visually Impaired and he/she will obtain the requested recordings. You may also contact your Department of Public Instruction to locate the tapes.

18. When introducing a new unit:

    a. Define the new vocabulary

    b. Explain the meanings of symbols and formulas

    c. Demonstrate how problems are to be worked

    d. Check each student's understanding of what was taught

19. If the student has reading problems:

    a. Read or tape the problems for the student

    b. Reword the story problems

    c. Underline the important words

20. Develop a reference dictionary in math. You might include definitions of terms, sample multiplication and division problems completed and showing the step-by-step procedure.

21. Teach the student a strategy for problem solving such as:

    a. Skim the problem asking, "What is this all about? What am I to find here?" Make certain the student understands precisely what the problem asks for.

    b. Read carefully to locate specific facts. What information is supplied in the problem? The student should make notes which summarize.

    c. Plan your attack. The student determines the process(es) to be used and the steps involved in finding the answer.

    d. Estimate the answer. The student asks, "What would a reasonable answer be?"

    e. Compute the problem. The student carries out all the operations listed in step "c".

    f. Review and check your work to be certain your answer is correct.

    (This method was adapted from a problem solving method [SQRQCQ] by Jerry L. Johns, Northern Illinois University.)

Credit

The vignette, "observations," and many of the "Helpful Hints" were obtained or adapted from the following sources:

"Accent on Accommodation: A Guide to Modifying the Classroom for Handicapped Teens"
Midwest Regional Resource Center
Drake University
Des Moines, Iowa

"Regular Educators and the IEP"
The National Learning Resource Center of Pennsylvania
King of Prussia, Pennsylvania

MATHEMATICS

An interview with: Ms. Carolyn Thune
Hoover High School
Des Moines, Iowa

PHILOSOPHY:

All students have problems. They deal with them in different ways. Teachers need to expect a great deal from each student. Teachers need to maintain high standards for all students. If a teacher expects more from a student, the student produces more.

HELPFUL HINTS:

Modifying Assignments, Tests and Response Modes

1. For students who are slower to complete assignments, I assign only the odd or even problems on a page.

2. Students take tests during their regular class period and if they are not finished, they come to my room after school to complete the tests. Tests are the same for all students.

3. One student was more comfortable taking tests with the resource teacher, which I allowed. It appeared he was more at ease and experienced less anxiety when he worked by himself. I think it frustrated him to see the others working so quickly in class.

4. Some students have problems organizing their work on dittoed worksheets. They are encouraged to complete the assignment on notebook paper; it seems that the lines are helpful in aligning problems and the completed work is much more legible.

5. All students use the same math book. All students have the same assignments, because I believe everyone can attempt each assignment. If a student does not try, he is letting himself down. I try to make everything the same, so that students with learning problems are not singled out and are not made to feel different.

Teaching Strategies

1. Use real-life, practical situations and examples to explain new concepts. For example, in discussing the terms "greater than" and "less than", I talk about people's weight. I also

might give age as an example; "19 is greater than 18. In Iowa you can drink legally at 19; at 18 you cannot." These references mean something to the students and help them understand the new concepts clearly. I use dollars and cents to describe many number concepts.

I change the terms in some definitions to suit a class, depending on the make-up of the class. For example, one class may be composed of more high achievers and they grasp a definition quickly with few examples. For another class I might need to give many concrete examples before they understand the terms.

2. I use the chalkboard for everything. I emphasize key words, give examples of problems, and use it to demonstrate concepts I am teaching. I rarely use the overhead projector; I might if I have tried many methods to explain a concept and the students still do not understand it. The overhead is then used as another approach, but only occasionally would I rely on it.

3. Students complete some problems on the chalkboard for the entire class to see. I make certain that the students know how to do the problem--either I have seen it on their paper or I know from homework assignments. This really boosts their confidence and egó.

4. Grading is based on their performance on tests, daily work, weekly quizzes and attitude. Students are graded on the percentage of problems completed correctly.

   "Pop" quizzes are given twice a week and I find that the student with a learning problem in math often performs better on these quizzes than the tests. I think they do not have time to become nervous and anxious. Does stress play a part in how students perform? I think so.

   Some factors I consider in the "attitude" portion of the grade are the student's amount of participation in class discussion, whether a student is prepared for class with pencil, text, and paper, and if the student has attempted to complete all assignments (effort).

   Any work the students hand in is graded; they need to see the results of their efforts.

   I do not assign projects or homework to obtain extra credit. If the students try to do what I ask them to, they are doing a lot and they will not fail in my class.

5. Peers are used to help students understand directions and new concepts. I might say to a student, "Explain this to Joe the way it makes sense to you." Sometimes the language the peer uses is more understandable to the student experiencing problems than terms I used in the presentation.

   I also use peers to assist younger students with their work. For example, one student who was enrolled in the learning disabilities program was "acing out" measurement (even though he had problems in math previously). He helped another younger student understand these measurement concepts and felt great about it.

6. I do not use math aids such as multiplication tables and calculators. We construct a 10" x 10" grid with the multiplication facts and keep track of the facts the students know. But I think students are capable of learning the facts and I expect them to complete their work without the aids.

Final Comment

Students in my classes, for the most part, demonstrate the ability to complete the work that is part of the general education curriculum. I have had students with learning problems in my classes, and I think because I am structured and demand students to produce, they do. I want students to feel comfortable, accepted, and to become resourceful in dealing with their problems. By encouraging students to complete challenging tasks they do not feel so different from the others.

MATHEMATICS BIBLIOGRAPHY INDEX

(All items are instructional materials except those listed under the Teacher Reference Materials.)

Measuring Things
Milliken Duplicating Materials - Math
Money Makes Sense
Money Matters (Creative Publications)
Money Matters (Teacher's Exchange of San Francisco)
Project MATH
Sound Page - Math
Useful Arithmetic
Working Makes Sense

Decimals and Percents

Aero Learning Lab
Basic Essentials of Mathematics
Basic Skills in Using Money
Coordinated Vocational Education and Training: Math
Cutting Corners
Electric Drill
Mathematics In Living
Milliken Duplicating Materials - Math
Practice for Modern Mathematics
Project MATH
Sound Page - Math
Working Makes Sense
Working with Numbers Series

Division

Aero Learning Lab
Basic Essentials for Mathematics
Basic Mathematics
Basic Practice in Multiplication and Division
Electric Drill
Guidebook to Mathematics
Math Breakthrough
Math From Rock Bottom
Open-Ended Task Cards
Project MATH

Sound Page - Math
Sports 'n Things
Steps to Mathematics
Working With Numbers Series

Fractions

Adventures with Arithmetic
Aero Learning Lab
Basic Essentials of Mathematics
Coordinated Vocational Education and Training: Math
Electric Drill
Fraction Dominoes
Math Mystery Theatre
Milliken Duplicating Materials - Math
Practice for Modern Math
Sound Page - Math
Working Makes Sense
Working With Numbers Series

Games

Cutting Corners
Dominoes
Fraction Dominoes
Monopoly
Picture Graphing
Quizmo
Sound Page - Math
Time to Deal
Touring
Yahtzee

Metrics

Contemporary Metric Shade-Ins
Metric Ease
Metric Flash Cards
Metric Task Skill Development Activities

Multiplication

Aba-Ten Rule
Aero Learning Lab - Math
Basic Essentials of Mathematics
Basic Mathematics
Basic Practice in Multiplication and Division
Basic Skills in Using Money
Color Computer
Coordinated Vocational Education and Training: Math
Electric Drill
Flash X Cards
Guidebook to Mathematics
Math Breakthrough
Math from Rock Bottom
Multiplication Fact Puzzles
Open-Ended Task Cards
Practice for Modern Mathematics
Project MATH
Sound Page - Math
Sports 'n Things
Working with Numbers Series

Subtraction

Aero Learning Lab
Basic Essentials of Mathematics
Basic Mathematics
Basic Practice in Addition and Subtraction
Electric Drill
Guidebook to Mathematics
Math Breakthrough
Math from Rock Bottom
Open-Ended Task Cards
Practice for Modern Mathematics
Project MATH
Sound Page - Math
Sports 'n Things

Steps to Mathematics
Working with Numbers

Teacher Reference Material

Business Math: Bills, Bill, Bills
Crosscurrents: A Prescriptive Teaching Handbook
Improving Reading in Every Class
Mainstreaming Handicapped Students
Mainstreaming Science and Mathematics
Mathematics and Learning Disabled Youth

Word Problems

Aero Learning Lab
Guidebook to Mathematics
Mathematics for Today
Mathematics in Living
Project MATH
Sports 'n Things
Steps to Mathematics
Useful Arithmetic
Word Problems in Math
Working Makes Sense

MATHEMATICS BIBLIOGRAPHY

The Aba-Ten Rule (Beta Enterprises) Slide Rule. Price Range: Under $10.

Slide-rule type instrument to be used as math aid.

Adventures with Arithmetic - Fractions (Creative Publications) Workbook. Price Range: Under $10.

This workbook provides practical review of the basic concepts of fractions.

Aero Learning Lab - Math (Aero Educational Products) Kit. Price Range: $100-$150.

Over 3,500 exercises very gradually advance through all phases and levels of number work. Includes fractions, decimals, measure, time-telling, negative numbers. Manual shows how to find a pupil's hidden difficulties and what practice to assign.

Arithmetic Step-by-Step (Continental Press) Spirit Masters. Price Range: Under $10 per unit.

A series of ditto masters which are useful in the developmental teaching of such survival skills as: using money, telling time, learning measurement and reading a calendar. The dittos clearly show the step-by-step procedure which should be followed in teaching aforementioned skills.

Basic Essentials of Mathematics (Steck-Vaughn) Workbook. Price Range: Under $10.

This workbook is a very thorough presentation of the basic math concepts. It includes mastery tests for each section. For some students this large number of problems on a page might be overpowering. If so, they could be transferred to another page with fewer problems.

Basic Mathematics (Merrill Publishing Company) Duplicating Masters. Price Range: $50-$100 per set.

Success in mathematics for the slow learner is the primary goal of Basic Mathematics. The program consists of 3 kits, each intended for one year of study. Placement in the program should be student performance levels rather than grade levels.

Basic Practice in Addition and Subtraction (Love Publishing Company) Workbook. Price Range: Under $10.

Basic Practice in Multiplication and Division (Love Publishing Company) Workbook. Price Range: Under $10.

These workbooks provide exercises to strengthen skills in the basic math operations.

Basic Skills in Using Money (CEBCO Standard Publishing) Workbook. Price Range: Under $10.

The activities and exercises in this book are designed to familiarize individuals with United States coins and paper currency. It covers such topics as the value of coins, the value of a dollar, writing dollars and cents, making change, etc. From 1 to 5 worksheets are devoted to each main area.

Business Math: Bills, Bills, Bills (A Mini-Course for Secondary Students in Business and Math, available through the CAP-P Project, Room 117, Roosevelt High School, Des Moines, Iowa)

This mini-course is a survival course which presents the various types of bills, finance charges and procedures for handling bills which present questions. The mini-course is designed around concepts and activities. The CONCEPTS comprise the basic content of similar courses taught in secondary schools. The ACTIVITIES found under each concept are designed to assist the teacher teach that concept. The activities are generally alternatives to the reading and writing which often frustrate students with learning problems. Other mathematics titles in the Mini-Course Series include: Calculator Math and Multiplication.

Color Computer (I.E.S.S.) Teacher-produced math cards. Price Range: Under $10.

Teacher-made color coded answer cards with 42 programming possibilities which are easily programmed for math drill of all types. The cards give immediate feedback for all learners and are adaptable to many content areas. Contents are: a color-coded answer card, prepunched question cards (4 different hole patterns with 42 programming possibilities) and a sheet with directions and recommended uses.

Contemporary Math Shade-Ins (Morris Bureloff) Workbook. Price Range: Under $10.

Math puzzles providing a new dimension in the teaching and learning of mathematical concepts and computations.

Contemporary Metric Shade-Ins - Intermediate (Morris Bureloff) Workbook. Price Range: Under $10.

A workbook giving practice with the internalization of the vocabulary. The newness of the metric system is related to vocabulary, not mathematics. Students will be exposed to many pages of drill material.

Coordinated Vocational Education and Training: Math (State Department of Vocational and Technical Education, Stillwater, Oklahoma) Looseleaf notebook for students and teacher's guide. Price Range: Under $10 per book.

This manual was developed especially for disadvantaged and handicapped students. Units of instruction have been developed in the following areas: Measurement, Whole Numbers, Fractions, Decimals, Percent, Consumer Education and Geometry.

Crosscurrents: A Prescriptive Teaching Handbook (Oklahoma Child Service Demonstration Center, Cushing, Oklahoma 74023)

This teacher reference book coordinates objectives and materials in four major categories: Reading, Math, Functional Skills, and Affect. The Math section uses the subtests of the Key Math Diagnostic Test as starting points to obtain a diagnostic profile of the student's strengths and weaknesses. Classroom observations describing possible sources of error for the student are discussed. Finally, remediation techniques are matched with instructional materials which may be appropriate to teach the student with the described skill deficit.

Crossnumber Puzzles (Creative Publications) Workbook. Price Range: Under $10.

This workbook deals with mathematics in the format of cross-word puzzles. It would be an excellent supplementary material for reinforcement or review.

Cutting Corners (The Math Group) Game. Price Range: Under $10.

A life-simulation game in which players earn and spend money while keeping a checkbook record of the expenses.

Electric Drill (Creative Publications) Reproducible pages in binder. Price Range: $50-$100 per binder.

Electric Drill is a flexible math material for supplementing a developmental program. It consists of four looseleaf books of reproducible worksheets and pre/post-tests. Titles included are: Whole Numbers, Fractions, Decimals and PerCents. May be purchased separately or as a set.

Flash X Cards - Basic Arithmetic (Dowlings, Inc.) Cards. Price Range: Under $10.

Each set consists of 12 cards (24 exercises) to be used with the Flash-X tachistoscope (operated manually). The cards vary in difficulty for step-by-step learning. Concepts covered include Addition, Subtraction, Multiplication and Division.

Fraction Dominoes (Creative Publications) Game. Price Range: Under $10.

The age-old game of dominoes converted into a fraction game. Not for beginning fractions students as unlike fractions must be matched.

Fractions: A New Approach (Singer) 6 filmstrips, 3 cassettes and 6 guides. Intermediate Junior High Level. Two Groups available. Price Range: $100-$150 per group.

This series is designed to provide a step-by-step system whereby students are introduced to the subject of fractions and to the fundamental functions of fractions. Some of the titles included are: The Properties of Operation: Fractions, Part 1, What Are Fractions? and Simplifying Fractions.

Fractions: New Dimensions in Decimals and Percent (Singer) 6 filmstrips, 3 cassettes, 6 guides. Price Range: $50-$100.

Graphic illustrations teach step-by-step mathematical operations of addition, subtraction, multiplication and division, while using decimal fractions. Some of the titles included are: Place Value and the Decimal Point, Multiplication of Decimals and Division of Decimals.

Guidebook to Mathematics (The Economy Company) Workbook and Teacher's Guide. Price Range: Under $10 per book.

Designed for the older pupil who is capable of learning but is working on low achievement level. It shows the pupil why he should and must know simple arithmetic skills and offers relevant exercises in figuring interest rates, making budgets, and using bank accounts.

The "I Hate Mathematics" Book (Creative Publications) Handbook. Price Range: Under $10.

This activity book provides the individual student with many fun games, puzzles and points-of-view regarding math. It would be a good resource for individual math project ideas.

Improving Reading in Every Class (Allyn and Bacon, Inc., Boston, Massachusetts)

This teacher reference book contains procedures not only for teaching the fundamental processes in reading, but also procedures for teaching reading in almost all high school subject areas. One chapter is devoted to practical classroom methods for teaching mathematics. Ideas are presented through practical examples and understandable descriptions of methodology. It discusses many how-to-do-it ideas and suggestions.

It's Your Money (Steck-Vaughn) Workbook. Price Range: Under $10.

The objective of this series is to reinforce facts the student already knows. "Challenges" are provided to assess the students' understanding of each section. Reading level fluctuates around 7.5, but material is presented in such a way as to familiarize the student with new vocabulary.

Mainstreaming Handicapped Students: A Guide for the Classroom Teacher (Allyn and Bacon, Inc., Boston, Massachusetts)

This teacher reference provides instructional strategies and curriculum adaptations for handicapped students in all content areas. It also describes characteristics of handicapped students and the educational implications associated with those characteristics. The chapter on mathematics instruction contains many helpful strategies which are applicable to the secondary level.

Mainstreaming Science and Mathematics (Goodyear Publishing Company, Inc., Santa Monica, California) Special ideas and activities for the whole class.

Although the activities described in this book are designed more for elementary students, many could be adapted for

junior-high students. This book is loaded with practical ideas for teaching math concepts to exceptional students working in classrooms with other students. Individual student objectives for each theme are identified on a daily basis; procedures for the teacher to follow and materials to be used in presenting the lesson are included.

Math Breakthrough (Teacher's Exchange of San Francisco) Multi-purpose task cards. Price Range: Under $10.

Thirty-six multi-purpose task cards involving addition, subtraction, multiplication and division of whole numbers, fractions, and decimals. Activities provide practice in basic math functions. Durable and reusable.

"Mathematics and Learning Disabled Youth: The Upper Grade Levels" (from Learning Disability Quarterly, Volume I, Fall 1978)

This is the first in a series of articles which focus on mathematics and learning disabled students. The authors present a model for mathematics programming for handicapped students that considers both the learning characteristics of the student and the appropriate representation of mathematics.

Mathematics In Living (Pruett Publishing Company) Workbook. Price Range: Under $10.

Four workbooks dealing with everyday math skills. Titles included are: (1) Buying, (2) Wages and Budgets, (3) Banking and (4) Credit, Loans and Taxes. Each workbook provides the student with practice in functional math computation.

Mathematics for Today (Sadlier Oxford Book Co., Inc.) Student workbook and teacher's guide. Price Range: Under $10 per workbook.

Mathematics for Today focuses upon fundamental math skills required for successful functioning in the community, in the home and on the job. Level Red includes activities such as filling out application forms, computing payroll deductions, and net pay, figuring taxes, cost and change as a clerk, maintaining checking accounts, budgets and understanding credit. Level Blue includes activities such as: computing costs, using a calculator, sales taxes, reading graphs, figuring averages and maintaining an automobile.

Math From Rock Bottom (Merrill Publishing Company) 2 kits (sets 1 and 2), 10 books, 10 study guides, 4 cassetts tapes, 1 teacher's guide. Price Range: $50-$100.

Math From Rock Bottom is a program that encourages students to take a look at counting and the operations for the whole numbers. It is a comprehensive developmental math program that requires intensive study. Students whose math achievement has been low will benefit from using Math From Rock Bottom in grades 7 and 8.

Mathimagination (Creative Publications) Reproducible pages. Price Range: $10-$50 (in binder). Also available in spirit masters.

This series of reproducible pages would be useful as supplementary materials and "time fillers" at odd hours of the day. Fun exercises and puzzles. Two levels are available.

Math Match (Creative Publications) Game. Price Range: Under $10.

This game reinforces basic math concepts.

Math Mystery Theatre (Fairview Audio-Visual Company) Filmstrip, cassette and spirit master. Price Range: $10-$50.

This is a series of 12 lessons dealing with specific math skills. Each lesson includes a full-color filmstrip dramatization, a cassette tape, and 4 spirit master Mystery Sheets. Three of the four Mystery Sheets are completed during the filmstrip; the fourth is completed as a review. Lessons are highly motivating and require from 30 minutes to 1 hour to complete.

Measuring Things (Coronet Instruction Materials) 6 filmstrips, 6 cassettes, 1 user's guide.

Measuring Things introduces students to the fundamental concepts of measurement and to a basis for understanding and working with standard units of measure. It also indicates the importance of measurement in everyday life. (Using Standard Units, Measuring Length, Measuring Weight, Measuring Liquids, Measuring Time with a Clock, Measuring Time with a Calendar)

Metric Ease (Creative Publications) Workbook. Price Range: Under $10.

This workbook provides exercises and activities that reinforce the use of metric measurement.

Metric Flash Cards (Special Education Materials, Inc.) Flashcards. Price Range: Under $10.

A boxed set of Metric Flash cards consisting of 3 sets are designed to help the student learn to estimate and measure length, weight and volume using the metric system. Each set consists of 36 flash cards.

Metric Tasks Skill Development Activities (Love Publishing Company) Task cards. Price Range: Under $10.

Seventy-two individual metric tasks, organized according to a developmental sequence of math skills. The activities offer practical suggestions for implementing the study of the metric system.

Milliken Duplicating Materials - Math (Milliken Publishing Company) Spirit masters. Price Range: Under $10.

This collection of spirit masters contains approximately 25-30 pages each. Good supplementary material for review or reinforcement of basic math concepts. Titles: Modern Arithmetic, Decimal Exercises, and Fraction Exercises.

Milliken Transparency & Duplicating Materials - Math (Milliken Publishing Company) Spirit masters and transparencies. Price Range: Under $10.

This collection of spirit masters also includes transparencies for use with overhead projectors. Useful when working in groups. Titles: General Mathematics, Concepts and Skills, and Hard Spots in Modern Math.

Money Makes Sense (Fearon Publishers) Workbook plus teaching guide. Price Range: Under $10.

This series gives a brief history of money and pertinent facts about U.S. money. It teaches coin recognition, the relative value of coins to the dollar bill, the use of money, counting and addition.

Money Matters (Creative Publications) Workbook. Price Range: Under $10.

This workbook consists of puzzles in which the student must choose correct coins to make change. Good review or reinforcement for making change.

Money Matters (Teachers Exchange of San Francisco) Task cards. Price Range: Under $10.

A comprehensive collection of activities involving the use of money and covering a wide range of real life situations. Realistic coins and bills, coupled with intriguing graphics, add to the effectiveness of the tasks.

Multiplication Fact Puzzles (The Math Group) Workbook. Price Range: Under $10.

A collection of reproducible puzzles intended to reinforce basic multiplication facts. These may be used for instruction, as well as for review. The puzzles are interesting and motivating for students and especially good for the student who has a short attention span.

Open-Ended Task Cards (Teachers Exchange of San Francisco) Price Range: Under $10.

A series of seventeen math tasks geared toward measurement, graphing, and money skills. Students are encouraged to keep a notebook of math tasks completed.

Picture Graphing (The Math Group) Workbook. Price Range: Under $10.

This book contains a variety of coordinates to be graphed. When done correctly, they make very interesting pictures.

Practice for Modern Mathematics (Steck-Vaughn Company) Five copies of each workbook with teacher's edition. Eight levels. Price Range: Under $10.

This is filled with fascinating puzzles and imaginative number games with colorful, interesting illustrations that add fun

and excitement of mastering the skills of modern math. Exercises are included to develop understanding of inequalities, number theory, properties of real numbers and topics in geometry. The main focus is clearly on developing computational skills.

Project MATH (Educational Progress, a division of Educational Development Corporation, Tulsa, Oklahoma)

Project MATH is a comprehensive developmental mathematics program for students with special education needs. Levels III and IV are frequently used at the junior and senior high school levels. Level III presents content ordinarily covered in Grades 2.5 through 4; Level IV presents content ordinarily covered in Grades 4-6 and places an increased emphasis on practical, everyday social interaction. In Levels III and IV the student is introduced to written problems. There is strict control of the natural language patterns in the problems, of the choice of problems written at different vocabulary levels, and of the computational complexity and operations required. The Social Utilization Units Levels III and IV provide relevant life experiences to reinforce mathematics skills.

Quizmo (Special Education Materials, Inc.) Game. Price Range: Under $10.

Quizmo is an educational game. By playing this game, the child practices the uses of basic addition and subtraction, multiplication and division facts. The game is played like Bingo.

Search Visuals: Reading Graphs 2 (Scholastic Book Services). Transparency, spirit master, lesson plan. Price Range: Under $10.

These visuals are for use with Junior and Senior High students who are reading at 4th and 6th grade levels. This volume contains eight graph reading lessons.

Sound Page - Math (R. K. Black, 3M Company) Resource book. Price Range: Under $10 per book.

These books contain visuals and narrative to be used with the Sound Page Teaching Machine.

Title	Content
Mathematics 1	Elementary Math, Telling Time, Place Value
Mathematics 2	Metric Systems, Topology, Graph Construction
Mathematics 3	Geometry, Algebra
Concepts in Mathematics	General Math

Sports 'n Things (Educational Insights) 12 cards with a teacher's guide. Price Range: Under $10.

These task cards are based on sports and other topics of interest to students. They emphasize word problems in math. Several sets are available to work on addition, subtraction, multiplication and division.

Steps to Mathematics (Steck-Vaughn) Workbook. Price Range: Under $10. Two levels.

This workbook was written especially for those who need to increase their basic mathematics skill. Both levels of Steps to Mathematics are based heavily on functional math of everyday life.

Time to Deal (The Math Group) Game. Price Range: Under $10.

There are 14 sets of cards in the deck, each consisting of a clock face and 2 or 3 cards listing alternate ways of expressing each time. These are used in several ways to teach time concepts. Instruction sheet included.

Useful Arithmetic (Frank E. Richards) Workbook. Price Range: Under $10. Two levels.

These workbooks cover basic functional math skills in two volumes. The readability is established at low 3rd grade. The series covers such skills as figuring grocery bills, wage deductions, paying loans and budgeting.

Word Problems In Math (Scholastic) Workbooks. Price Range: Under $10.

This series of workbooks deals only with word problems. The series has four levels which take the student through the steps necessary to solve word problems. Basic skills taught are recognition of facts, identifying the problem, determining the math operations, estimating and problem synthesis.

Working Makes Sense (Fearon Publishers) Workbook plus teaching guide. Price Range: Under $10.

Through interesting and relevant story problems involving teenagers at work and play, this series gives practice in developing skills. It introduces fractions and percentages, teaches about payroll deductions, checking and savings accounts, and other important practical matters.

Working With Numbers Series (Steck-Vaughn Company) 5 workbooks, 5 tests, 1 answer key. Price Range: Under $10 per book.

Hundreds of skill building exercises are blended with concise textual material to give students a strong base of knowledge and experience in computation.

Credit

Many of the sources listed were obtained from:

Multi-Media Materials Catalog
Secondary Level Grades 7-12
Oklahoma Child Service Demonstration Center
Hillside School, Route 3
Cushing, Oklahoma 74023

SCIENCE

INTRODUCTION

This unit explains how a secondary general education science teacher can individualize instruction to meet the needs of handicapped students in his/her classroom.

The unit begins with a vignette, or description, of a student who is placed in a secondary level science class. Observations of some of the problems a student may encounter when participating in the classroom activities follow.

The majority of this unit consists of "Helpful Hints" which general education teachers should consider when adapting curriculum, assignments, tests, and laboratory procedures in order that handicapped students can successfully participate in the classroom activities. The strategies which are listed can be applied to any science course--chemistry, biology, physics, and so forth. The suggestions are listed in order starting with those that require the least amount of modification of classroom activities to those that require the most. Although we suggest implementing these procedures with handicapped students, most of the suggestions are those which can be considered when programming for any student with learning problems. If you need to adapt or obtain materials for visually or hearing impaired students, we suggest you contact a consultant at your Area Education Agency or Department of Public Instruction.

At the end of the "Helpful Hints" section are several articles which discuss instructional strategies useful when teaching science vocabulary and adapting science texts and some general considerations for planning and programming for special needs students.

Next is an interview with John Heinzerling, a learning disabilities resource teacher at Hoover High School in Des Moines, Iowa. He outlines some strategies which teachers have found to be successful in working with handicapped students in science classes.

Finally, an extensive annotated bibliography, which lists instructional materials and teacher references, is included.

SCIENCE

PROBLEM:

Linda, a blind student in tenth grade, is enrolled in the general education biology class. Although she tape records most class presentations, she experiences problems in the class because of the number of visual aids used by the teacher to explain concepts. For example, in describing details about the digestive system, the teacher might say, "You can all see from this chart how. . . ."

Linda is also at a disadvantage when filmstrips and slides are shown to the class. In a school where Linda had been enrolled in ninth grade the science teacher had obtained special models from the Consultant for the Visually Impaired that Linda could feel while a peer or volunteer explained to her what she was touching.

Lab experiments are something with which Linda has little experience, because the equipment is not labelled in Braille.

Linda is extremely frustrated, because she understands many of the science terms, but cannot participate in the activities and complete assignments.

OBSERVATIONS:

Because students need to develop such a diversity of skills to participate in science activities, there are many who feel frustrated in these classes.

Many students frequently experience difficulty in science because of the technical vocabulary used, their inability to understand and follow the directions of an experiment, and because they must read complicated symbols, graphs, diagrams, charts, and formulas. Some students also have problems understanding scientific concepts, because they may seem so abstract and unfamiliar to them.

A significant portion of science also involves lecture, discussion, and verbal interaction in small groups, so students who

have difficulties expressing themselves orally or taking notes may have problems.

These are just a few of the areas where students have difficulty. Naturally, problems are compounded when a student has a severe vision or hearing impairment or a physical handicap which confines the student to a wheelchair.

HELPFUL HINTS:

Modifying Assignments and Tests

1. If a visually or hearing impaired student is in your science class, contact the Consultant at the Area Education Agency or State Department of Public Instruction. The consultant will assist you in locating materials which have been specifically designed for students with these handicaps.

2. Preview materials, asking yourself:

   a. What terms may be confusing?

   b. How can I relate these concepts so students can understand them?

   c. Are there examples of practical everyday situations provided?

   d. What skills must a student already possess to be successful in using this material?

3. After giving directions for an assignment or test, ask the student if he/she will require any special adaptations to carry them out.

4. Tell the students to read the end of the chapter questions and the chapter summary before beginning to read the chapter. These pinpoint the main ideas of the chapter and help the student to locate important details in the content.

5. Show the student how to use bold face headings, topic sentences, and summaries written in margins of textbooks to help him/her locate answers to questions and get the "main idea" of the paragraph. New textbooks published since 1978 may includes these margin summaries.

6. Allow students to do fewer questions on assignments.

   a. Circle certain questions for the student to complete.

   b. Assign only the "odd" or "even" questions.

7. Allow students to use filmstrips or other visual aids that stress the same concepts as the lesson, rather than requiring them to read the assignment or rely on notes they took during lecture.

8. Introduce students to new vocabulary prior to the time the vocabulary will be used in the lesson.

   a. If the students have dictionary skills, they can look up new words and write the meanings on index cards. Also on the cards students can write the word in a sentence and either draw a picture or find a picture in a magazine as a form of illustration. All cards could be kept in a file box. Reviewing the cards can become an activity the students can do as an assignment or in their free time.

   b. Students who have not mastered dictionary skills will need assistance in defining new vocabulary. Use the resource teacher, an aide, a peer tutor, or a volunteer to help the students define and review vocabulary so they can participate in class discussions.

   c. Refer to the article "Reading in the Content Area" which appears after the "Helpful Hints" section. Several techniques are described in detail which build vocabulary skills.

9. Allow the student more time to complete assignments. The student should be encouraged to take the material to study hall or home to read an assignment, listen to a tape, or write answers to questions.

10. Avoid forcing some students to read aloud. For a student with reading problems this is very embarrassing; in addition, comprehension will most likely be poor when reading aloud.

11. Have a peer tutor and a student with reading/writing problems complete reading assignments together. Both students might read the assignment orally, with the tutor helping his partner identify unfamiliar words.

12. Make good use of discussion periods before, after, and during reading assignments. Clarify and explain the reading by making your own contributions and through the use of skillful questioning.

13. Volunteers or peer-tutors can tape record textbooks for those students who read significantly below grade level.

   a. Include an introductory "organizer" which briefs the student on important details he/she should listen for or a "main idea" to be obtained.

b. At the end of a page or unit, include study questions to check the student's comprehension.

14. Directions for assignments may need to be given in one or more ways--orally, in writing, taped, or by example. If the student has difficulty understanding directions, provide alternative methods for explaining them:

    a. Have the student ask a friend for an explanation.

    b. Have the student signal for your attention so you can clarify them.

15. Simplify directions on assignments or tests.

    a. Make terms clear and concise.

    b. Decrease the number of steps the students must follow to complete an assignment.

16. Allow the student to tape record answers to questions for assignments and tests.

17. Design homework or test questions using simpler vocabulary. In this way a student with reading problems is not penalized because of his inability to read and comprehend the questions.

18. Have students who have stronger reading abilities make chapter summaries for those students with reading and writing deficits.

    a. The student with the reading/writing problem can participate in the development of the summary by illustrating it with pictures from old textbooks or magazines.

    b. Have the students bind the summaries together for booklets which can be used when reviewing for tests.

    c. The summaries could be laminated or covered with clear contact paper so other students can use them in the future.

19. Provide summarizing and organizing activities such as writing summary paragraphs, jotting down the steps in an experiment, making outlines, keeping notebooks, and writing observations.

20. For students with short attention spans, sitting and listening to a lecture or discussion for the entire class period is very difficult. Try to include several change-of-pace activities during a class to break up the routine:

    a. Conduct an experiment.

    b. Have students work with peer tutors or volunteers.

c. Use an audiovisual aid.

d. Have the student complete a LAP (Learning Activity Packet). These are individual activities designed to provide more practice with and exposure to a skill being taught. The activities may include completing a worksheet, listening to a tape, using a programmed instruction booklet, and so forth.

e. Have the student write/illustrate a story or design a poster about the concept being studied.

21. In class discussions and lecture presentations, use familiar words in a context that is understandable to the students. Give examples of practical applications with which students have had experience.

22. Provide as many "hands on" experiences as possible. For example, having a garden outdoors where students can work with plants rather than reading about them will be more relevant and enjoyable for students learning about plant growth and so forth. Equipping the plot with a rain gauge and measuring plant growth will provide students with data necessary for recording climatic and growth changes.

23. In assignments, textbooks, or tests, color code or outline the key concepts on each page so that the student is visually aware of their significance. Signaling out concepts increases the likelihood of a student reading and remembering them.

24. If the student has reading problems, substitute projects for written assignments or reports. These projects may include developing oral reports, posters, charts, drawings, models, collections, and so forth. For example, in studying about plant growth, have the student save some seeds from the foods at home, plant them, and chart their stages of growth or write <u>brief</u> descriptions of their changes in a weekly journal.

25. For students having difficulty understanding abstract concepts in class presentations or assignments, use the language experience approach as a way to promote concept development.

    a. Have students summarize in their own words the information which has been presented in a class discussion, lecture, film, or required reading.

    b. If the student is unable to write or spell adequately, have a peer tutor or volunteer write the summary as the student dictates it.

    c. Or the student could find pictures in magazines or draw pictures to illustrate the concepts emphasized.

26. Use real-life examples and situations to explain concepts whenever possible. Rewrite or reconstruct "story problems" provided by textbooks so that students are actually involved in the described situation. For example, if you are studying about weather forecasting, air currents, and so forth, go on a field trip to a television station where you can interview a meteorologist or have him/her come to your class and discuss the techniques used in weather forecasting. Have students clip the weather section from the newspaper and make charts and graphs showing various weather conditions on a daily basis. Students are then experimenting with and analyzing results which are more relevant to them because they are actually involved in the process of gathering the data.

27. Prepare study guides which break down a chapter or material point by point.

    a. Before reading a chapter have the students read the study guide questions. This will help them organize their thinking and direct their reading. (Use the blackboard or duplicated work sheets; ask the students to read for the "main idea" or tell what the purpose of an experiment is, and so forth).

    b. The guide can contain summary questions. At the end of each question write the page number of the text(s) where the correct answers can be located.

28. For students who have difficulty with note-taking:

    a. Have a peer use carbon paper and give duplicate copies of the notes to those students who have note-taking problems.

    b. Provide an outline where the student can add brief notes during lectures. Outlines can be written on the board or prepared prior to class on a ditto.

    c. During an oral presentation, write and/or underline key words or phrases on the blackboard or overhead transparency.

    d. Provide the student with "concept" cards. Before each class period, make notes of the concepts which will be presented during class. For the last five minutes of class, ask the student to review the cards with you. The student then returns the cards to you to use with another student or they may be given to the student to review at home or with a peer.

       Concept cards may also be very useful in studying for a test.

As the student becomes more adept in the use of "concept cards," he should be encouraged to make them for himself, checking with the teacher after class to see that he accurately noted the concepts presented.

29. Alter the test format.

    a. Give shorter tests by asking fewer questions. Use double spacing rather than typing a test with single spacing, which will result in the same number of pages but fewer questions. In this way it is not so obvious that the student has a shorter, different test.

    b. Permit oral responses.

    c. Give the test orally--put the questions on language master cards or a tape.

    d. Utilize true-false, multiple choice, matching, or fill-in-the-blank tests rather than essay tests.

    e. Allow students to take "open book" tests. Use the same test for the entire class, but allow some to use their books. Students really learn material this way, because they hear it in class, review it when they search for the answers to questions, and then write it.

    f. Allow an "open book" test but vary the test questions according to student abilities. Some may have open-ended essay questions and others a multiple-choice test.

    g. On essay tests, rather than writing complete sentences, allow the student to answer questions in topical outline form. Many students have difficulty writing lengthy descriptive sentences but can complete topical outlines because they require less writing.

30. In grading, provide different ways for students to earn points for their final grade. Tests and written assignments may be one portion. Conducting laboratory activities may be another. Other requirements might include projects such as making tables, charts and graphs which are relevant to the unit of study or participating in a panel discussion, presenting oral reports, participating in class discussions, and keeping a daily journal.

Modifying Lab Procedures

The constraints imposed by individual handicaps must be kept continuously in mind in designing laboratory activities. Otherwise, the experiences could discourage and perhaps humiliate students.

Make adaptations so that all handicapped students can participate in laboratory experiences.

1. At the beginning of the science course, provide the students with guidelines which outline how to read directions for laboratory experiments.

   a. Develop a unit to teach students how to read and review the directions in preparing for an experiment.

   b. The guidelines can be posted in large print for students to see in the classroom.

   c. A set of the guidelines can be copied and given to each student to keep in his/her lab notebook for future reference.

2. If equipment for an experiment needs to be assembled, be sure to include appropriate instructions and/or provide assistance in its assembly.

3. Put tape marks on the outside of test tubes to help students with measuring.

4. Use peer tutors to assist a student with:

   a. reading the steps of the experiment

   b. locating the materials needed for an experiment

   c. writing the observations

   d. manipulating equipment, chemicals, and so forth.

5. Teach students a problem-solving method to use when conducting an experiment or testing a hypothesis:

   a. Formulate a hypothesis

   b. Collate all evidence

   c. Evaluate and organize the evidence

   d. Form a conclusion

   e. Test the conclusion

Refer to modificiations listed in the Math and Language Arts (Written Expression) units for additional ideas.

Other pertinent modifications are reviewed in two articles, "Science Safety for Handicapped Students" and "Adapting Science to Disabled Learners" which appear after the "Helpful Hints" section.

Credit

Some of the suggestions listed in the "Helpful Hints" section were adapted from:

Reading Science Materials
by Jerry L. Johns
Northern Illinois University

USING "READING IN THE CONTENT AREA" TECHNIQUES IN SCIENCE TEACHING

Dr. Donald C. Parker

Teaching vocabulary is one of the more difficult aspects of science instruction, particularly at the secondary school level. Methods of coping with this problem range from teachers distributing daily "new words lists", which students must memorize for later recall tests, to teachers ignoring new vocabulary, assuming students already know all science terminology.

The outcomes of many of these practices most often are negative. Students may miss intended concepts due to an inadequate understanding of vocabulary, or may retain distorted understandings of certain concepts due to misconceptions of word meanings. Such a lack of fundamental understanding will indeed have a compounding effect as students progress through future science experiences.

While neglecting the teaching of vocabulary can have negative effects on students, so too can the over emphasis of science terminology. Excessive word drill may lead students to associate science with the memorization of facts. Although a science teacher may claim he is hired to teach "science", not reading, to ignore reading and vocabulary in science instruction is like pedaling a bicycle while engaging the hand brakes. It must be kept in mind that using all available resources in pursuit of a goal will increase the chances of meeting intended objectives.

One method for dealing with the problem of teaching science vocabulary is through content area reading techniques. As outlined in detail by Harold Herber in his book Teaching Reading in Content Areas, such techniques are easily incorporated into a teacher's daily lesson planning. Inclusion of such practices of instruction strengthen the generalizable reading skills of students at the same time as the student is meeting specific course objectives. He learns not only how to read better, he also learns to better understand what it is he is reading.

This paper will briefly outline five reading-in-the-content area techniques. Although discussion of the philosophy and methodology of approach will be limited, it is hoped that by supplying concrete examples of each technique, the reader will gain a basic understanding of the reading-in-the-content area approach to classroom instruction.

The Magic Square

The magic square is a puzzle which students complete by matching a series of questions to their correct answers. This technique can be used in a variety of ways, ranging from questions on a single topic to an overview of an entire course. In Example 1, a magic square is used as a Task Analysis exercise to reinforce a student's knowledge of a science textbook. From this activity they should become familiar with the book's table of contents, glossary, chapter summaries, etc. as well as recognizing the text's major headings and general layout. Task Analysis is an important study skill that provides some practice in using the resources which the book contains while enabling him/her to become a more independent learner.

The Bubblegram

The bubblegram is a "Reading-in-the-Content Area" technique which may be used to direct students to areas in a text that are necessary to complete a series of fill-in-the-blank questions. The answers are then used to complete a puzzle. Bubblegrams can be adapted to various student levels by construction with very direct guidance (i.e. Page 6, Col. 2, Line 5) to more general directions (i.e. Chapter 5). Examples 2a and 2b show two types of bubblegrams.

Scramblegrams

Scramblegrams are extremely popular with students. As shown by Example 3, words relating to a particular concept, chapter, etc. are contained in a matrix of letters. Students are to locate specific terms (which may or may not be provided on a separate sheet, depending on student levels) and then circle them on the scramblegram.

Vocabulary List

A simple yet often neglected aspect of science teaching is the use of vocabulary lists. Most helpful in effective science instruction, they serve to help students prepare for content in an assignment by pre-teaching new vocabulary. Teachers can also use such lists on a pre test - post test basis for assessing students growth. Vocabulary lists can be used for criterion reference testing and in the planning of appropriate follow-up material. Example 4 illustrates an example of a vocabulary list.

Reading and Reasoning Guides

Inherent in "Reading-in-the-Content-Area", is the philosophy that students in the same class function on different levels of comprehension. To meet the needs of all students in a particular

class, material has to be directed at the level at which each student is functioning. One technique for varying instruction to complement student comprehension levels is through the use of reading and reasoning guides. Consisting of a series of questions, such guides are directed at three basic levels of comprehension ability; literal, interpretive, and applied.

Levels of Comprehension

The literal level of comprehension is the most elementary level. Reading guides at this level often consist of questions which direct students to a specific section of the book. Answers at the literary level are exact passages from the text, they are concrete - either right or wrong. Example 5a is a literal level reading guide.

Example 5b illustrates a guide which directs students to finding interpretive level answers. Interpretive guides require students to read a section of the text, analyze it, and interpret the author's meanings. Group work especially facilitates effective use of interpretive reading guides. Unlike responses on literal level guides, answers to interpretive questions are not as clear-cut. Any answer a student can support is acceptable. Often there will be more than one correct answer.

The highest level of comprehension is the applied level. Guides directed to students at this level require consolidation of material additional to that presented by the text. Students must use the knowledge gained from the text in addition to that they already have accumulated from past experience (see Example 5c). As with interpretive level guides, applied level questions lead to active student interaction, again with no concrete answers, but rather responses which students must support by their own subjective/objective interpretation of data.

Summary

Surveyed in this text have been five "reading-in-the-content areas" techniques which can be utilized in teaching science. The purpose of these procedures is to increase the reading skills of students using science as the practice vehicle. The eight examples presented attempted to provide interesting and motivating ways to introduce new terminology to students while making text material more meaningful to them. Techniques, such as the use and development of reading guides, can meet the needs of different levels of students by allowing each to function at his general level of comprehension.

Hopefully, through use of activities such as those illustrated, "science" may become not just "memorization of facts", but rather a series of experiences where new and interesting information can be obtained. Additionally, with students using materials designed to meet their individual needs, such an approach, in time, would lead to students becoming more independent learners by facilitating their interactions with other class members in the exchange of ideas.

Example 1

The Magic Square

Text: General Science 9 Name _____

Science Task Analysis Date Due _____

"An Introduction to Your Textbook"

Method:

Directions: The following exercise will help you to know your science book. Match the groups of words or numbers in Column II with the sentences that best describe them in Column I. Place the number that matches the letter to the correct answer in the box containing that letter in the magic square below. Find the magic number by adding the columns in the square; up, down and across.

MAGIC SQUARE

A	B	C	D
E	F	G	H
I	J	K	L
M	N	O	P

MAGIC NUMBER _____

Example 1 (Cont'd)

COLUMN I	COLUMN II
1. A place at the front of the book that lists chapter headings and the page numbers on which the chapters begin.	A) 
2. A place at the back of the book that lists words, and the page numbers on which they can be found.	B) Index
3. This is printed in black, bold fact type and tells you what the paragraph is about.	C) Paragraph headings
4. These appear at the end of every chapter.	D) The highest point on the celestial sphere.
5. What figure 10 shows.	E) Erosion of a rock by wind
6. The pages on which information about tornadoes can be found.	F) Watch the earth turn
7. The title of Chapter 5	G) Rock forming minerals
8. The page on which the index begins.	H) 432
9. The page on which the glossary begins.	I) 412
10. What table 12-1 lists.	J) The formation of rocks
11. What the boy on page 125 wants to do by the experiment he has set up.	K) 153-55
12. The section of the book that gives the meaning of science words.	L) Glossary
13. The meaning of the word ZENITH.	M) Summary - Review Questions
14. The page on which the mineral identification chart begins.	N) 450
15. The color of azurite.	O) Blue
16. The symbol used on p. 230 to show volcanic rock.	P) Table of Contents

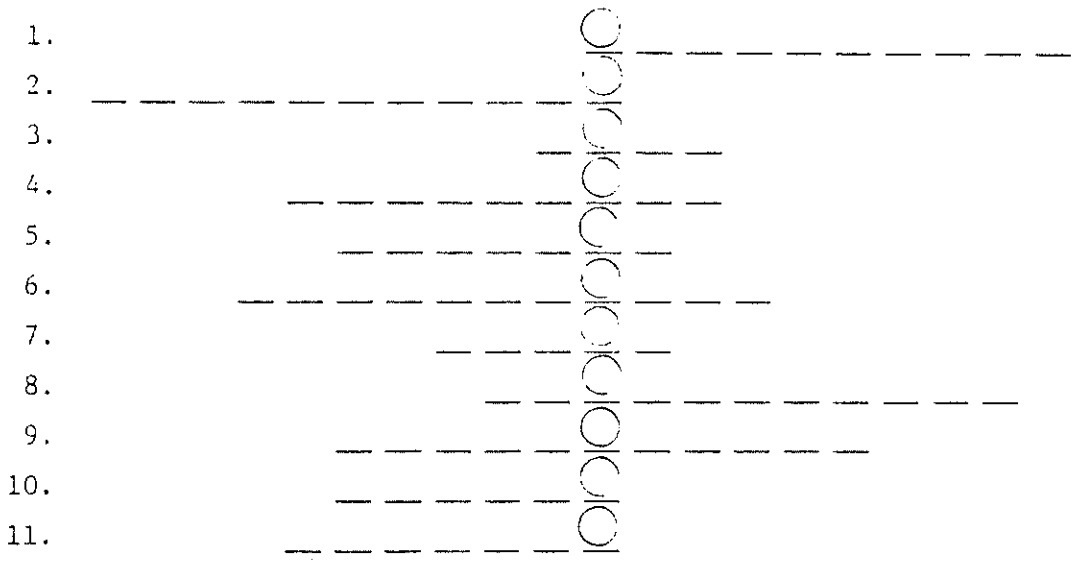
Example 2a

The Bubblegram

Science Bubblegram
Text - General Science 9
Chapter 2: Measurement Systems

Date _____
Name _____

Directions: Fill in the blanks at the top of the page with words that are the correct answers to the statements below. The letters that appear in the circles will spell out something that is very important to all of us.



1. The amount of error in a measurement is known as the _____ error. (P. 23, No.2)
2. This measurement is not a combination of other units. (P. 25., No.3)
3. For most measurements on earth, we can substitute weight for _____. (P. 18, No. 4)
4. An interpretation of your observation is called an _____. (P. 12)
5. A unit that is a combination of more than one unit is a _____ unit. (P. 20, No. 2)
6. A use of the senses to determine something about the environment is _____. (P. 14)
7. The unit of length in the metric system is the _____. (P. 16)
8. _____ is made up of a quantity and a unit. (P. 26)
9. This measurement tells us how hot something is. (P. 19)
10. The pull of gravity on something is _____. (P. 27)
11. Feet and tons are part of the _____ system. (P. 11)

Example 2b

The Bubblegram

Text: Physical Science Today

Chapter 6: Water and its Properties

Date _____

Name _____

SCRAMBLED BUBBLEGRAM

Directions: Match each word with its meaning. For each word, place the underlined letter in a circle below that has the same number as the word's meaning.

1. Concentration of matter in a given space
2. One of the states of matter
3. Becomes lesser
4. Wind speed and direction
5. This substance does not follow the rules when in a frozen state
6. This increases as you go deeper into a body of water
7. Lakes do this from top to bottom
8. This is the amount of water vapor in the air.
9. The temperature at which the air becomes saturated is this
10. Barometer pressure is usually given in this

A. L I Q U I D

B. F R E E Z E

C. D E N S I T Y

D. H U M I D I T Y

E. P R E S S U R E

F. D E C R E A S E

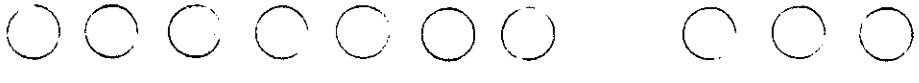
G. D E W P O I N T

H. W A T E R

I. W I N D V E L O C I T Y

J. I N C H E S

1 3 2 5 9 4 6 7 8 10



Example 3

The Scramblegram

Text: Exploring Our World

Chapter 8: Energy and its Properties

Name _____

Date _____

SCRAMBLEGRAM

Directions: Hidden in the scramblegram are words that are an important part of Chapter 8 . (Helpful hint: The words may be spelled BACKWARD, FORWARD, OR IN LOOPS.) The words that are hidden have been listed to make them easier to find.

L	C	O	R	N	O	I	T	C	U	D	N	O	C
I	O	P	K	A	T	M	O	S	P	H	E	R	E
Q	N	T	I	X	Y	X	V	P	W	A	T	E	R
U	V	S	N	M	C	T	I	O	N	W	Z	E	A
I	E	N	E	R	G	Y	Y	T	I	V	A	R	G
D	C	O	T	G	H	O	P	E	T	N	B	K	O
A	T	I	I	V	R	A	A	N	T	S	H	T	K
B	I	T	C	T	A	N	B	T	H	E	E	A	E
E	O	A	F	A	D	O	S	I	E	V	S	T	N
R	N	Z	R	N	I	I	O	A	R	A	A	U	V
U	R	I	I	E	A	T	R	L	O	W	I	V	I
T	E	R	C	E	T	N	P	Z	Y	X	R	W	R
A	F	O	T	T	H	M	T	S	I	N	K	S	O
R	R	P	I	E	E	L	I	O	A	N	B	P	M
E	A	A	O	F	R	K	O	U	C	O	F	H	E
P	C	V	N	F	M	T	N	R	D	I	C	G	N
M	T	A	Y	O	Z	E	C	C	E	S	A	H	T
E	E	W	Z	Q	L	U	A	E	X	U	S	I	O
T	D	X	A	P	A	H	P	S	L	F	X	J	G

Example 4

Vocabulary List

Text: General Earth Science Name _____

Chapter 3: Finding Locations on the Earth Date _____

Pre Test
Post Test

VOCABULARY

Briefly explain each of the following 15 items:

1. Coordinate System
2. Equator
3. Prime Meridian
4. Latitude
5. Longitude
6. Fields
7. Magnitude
8. Scalar Fields
9. Vector Fields
10. Gradient
11. Contour Map
12. Profile
13. Isolines
14. Iso surfaces
15. Contour Interval

Example 5a

Literal Level Reading Guide

Text: Investigating the Earth Name _____

Chapter 15: An Overview of Environmental Pollution Date _____

Reading and Reasoning Guide

I Literal

Directions: Fill in the blanks with the correct answers. The page numbers will help you find the answers.

1. Your study of earth science will be concerned with both the _____ of change and the _____ of change. (P. 131, bottom of left column)
2. On a time scale, _____ is the frame of reference. (P. 131, Col. 2, Line 23)
3. A common way to represent change is in the form of a _____. (P. 89)
4. Changes in the appearance of the moon are called _____. (P. 102)
5. Energy flow is generally across an _____. (P.111)
6. The natural environment is normally in a state of _____ _____. (P. 113)
7. The natural environmental equilibrium is often called the " _____ _____ _____." (P. 101, Col. 1, Lines 2-5)
8. Human activities are tending more and more to cause _____ _____ of the environmental equilibrium. (P. 96)
9. Pollutants may be _____, _____, _____ _____, forms of energy such as _____, _____, and _____ _____. (P.111)
10. Pollutants are found in the _____, on _____, and in water. (P. 113)

Example 5b

Interpretive Level Reading Guide

Text: Investigating the Earth Date _____

Chapter 15: An Overview of Environmental Pollution Name _____

Reading and Reasoning Guide

II Interpretive

Directions: Use your knowledge of the chapter to answer the questions. The page numbers listed will guide you to information that may help you in answering the questions.

1. Why is it important to maintain the balance of nature? (P. 103)
2. How can man stop polluting the environment? (P. 115)
3. What conclusions can we draw about pollution if we consider that highly populated and highly industrialized areas have more pollution than lightly populated and industrialized areas have?
4. What will happen to the environment if man refuses to stop polluting it? (P. 12
5. Why is it probably healthier to live in a small mountain village in Switzerland? (P. 111)

Example 5c

Applied Level Reading Guide

Text: Investigating the Earth Date _____

Chapter 15: An Overview of Environmental Pollution Name _____

Reading and Reasoning Guide

III Applied

Directions: Use your understanding of the chapter and any other information you may have to answer the following questions:

1. If you were an executive of General Motors Corporation, what plan would you propose to eliminate pollution caused by automobiles?

2. Today, pollution is a great threat to our environment. If you were President of the United States, what laws would you want passed to stop pollution?

3. How can a manufacturer of bottles and cans keep them from polluting the environment after they have been used?

4. What steps do you think can be taken to prevent the "Balance of Nature" from becoming upset?

5. How can what has happened to our environment in the past help us to protect our environment in the future?

References

Herber, Harold L. Teaching Reading in Content Areas. Prentice Hall, 1970.

East Syracuse-Minoa Central Schools. Assorted Curriculum Guides for Science Instruction. Developed 1972-78.

Permission to include this article was obtained from Dr. Donald C. Parker, East Syracuse-Minoa Schools, East Syracuse, New York.

SCIENCE SAFETY FOR HANDICAPPED STUDENTS

(from Better Science Through Safety)

The passage of PL 94-142 and Section 504 of the Vocational Rehabilitation Act has greatly increased the interest of schools in the education of students who are handicapped. These laws mandate programming for handicapped students in the least restrictive environment appropriate and may result in the inclusion of many handicapped students in the regular curriculum and classroom. Many articles and textbooks have been written describing handicapped students and how curriculum can be adapted for them. An excellent source for describing various adaptations of science curriculum and equipment for the handicapped as well as an extensive bibliography is found in the proceedings of A Working Conference on Science Education For Handicapped Students edited by Helenmarie Hofman.

Articles and manuals have also been written describing the safety rules and procedures that need to be utilized to ensure a safe environment for students in the science classroom and laboratory. The problem of safety and the handicapped student has not been addressed in most of the materials reviewed. This oversight may be due in part to the fact that most handicapped children were excluded from most secondary (7-12) science courses, particularly the laboratory sciences. To quote Martha Ross Redden, a participant at the conference, "The response that came from the survey was indeed bleak, for there was not one state in the country that could define for us the science program for the physically handicapped youth." (1) This is not to say, however, that individual teachers have not accomplished much in educating handicapped students that have been in some of their classes. The inclusion of handicapped students in laboratory science courses increases the concern for their safety since they may not be able to see or hear or identify if they do see and hear potentially dangerous situations developing and if the situation does become critical they may not be able to react rapidly enough to protect themselves.

Although it is not the intent of this chapter to discuss in detail how to teach handicapped students some attention to this topic is necessary since most secondary teachers have had little experience with handicapped students. The following quote from Bybee (2) in the October, 1979, Science Teacher gives some guidelines that teachers may wish to utilize.

Understanding Special Students---General Guidelines

Certainly there are unique problems in integrating any special student into the classroom. Nevertheless, there are simple straightforward approaches that have proven helpful with most students:

- Obtain and read all the background information available on the student;

- Spend time educating yourself on the physical and/or psychological nature of the handicap, and how it affects the student's potential for learning;

- Determine whether or not special help can be made available to you through the resources of a "special education" expert;

- Determine any special equipment needed by the student;

- Talk with the student about limitations due to his or her handicap and about particular needs in the science class;

- Establish a team of fellow teachers (including resource teachers and aides) to share information and ideas about the special students. A team approach is helpful in overcoming initial fears and the sense of aloneness in dealing with the problem. You may need to take responsibility for contacting appropriate school personnel and establishing the team;

- Other students are often willing to help special students. Use them;

- Be aware of barriers--both physical and psychological--to the fullest possible functioning of the special student;

- Consider how to modify or adapt curriculum materials and teaching strategies for the special student without sacrificing content;

- Do not underestimate the capabilities of the special student. Teachers' perceptions of a student's abilities have a way of becoming self-fulfilling prophesies. If these perceptions are negative, they may detrimentally affect the student and your ability to create new options for him or her.

- Use the same standards of grading and discipline for the special student as you do for the rest of the class;

- Develop a trusting relationship with the special student;

- Educate the other students about handicaps in general, as well as specific handicaps of students in their class.

Hearing Impaired

- The hearing impaired depend heavily on visual perception. Therefore, seat the student for optimal viewing;

- Determine whether an interpreter will be needed and the nature of the child's speech/language problems;

- Learn the child's most effective way of communicating;

- Find the student a "listening helper."

Visually Impaired

- Visually impaired students learn through sensory channels other than vision, primarily hearing. Therefore, seat students for optimal listening.

- Determine from the student what constitutes the best lighting;

- Change the room arrangement whenever necessary, but always make a special effort formally and informally to reorient the student;

- Allow the student to manipulate tangible materials, models, and when possible "real" objects. Do not unduly "protect" students from materials;

- Speak aloud what you have written on the board and charts;

- Use the student's name; otherwise, the student may not know when he or she is being addressed;

- Since smiles and facial gestures might not be seen, touching is the most effective means of reinforcing the student's work;

- Be aware of student eye fatigue. This can be overcome by varying activities, using good lighting, and providing close visual work.

Physically and Health Impaired

- Eliminate architectural barriers;

- Become familiar with the basic mechanics and maintenance of braces, prostheses, and wheelchairs;

- Understand the effects of medication on students and know the dosage;

- Obtain special devices such as pencil holders or reading aids for students who need them;

- Learn about the symptoms of special health problems, and appropriate responses.

Speech and Language Impaired

- Help the student become aware of his or her problem; students must be able to hear their own errors;

- Incorporate and draw attention to newly learned sounds in familiar words;

- Know what to listen for, and match appropriate remediation exercises with the student's problem;

- Be sure your speech is articulate; students often develop speech and language patterns through modeling.

Learning Disabilities and Mental Retardation

- Listen closely so you can understand the student's perception and understanding of concepts and procedures;

- Use an individualized approach based on the student's learning style, level of understanding, and readiness;

- Use multisensory approaches to learning: visual, auditory, kinesthetic, and tactile;

- Find and use the student's most refined sensory mode to aid in development of mental capacities;

- Teach to the student's strengths, and work on diminishing his or her deficiencies;

- Reduce or control interruptions since many special students have short attention spans;

- Stay within the student's limits of frustration. Rely on your judgment, not the level of curriculum materials;

- Start conceptual development at a sensory-motor or concrete level, and work toward more abstract levels;

- Work on speech and language development;

- Help special students to develop self-esteem; a good, firmly grounded self-concept is essential to their continued development.

Emotionally Disturbed and Disruptive Students

- Make rules reasonable and clear;

- Provide realistic, appropriate consequences if rules are broken;

- Never use physical punishment for rule violation;

- Disruptive behavior ranges from low levels at which a student may merely be looking for attention or recognition through a spectrum that ends in rage, tantrums, or complete withdrawal. Try always to be alert to behaviors that, though minimally disruptive, could become more serious problems;

- Resolve conflicts by talking and reasoning with the student. Once a course toward aggressive or uncontrolled behavior is started, it is hard to stop;

- If behavior problems escalate, try to talk about the process while providing ways out of the problem. For example, "We are both getting angry, can't we settle this calmly," or "I see you are upset, let's try to solve the problem."

(pp. 23-24)

What type of facility for the laboratory will accommodate the handicapped? One source indicates, "It can be seen that a laboratory serving students with physical disabilities differs from a conventional one in respect to allowing more space per pupil, and providing accessible work stations and storage areas." (3) One example of a facility for the laboratory which will accommodate the physically impaired is found in Barrier-Free School Facilities for Handicapped Students. To quote, "At least one student laboratory station should be provided to accommodate the physically impaired. This would necessitate that a 30-inch clearance exists between the bottom of the work surface or apron and the floor. This space must also be 18-inches deep and a minimum of 30-inches wide. Hot water pipes in this space should be insulated. Faucets and utility outlets at these stations should be side-mounted rather than rear-mounted and be equipped with wristblade or lever handles. The aisles in this area should be a minimum of 36-inches wide and clear of obstructions." (4)

Yuker, Revenson and Fracchia suggest the following design considerations for a science laboratory. Work areas mounted at wheelchair height along the perimeter of the room, a student work area of 4 feet with 8 feet between sets of gas, water and electrical outlets, storage alongside the work area and beneath the work surface and a sink installed with the lowest edge at a height of 27 inches with recessed plumbing. Faucets with gooseneck spigots and batwing taps are suggested since they require less strength and dexterity. (5) A portable laboratory bench has been designed by the Department of Chemistry, University of California, Davis. A commercially produced portable science station for the physically handicapped is available from Conco Industries Inc.

The previously described facilities, although making it easier for the handicapped student to function, do present some concerns for the safety of the student. The students using these desks will generally be sitting and thus become exposed to several potentially dangerous situations. First, the student, due to sitting, has the apparatus and equipment at face level. Second, any spills have the potential to end up in the student's lap. To protect the student's face, neck, chest and lap it is recommended that the student be provided with an approved full face and neck shield and appropriate body cover depending upon the handicap.

Consideration must also be given to students who may have prosthetic limbs, artificial hands, hooks or other artificial body parts. In addition, students who are subject to seizures or who, from their handicap, tire easily must also be provided for. Some or all of these students may need help in getting in and out of their protective clothing and equipment. A few may need someone to sequence the activities so that they can see how to use and practice the procedures necessary to complete the assigned activity. A stool should be provided for students who become easily fatigued. It is recommended that a bar be placed across the front of the laboratory station so that students who may have a seizure or become suddenly fatigued will not fall directly into the apparatus on the laboratory table.

Tombaugh (6) indicates that the handicapped student must strive to gain independence in the laboratory situation. This will be facilitated if separate accessible shelves are provided for their use, labels are provided in Braille, if necessary, and electric hot plates replace Bunsen burners if possible.

Another technique suggested by several authors (Fern and Hamilton, Swazuk, Johnston, Thier, Tombaugh) is that the handicapped student be paired with a "normal" student or another handicapped student whose strengths can compensate for the other's handicap. (7) Gaugh (8) describes a procedure for blind students to use in safely lighting a Bunsen burner. In addition, she describes how blind students can use hypodermic syringes to measure and pour corrosive chemicals.

Obviously, the handicapped student may not be able to perform every experiment that other students can do. However, the following quote sums up the feelings on the subject. "Occassionally a modification will need to be made in assignments such as using a microscope. Such modifications should be the exception rather than the rule, however; and when really necessary, the modification should provide a logical equivalent, rather than a substitute which is easier and/or irrelevant." (9) The science teacher's common sense has to be the final judge of what is or is not allowed while still keeping the intent of PL 94-142 and Section 504.

It is not the intention of this discussion to relate the many procedures and methods that can be used to modify experiences for the handicapped. However a list of sources is included for your information.

Sources of Information:

Hofman, Editor, A Working Conference on Science Education for Handicapped Students, National Science Teachers Assn., April 1978. (Contains large bibliography.)

Willoughby, Doris, Editor, Your School Includes a Blind Student, (National Federation of the Blind Teachers Division, Chatsworth, California)

Yukers, Revenson and Franhia, The Modification of Education Equipment and Curriculum for Maximum Utilization by Physically Disabled Persons, (ED031022, 1968, Human Resources Center, Albertson, New York)

American Association for the Advancement of Science. Science Education News. Washington, D.C.: AAAS Fall 1978/Winter 1979 (Contains large bibliography)

American Foundation for the Blind, Inc., 15 West 16th St., New York, NY 10011.

American Printing House for the Blind, Inc., 1839 Frankfort Ave., Louisville, KY 40206.

Science for the Blind, Inc., Box 120, Bala-Cynwyd, PA 19004.

National Technical Institute for the Deaf, One Lomb Memorial Drive, Rochester, NY 14623.

Footnotes

1. Hofman, editor, A Working Conference on Science Education for Handicapped Students, National Science Teachers Assn., April 1978, p. 4.

2. Bybee, Rodger, "Helping the Special Student Fit In," The Science Teacher, October, 1979, p. 23-24.

3. Yukers, Revenson and Fracchia, The Modification of Education Equipment and Curriculum for Maximum Utilization by Physically Disabled Persons, (ED 031011, 1968 Human Resources Center, Albertson, New York) p. 16.

4. _____, Barrier-Free School Facilities for Handicapped Students, Educational Research Service, Inc., 1977, p. 75.

5. Yuker, etc., Op. Cit., p. 16, 32, 33

6. Hofman, Op. Cit., p. 168

7. Ibid.

8. Ibid., p. 97

9. Willoughby, Doris, Editor, Your School Includes a Blind Student (National Federation of the Blind Teachers Division, Chatsworth, California) p. 22.

This article, which is to be published in 1980, was reprinted with permission from Iowa State University Press, South State Avenue, Ames, Iowa 50010.

ADAPTING SCIENCE TO DISABLED LEARNERS

Judy Hoyt

Introduction into the wonders of science in the lives of the handicapped is an exciting concept in any age of our nation's history. It is especially exciting right now because finally with Massachusetts Legislation Chapter 766 and Federal Legislation PL 94-142 handicapped students must be part of our education system. I feel confident no one disagrees with the philosophy. Realistically, professionals are apprehensive about the right way in which to deal with the handicapped learner. Educators have questions like what does the disability mean? Will the child break? Will he choke? How do I toilet him? What do I do with the rest of the class while I am involved with the disabled child? How can I get him involved in science experiments? Can he hear and see as well as the rest of the class? How do I maneuver a wheelchair? How can he communicate with me? What do I tell the rest of the class when they ask questions? How much extra time will this student need directly and indirectly in preparing and adapting my lessons? What if there is a fire?

These questions are all very valid and very real. Because our society has excluded the handicapped with attitudinal and architectural barriers for so many years our teacher training institutions of higher learning are just now beginning to realize the need for all teacher trainees to be introduced to the world of the handicapped so they feel comfortable, at least, when they find a small number of handicapped students on their class role.

The most important factor to learn in interacting with the physically handicapped is that they are people just like you and I. So what if their body doesn't work when they want it to, they have learned to live with that problem. They have no choice. We must learn to live with that too and not feel sorry or try to overprotect children because of their differences. All of us are different. In some of us, the difference is visable and in others of us, it is not. We all most learn to interact with all people zeroing in on what is inside the artificial outside cover. The functions of the mind and feelings are what we are really all about and maximizing these potentials in the best way possible is where the focus should lie.

In the classroom setting, the purpose of mainstreaming a disabled learner is to make his learning methods approach that of the non-disabled child to the fullest extent possible. Most important in the disabled child's experience is social acceptance by his peer group. We have discovered that children will best accept the disabled learner if his disability is fully understood by the group. Often the best approach is to have a series of lessons on individual differences. Part of this learning experience can include having some non-disabled student becoming "handicapped" by tying fingers together, putting blindfolds on etc. This should also include the teacher. Often students can help these students with a lesson which can be presented while the "handicaps" are applied. Students who are helping the "handicapped" ones should be encouraged to do only as much as is absolutely necessary, allowing the "handicapped" students to do as much as possible for themselves. Once the students have an appreciation that everyone has individual differences, they will have a more positive attitude toward the disabled learner.

Sometimes a science unit can grow out of the experience with a disabled learner. For example, this writer had a child with a severe hearing loss in the room. In a talk with him I discovered that he was most anxious to show his hearing aid to the class and explain how it worked. The class got very interested in the anatomy of the ear, so we called in a hearing specialist who was most helpful.

Any of these experiences will help the class deal intellectually and socially with the disabled learner's differences.

You will encounter many different categories of physical handicaps. Whether the law followed in your school is setting labels on children or not is not really important. You, as a teacher, must know the disability you are dealing with in order to plan proper interaction of the child within your classroom setting. The wheelchair table of a spastic cerebral palsy child would not be the place to set glass beakers for an experiment. The uncontrollable flailing movements of a spastic child would probably unintentionally knock off the beaker. Discussing the placement of a science experiment in relations to a spastic learner is an excellent lead in for the disabled child and the rest of the class to talk about why the child cannot control his arms. You as a teacher will have to have done your homework to be ready to focus the discussion in the proper direction. It is very healthy for disabled people to talk about what they can do and why they cannot do other things and how they compensate for what they cannot do. Able children learn to accept all of life's trials and tribulations much easier when they have had the experience of interacting with someone who has had to cope with life in a different way than they have.

Architectural barriers (the physical things in the school building and classroom) can be worked around. If a science class must go to the second floor in a building with no elevator, then a couple of teachers or older students should simply carry the non-ambulatory child to the setting. A matter of fact attitude in dealing with mobility usually forces us to use common sense to adapt to a situation.

Some of the children you may deal with in the classroom may be mildly impaired and have varied ability in fine motor skills. They may move slowly or jerkily and easily lost their balance. Many will drool and have slurred or non-intelligible speech. Canes, crutches, walkers and wheelchairs will become commonplace to you with some of these children. Remember to allow your disabled learner to share his apparatus with the able children. This is an important part of acceptance. The very disabled children may have a classroom aide with them and some type of communication device. Remember to talk directly to the child, not to the child through the aide. Ask a child with poor speech to repeat what he is trying to say as many times as necessary. He knows he is hard to understand. Make use of body language and encourage classmates to interpret for the learner. When it is necessary to lift a child, lift with your knees, not your back. Some of the mobility impaired disabilities you might encounter are cerebral palsy, spina bifida, arthro groposis, muscular dystrophy, scoliosis, spinal cord injury, leg prosthesis disease, asthma and rheumatoid arthritis.

Deaf children are leaving specialized settings more and more and returning to the mainstream. Make sure the deaf learner sits where he can see to read your lips. Encourage him to use his hearing aid when he has one. Blind children are trained when very young to organize in a clockwise direction. Keep this in mind when you are teaching.

All disabled people highly develop the senses they had command of to compensate for what is lost. They also develop body language and will pull all the tricks of the trade every other child in your classroom will try.

Keep in mind the sensory apparatus is sometimes lost in certain disabilities. For example, when attaching a magnet to a child's body so he can feel the pull, don't attach it to his leg if he has no feeling there. Remember too that many disabled children, because of their overprotective families, have not experienced some of the sensations we take for granted. These sensations can be experienced by your whole class by venturing outside of the class to the grass, or sand. Encourage all the children to roll and slide and appreciate the laws of science at work in our environment at all times. This will mean getting a child out of his wheelchair and unlocking braces in many instances. Feeling and in doing learning principles is much more meaningful than being told something feels a particular way.

Pairing of classmates so that all in the class get to be a partner to the learner needing help is also important. Many of the quiet classroom learners will be too shy to step forward and interact with a child that is different. Be sure to watch for a child who might have a very difficult time relating to the disabled learner. Talk out any of these feelings and let the child know it is okay.

When planning a trip outside the school setting, make it second nature to inquire as to accessibility of the building and toilet facilities. Also inquire about braille for the blind students.

A suggested planning process is to begin the year with notice going home to all the parents talking about the overall goals and talking about the pairing and experiencing for all the children in the area of individual differences.

When planning your lessons, it is important to pair students as much as possible and assume that all your class has had limited sensory stimulation.

When presenting a science lesson to a class which includes handicapped students, the teacher should attempt to utilize the child's well-developed sensory channels.

A lesson on magnetic models from level 6 Science Curriculum Improvement Study, SCIS, Chapter 8 guides the student to explore the interaction of different materials with a magnet. The students are asked to make a list of materials that interact with a magnet and those that do not.

We can adapt such a lesson to a spastic child who has no limb control by taping the magnet to his hand or arm. Another student can bring objects in contact with the magnets. The child should be able to feel and see which objects interact with the magnet and which do not. In this way, the spastic child is involved in the decision making and discovery that is the major emphasis of the lesson.

Another lesson in Astronomy involving the cause of day and night and the rotation of the earth can be taught to the blind student with the use of a heat lamp. The student turns (counter clockwise as the earth does) while a heat lamp is directed toward him. The heat lamp represents the sun. Here the teachers utilize the input channel most closely related to light that the child can utilize.

When teaching a lesson on revolution of the earth around the sun, a student confined to a wheelchair can be wheeled around in a circle along with the other students who will take the paths of other planets.

Once a teacher is "tuned in" to adapting lessons to the handicapped, many novel methods become evident. Students also sometimes come up with useful ideas and should be encouraged to do so. Sometimes the adaptation helps all the students gain a greater understanding of the objectives of the lesson.

Disabled children grow up and as society conquers some of its barriers aides in museums and planetariums will be needed to initiate displays and allow the disabled to enjoy the shows as everyone else does.

A significant part of the educational experience occurs outside the classroom. Field trips to museums, planetariums and performances may present problems to disabled learners. Adaptation must be extended to these areas.

Perhaps the first problem encountered by the disabled learner is the presence of architectural barriers. A call to the museum, etc. should be made to determine if the building is accessible. If not, the teacher should show concern and perhaps point out the availability of funds to remove barriers.

Many museums have changed or are in the process of changing to interactive displays. The visitor to the museum pushes a button which activates a series of demonstrations or a recording. This type of exhibit can be adapted to the disabled learner by installing an ultrasonic switch in parallel with the button. The museum supplies an ultrasonic sound device which can be attached to the sheelchair and activated by a standard input jack from the disabled learner's switch. The device would be very directional and of limited range so that only one display would be activated at a time. At first glance, a planetarium show would not seem to present any more problems than a movie theater. However it is projected directly ahead while the planetarium show is projected in many directions including overhead. This may pose a problem for someone who is confined to a wheelchair and has restricted head movements. Rather than provide a complicated and perhaps intimidating device which would provide both side-to-side and up or down movement, we propose a much simpler apparatus. A rotating platform (no bigger in area than the wheelchair itself). This would provide the side-to-side movement while prism glasses could be used to provide a wider vertical field of view.

The writers are presently working on such a device as a pilot project and hope to make it available to the Springfield Museum of Science in Springfield, Massachusetts in the near future.

We live in an age of electronic wonders. This is very exiting and beneficial to the disabled. The use of computer technology to communicate with disabled learners will depend on how much of a communication problem the person has. If the disabled learner is able to type on a computer keyboard, then he may need special

software. Also, if the person has muscular problems and is able to control a switch, then he should have the use of special software and mechanical devices. This section will discuss the cost and efficiency of microcomputers to communicate with the disabled learners, a computer system and software that is a disabled learner is using, and specific details about the kinds of software that can be used with physically disabled learners.

In the United States there are several dozen computer manufacturers with a new one coming out every month or so. Almost all of these manufacturers have a good micro-computer that is inexpensive and has a way of keeping storage, either by a floppy disk, cassette, paper tape or some other form. Special software for the handicapped can be stored on these devices until needed. When somebody needs the software, all they have to do is call the program to memory from the floppy disk, cassette or whatever kind of storage they have. Also, the cost of micro-computers is relatively low and is expected to decrease in the foreseeable future.

The software being used by Rick Hoyt, a severely physically disabled learner in public school in Westfield, Massachusetts, is used for the Digital VT 52 video terminal which is to be used with the Digital PDP 11/50 computer. One piece of software will print out eight (8) groups of letters, numbers, and words. After the computer prints out the words, a cursor will go next to the group of words for the number of seconds specified in the program.

When Rick sees the cursor next to the group that has the letter in it that he wants, he will hit a switch[1] or hit the escape (altimode)[2] button on the computer terminal. If he does not want that group of words, the cursor will automatically go to the next group of words and do the same thing over again. After the cursor goes through all the groups of letters, numbers and words the computer will start all over again at the first group of words. After he hits the switch, the computer will then print out the group of words on the top of the screen. After that, a cursor will go under the letter or word for the number of seconds specified in the program. When he sees the letter or word that he wants, he hits the switch. If he does not want that letter or word, the cursor will then move to the next letter and start all over again. After the cursor goes through all the letters or numbers in that group, the computer will clear the line and go

[1] If a person using this program is physically handicapped, a switch will be used to trigger off the escape (altimode) button.

[2] The escape (altimode) button on the computer terminal is a character that was chosen in this program.

back to ask for what groups of letters or words he wants. After he hits the switch for the letter he wants, the cursor will go on the very top line on the screen and wait the number of seconds specified in the program. If Rick hits his switch during this time the computer will think that Rick does not want that letter or word and will then go down at the bottom of the screen and start asking for the group that he wants. But, if he does not hit the switch the computer will print out the letter or word with the other letters and words that he picked previously. After that, the computer will go back to ask for what group of letters or words that he wants. When Rick exits from the program, the computer will store all the letters, numbers and words in a file. If anyone wishes to see the letters, numbers or words Rick has used, all that must be done is to use another program which will print out the letters, numbers and words and how many times Rick has used them. This information can be used to analyze the word usage and patterns of the student. Computer technology is a flexible way for the physically disabled to communicate.

A unique group of individuals, most of whom recently have had their lives affected by their involvement with a severely physically disabled non-vocal learner, came together to produce this paper. The sharing, sensitivity and growing that occurs when people pull together resources and common sense to teach science and use science to better the lives of the disabled is a wonderful event.

This paper was prepared by the following people: Tod Emmershy, 10th grade able student; Rich Hoyt, 7th grade disabled student; Joseph Wright, 6th grade science teacher; Peter Backus, graduate student; Judy Hoyt, mother of physically disabled student; Richard Warren, bio-medical engineer.

Bibliography

The Instructor Magazine, October 1977, pg. 202-203, "Rick's A Part of the Team," talks about mainstreaming a multiple handicapped, non-vocal child with the use of an electronic communicator.

Computer Software, Interactive Communicator Software Using Morse Code. MCode LPT by Robert P. McCormick, c/o Wilfred Pacquin, Westfield High School, Computer Center, Westfield, Massachusetts.

R-1074 Progress Report, A Research Program for the physically handicapped to develop independence via "Build-It-Yourself-Kits" and practical instructions in engineering technology by Richard E. Warren, April, 1977. The Charles Stark Draper Laboratory, Inc., Cambridge, Massachusetts 02139.

Science Curriculum Improvement Study, Models: Electric and Magnetic Interactions, Rand McNally and Company, New York, New York, 1971.

- - -

Printed with permission from Hofman, Helenmarie H. and Ricker, Kenneth S., editors. Sourcebook: Science Education and the Physically Handicapped (Washington, D.C.: National Science Teachers Association), 1979. Pages 163-169.

SCIENCE

An interview with: John Heinzerling
Learning Disabilities Resource Teacher
Hoover High School
Des Moines, Iowa

1. All students must take a science course as a requirement to graduate. I recommend that students with learning disabilities take the general science course, because the objective is to understand main theories rather than a multitude of concepts. Earth science involves learning many concepts so is difficult for students with learning problems. The physical sciences may present problems because of the mathematics skills required to complete the work.

2. Laboratory work is a must for students with learning disabilities. They have the opportunity to see, compare through reading, and formalize concepts through their own knowledge. So they have three methods from which to learn the concepts. Where laboratory equipment is not used, then the student with learning disabilities must be required to interpret the way science is used today (e.g., how it is applied to the auto industry, rivers, dams, and so forth).

3. I am working closely with general education teachers to improve testing methods.

   a. Teachers should prepare their own tests rather than use the pre-written tests that accompany text books.

   b. The pre-written tests are very difficult; they require too many concepts to be utilized before an answer can be found.

   c. Some test questions require too much reading. It is not uncommon for a pre-written test to include multiple choice questions where four answers are given and all four answers are very difficult and take too much time to complete.

   d. In earth science and some of the more difficult science courses, too many concepts are presented in a question. For example, four pictures may be shown, and the student is asked to match the four answers to the appropriate picture. The problem with these pre-written tests is "they forget to put the student in the picture." One concept or two, at the most, are all students can handle per question.

e. Teachers can develop tests that are good for all students.

f. Teachers can use the summaries located in the margins of pages to develop test questions.

4. It would be helpful if teachers would try to connect the content to the "local environment." For instance, on one day a student who is working in the lab may be trying to determine the specie of a particular animal. On the following day the student should get to look at the "real" animal. On the third day, review observations and information obtained from the two previous days.

5. I believe in the SQ3R study approach for science and think it is very effective in teaching students a study method. (Refer to the Study Skills Section of this handbook for a thorough description.)

6. Films are good; they should be used to relate only to the subject content presently studied. They should not relate to some future topic. Students have difficulty transferring the information to a future date.

7. Some techniques which help students study the content are:

   a. Using the margin summaries and bold face headings.

   b. Providing the student with a monthly outline of the course which also includes assignments and their due dates. This outline can be given to parents as a reminder of when assignments are due. Because students are aware of deadlines, they are more prepared. It helps them to see the assignments in written form.

   c. "Word banks" are used extensively. These are lists of words which are grouped together because they are related to a particular concept. Some texts have "word banks" at the end of each chapter. An assignment may be to define these words in written form. Then the teacher can review definitions throughout class periods. Students have the opportunity and desire to participate in class discussions because they are prepared.

8. Many students have problems understanding and memorizing formulas and symbols. Teachers should show how the formula is used, what it means, and how it relates to the content, but students with learning disabilities should not be required to memorize them for tests. They are too abstract and the symbols are very difficult to remember.

9. For students who have lower reading ability, I recommend that the reading be completed with the resource teacher rather than have a peer or volunteer read the content to them. Many peers would read too rapidly. The resource teacher can help students understand the vocabulary and interpret the concepts. Interpretation is necessary for a student to retain the concepts.

10. Note-taking is almost impossible for some students; therefore, we recommend the use of a fundamental outline which the teacher prepares. Also the margin entries are very clear and teachers frequently base their presentations on them.

11. If teachers use the chalkboard or overhead transparencies to review lab write-ups, for example, this is very helpful to a student. Any time a visual presentation accompanies the oral discussion it is extremely beneficial to students.

12. In regard to grading, tests account for the majority of the grade. Students can also earn credit points toward their final grade by completing the daily worksheets.

    I think the point system is very discriminatory. For example, in a nine-week period a possible 576 points can be earned. The average for students with learning disabilities was 272, which meant these students received either a C, D, or F grade for that nine-week period.

    Reasons for students to receive poor grades are that they do not have the time to get the daily work done and that they also perform poorly on the tests (because of the test design). In class there is no opportunity for the student do do things orally. The lab work is done on paper, so a student thinks he must hurry to get it completed during class. Students are paired for lab work, but often the students with learning problems are grouped together.

SCIENCE BIBLIOGRAPHY INDEX

SECTION I

(All are instructional materials other than those listed in the Teacher Reference section.)

Biological Science

Basic Science for Living

Coordinated Vocational Education and Training: Life Science

Milliken Duplicating Materials - Science

Milliken Transparencies and Duplicating Materials - Science

National Geographic Science Filmstrips

Pathways to Science

Sound Page - Science

Useful Science

We Are What We Eat

Earth Science

Basic Science for Living

Coronet Science Filmstrips

Eye Gate Science Filmstrips

Milliken Duplicating Materials

Milliken Transparencies and Duplicating Materials - Science

National Geographic Science Filmstrips

Pathways to Science

Sound Page - Science

Ecology

Conservation for Today's America

Coronet Science Filmstrips

Eye Gate Science Filmstrips

National Geographic Science Filmstrips

General Science

Coordinated Vocational Education and Training: Life Science

Coronet Science Filmstrips

Milliken Duplicating Materials - Science

Milliken Transparencies and Duplicating Materials - Science

Pathways to Health

Pathways to Science

Sound Page - Science

Springboards Science Program

Useful Science

We Are What We Eat

Teacher References

Laboratory Science and Art for Blind, Deaf, and Emotionally Disturbed Children

Mainstreaming Handicapped Students: A Guide for the Classroom Teacher

Mainstreaming Science and Mathematics: Special Ideas and Activities for the Whole Class

Man, the Marvelous Machine

Marine Science Activities for the Visually Impaired

Science Enrichment for Learners with Physical Handicaps (SELPH)

Science for the Handicapped Association: Bibliography

Sourcebook: Science Education and the Physically Handicapped

Physical Science

Milliken Duplicating Materials - Science

Milliken Transparencies and Duplicating Materials - Science

National Geographic Science Filmstrips

Pathways to Science

SCIENCE BIBLIOGRAPHY

SECTION I

Basic Science For Living (Steck-Vaughn) Workbook. Readability: Approx. 6. Two Levels. Price Range: Under $10.

Designed to serve the needs of those students who need to learn or review the basic scientific facts and ideas that are normally covered in an ordinary general science course. Written in a manner which develops a high degree of reading comprehension and vocabulary mastery while providing a thorough and systematic survey of basic science. Includes topics on the solar system, the composition and forms of matter, the various types of plant and animal life, the anatomy and physiology of the human body, and the nature of good physical and mental health.

Conservation For Today's America (Singer) 7 filmstrips, 4 cassettes and 6 guides (1 for each subject) in each kit. Price Range: $50-$100 per set.

Objective is to point up the necessary role of conservation of natural resources in our lives. In addition to the five subjects usually treated in any conservation discussion (Soil, Forest, Water, Wildlife and Mineral), Urban and Land Conservation is also included.

Coordinated Vocational Education and Training: Life Science (State Department of Vocational and Technical Education, Stillwater, OK) Notebook and teacher's guide. Price Range: Under $10.

Units of instruction have been developed in the following areas: How the Body Works, Food and Life, Behavior, Disease Control, Heredity and Ecology.

Coronet Science Filmstrips (Coronet Instructional Materials) Filmstrips with audio tapes and guide. Price Range: $50-$100.

Title	Content
Seed Plants	Botany
Discovering Rocks & Minerals	Geology
Investigating Electricity	Earth Science
Learning about Conservation	Conservation
Investigating Insects	Entomology
Science Principles in Space Travel	Space

Eye Gate Science Filmstrips (Eye Gate Instructional Materials) Filmstrips with corresponding cassettes and teacher's manual. Price Range: $50-$100.

Title	Content
Saving What's Left	Conservation
Earth Science	Earth Science
Earth, Home of Man	Earth Science
Fundamentals of Geography	Geography

Laboratory Science and Art for Blind, Deaf, and Emotionally Disturbed Children: A Mainstreaming Approach (University Park Press, 233 East Redwood Street, Baltimore, Md. 21202)

This volume presents a series of lessons in laboratory sciences and art for mainstreamed classes (K-6) where there are deaf, blind and emotionally disturbed children of normal intelligence. The materials presented in this book are based on the standard elementary school science curricula and can be readily adapted to the special needs of individual class situations. This book is also a valuable resource in science teaching methods for "normal" children.

Mainstreaming Handicapped Students: A Guide for the Classroom Teacher (Allyn and Bacon, Inc.)

This book highlights instructional strategies and curriculum adaptations in content areas for both elementary and secondary students. The ideas are straightforward and practical for general education classroom implementation. The book also provides an analysis of characteristics of the handicapped students and the educational implications associated with those characteristics.

Mainstreaming Science and Mathematics: Special Ideas and Activities for the Whole Class (Goodyear Publishing Company, Inc., Santa Monica, California)

This resource is loaded with practical ideas that apply to exceptional children working in classrooms with other children. Numerous teaching activities are included. Each lesson contains the following: an objective, a section describing what the teacher must do to prepare for the activity, and a section outlining what the student does to participate in the activity.

Man, the Marvelous Machine (CAP-P Project, Roosevelt High School, Room 117, Des Moines, Iowa 50213)

This biology mini-course for secondary students explores the main body functions and anatomical organization. The course is designed around CONCEPTS and ACTIVITIES. The CONCEPTS comprise the basic content of similar courses taught in secondary schools. The ACTIVITIES found under each concept are designed to assist the teacher teach that concept. A second science mini-course entitled Health and Nutrition is also available.

Marine Science Activities for Visually Impaired (Pacific Science Center, 200 2nd Avenue North, Seattle, Wash. 98109)

This program is to be used as a supplement to a teacher's standard science program or to be the basis of a unit on marine education. Most of the activities can be used separately, fitting into the teacher's program where appropriate. The guide is organized into two sections: (1) activity sets and (2) background information for the sets. The kit of materials that accompanies this guide is available on loan from the Pacific Science Center.

Milliken Duplicating Materials - Science (Milliken) Spirit masters. Price Range: Under $10.

Title	Content
Science Goals	Basic Concepts
More Science Goals	Basic Concepts

Useful Science (Frank E. Richards) Workbook. Readability: Approximately 4. Price Range: Under $10.

This 86 page workbook provides an interesting assortment of stories, facts, and exercises to challenge and to inform students in the field of science. Can be used as a beginning study for science, health, and biology. Complicated terminology and biological labels are avoided by the author.

Milliken Transparencies and Duplicating Materials - Science (Milliken) Transparencies and duplicating pages. Price Range: Below $10.

Title	Content
Magnetism & Electricity	Physical Science
Light & Sound Energy	Physical Science
Weather Science	Earth Science
Our Living World	Earth Science
Physical & Chemical Changes	Physical Science
Earth Science	Earth Science
Nature of Science and Origin of Life	Physical Science
Machines and Work	Physical Science
Mapping - Earth Science Series	Earth Science
The Changing Earth	Earth Science

National Geographic Science Filmstrips (National Geographic Society) Filmstrips with accompanying cassettes, teacher's guide. Price Range: $150-$200.

Title	Content
This World of Energy	Energy Sources and Uses
The Universe	Space and Exploration
Kingdom of the Plants	Structure & Roles with Man
Powers of Nature	Natural Disasters
Sea Life	Marine Animals
Life Cycles	Birth through Maturity to Death
Exploring Ecology	Ecological Concepts
Small Worlds of Life	Ecological Environments
Kingdom of the Animals	Animal Species

Pathways to Health (Globe Book Company) Six paperback books. Readability (by publisher): 4-5. Price Range: Under $10 per book.

In this series of 6 titles, scientific subjects are dealt with in a functional, practical manner. The readability level by the publisher is 4-5th grade. Titles included are: Drugs, Alcohol & Tobacco; The Pollution Problem; Protecting Your Health; Safety & First Aid; Mental Health, and Consumer Education.

Pathways to Science (Globe Book Company) Paperback books. Readability (by publisher): 5-6 grade. Price Range: Below $10 per book.

This series of 12 titles is designed for flexibility in the science program. They may be used to teach a general science program on 3 levels, or to teach 4 general concepts (biology, earth science, chemistry, and physics). The publishers state the readability at 5th-6th grade level; however, passages have been computed at a much higher level.

Science to Advance Reading - Star Program (Bell and Howell) Materials Kit. Readability: 3rd grade. Price Range: Above $200.

The Science to Advance Reading program is a multi-media approach to the teaching of reading skills through highly motivational science activities. The program provides a systematic development of essential reading skills while stimulating a desire to learn by involving the student in concrete science experiments. A supplementary science materials kit is available for use in the experiments. The program has been used successfully as remedial activities for building basic reading skills at the junior and senior high school level.

Science Enrichment for Learners with Physical Handicaps (SELPH) (Lawrence Hall of Science, University of California, Berkeley, California 94720)

SELPH is an extension of Science Activities for the Visually Impaired (SAVI) project. The SAVI program has now been expanded to use with orthopedically handicapped students and learning disabled youths. The SAVI activities were developed for 9 to 12 year old visually impaired students, and employed a multisensory approach to learning. SELPH uses learning centers that can operate in the mainstream classroom to provide enrichment for all or some of the students in the class.

Science for the Handicapped Association: Bibliography (Dr. Ben Thompson, Department of Education, University of Wisconsin-Eau Claire 54701)

This is a complete bibliography, updated in August, 1979, which lists journal articles, curriculum guides, programs, and research pertaining to teaching science to the handicapped at both the elementary and secondary levels.

Sound Page - Science (R. K. Black, 3M Company) Resource books. Readability: 3.0-6.0. Price Range: Under $10. 2 levels.

A book of visuals and narratives to be used to make sound pages. Visuals are xeroxed or cut out and taped to the front of the sound page and narrative is recorded on the sound page from the readings in the book. Level 1 deals with General and Space Science, while Level 2 deals with Botany, Geology, and Human Structure.

Sourcebook: Science Education and the Physically Handicapped (National Science Teachers Association, 1742 Connecticut Avenue, N.W., Washington, D.C. 20009, 1979) Price: $6

This sourcebook contains many articles and papers dealing with science education and the handicapped. It is divided into ten sections with topics including Preparing Teachers to Work with the Handicapped, Resources for Teachers/Schools, Science and the Visually Handicapped, and so forth. It contains many useful strategies and thought provoking ideas concerning the integration of handicapped students in the general education science class.

Springboards Science Program (Noble and Noble) 20 booklets, teacher's guide and concept chart. Price Range: $100-$150.

A high interest, low vocabulary series which attempts to make science interesting and readable (4th to 6th reading levels).

We Are What We Eat (Steck-Vaughn) Workbook. Readability: 3.0. Price Range: Under $10.

Written especially for students who need to increase their basic reading skills. Workbook provides interesting and informative reading materials on the relationship of good health to the buying and eating of certain foods. The lessons are centered around family-type experiences. Each lesson is divided into three parts. The first part consists of the story, the second part is made up of a variety of activities designed to test the student's understanding of the material covered in the story, and the third part is made up of a series of activities which will build specific basic reading skills.

Many of the items listed were obtained from the Multi-Media Materials Catalogue, Secondary Level, Grades 7-12, Oklahoma Child Service Demonstration Center, Cushing, Oklahoma.

SCIENCE BIBLIOGRAPHY

SECTION II

This section includes an annotated bibliography and critique of selected science materials recommended for use with special education students in secondary programs.

This compilation of materials and their critiques were developed by consultants from the Grant Wood Area Education Agency in Cedar Rapids, Iowa. Although the materials are recommended for use with handicapped students, it is thought that many would also be appropriate for non-handicapped students.

For each item listed, the location where the material could be previewed is the "GWAEA", which is the acronym for the Grant Wood Area Education Agency.

For further information, contact the GWAEA consultant listed with each material.

Building Blocks (Steck-Vaughn Complete Kit No. 0380-7) Lab activities in workbook and/or kit. Ability level: K-3. Interest level: K-12. Price Range: Kit, $30; individual student, $12.

This program consists of activities to be used as resource materials in planning a program for teaching basic learning skills. Although aimed for the lower elementary population, the activities appeal to every level and can be integrated into a total science program. There are "learning how to learn" activities that combine science, math, social studies and language arts and help develop an understanding of the real world, things in the world and the relationships of these things to each other. This is a flexible and adaptable program; particularly suited to students of low reading ability as no reading skills are required.

For more information you may contact Phyllis Langenhan, Special Education Consultant.

Cambridge Work-A-Texts (Cambridge the Basic Skills Company, a New York Times company, 488 Madison Ave., N.Y. 10022; 1977) Work-A-Text. Ability level: Grades 3-6. Interest level: Grades 7-12. Price Range: student text, $2.36 to $2.69; teacher's manual, $3.47 to $3.80; duplicator masters, $11.25.

There are textbooks, workbooks, and lab experiences and testing all in one.

Level 3 - Science Is Comparing

1. Environment and Ecology
2. The Senses
3. Oceanography
4. Planet Earth in Space
5. Air and Water; Magnetism and Electricity

Level 4 - Science Is Inquiring

1. Planets and Animals
2. Better Health
3. Weather and Climate; Changing Earth
4. Objects in Space
5. Matter and Energy

Level 5 - Science Is Experimenting

1. Living Things
2. Tissues, Organs and Systems
3. The Earth's Atmosphere; The Planet Earth
4. A New Frontier
5. Matter, Energy and Work

Level 6 - Science Is Predicting

1. Intro to Biology
2. Human Biology
3. Intro to Earth Science
4. The Universe
5. Introduction to Physical Science

Materials included: Student's text/teacher's guide that correspond page by page to student texts and clearly explain each lesson offering planning suggestions plus supplementary and follow-up activities; spirit duplicator masters.

Learning objectives are stated clearly at the beginning of each lesson. There are frequent review and check-up sections to encourage recall and reinforcement. Visual material is abundant. Plenty of photographs and drawings depict the real world. All activities and experiments in the program utilize objects and explain events that are familiar to the students' daily experience. No special equipment is necessary.

Teacher/Learner Interaction: Teacher directed primarily, but reading can be done independently by students with grade level skills that correspond with level used. Short sentences, short paragraphs, simple factual statements.

It can be used as a total program in itself, an alternative to what your science program is using, or as a supplement for students who cannot read the text used in the regular room, as it covers the content generally taught by junior and senior high science departments.

Although these texts are geared for the elementary student, the format is not offensive to a high school student or teacher. You do not have to be a science major to use this, but science majors do not feel we have lowered their standards by using it.

The student will enjoy it--they can read it themselves, it looks adult, and they can actually understand the concepts presented. The lessons are short (good for those with short attention spans), to the point, and do not leave a lot of questions unanswered. The questions following the reading are answered in the reading and about the objectives to be mastered. The lab activities relate to the objectives and can be done fairly independently by the students.

For more information you may contact:

1. Mary Sires, Special Education Consultant
2. Dave Winkler, Kennedy High School Science Department, Cedar Rapids, Iowa

ESS Elementary Science Study (Webster Division, McGraw Hill Co.) Kits available, teacher's guide. Ability level: Primary activities to Senior High activities. Interest Level: Primary to Secondary.

This program is composed of 56 non-sequential independent units centered around important science concepts. Students explore the concepts through hands-on inquiry. The activities are non-reading dependent and emphasize starting with a concept which the student understands and progressing as far as the student is able. Individual units are identified as appropriate for ranges from two to ninth grade levels, covering the grade levels K-9. Some units require sets of material which are available from commercial suppliers or in many cases are available locally as scrounge items or from stores. Others require no equipment. The units cover the areas of physical science, biological science, earth science and thinking.

Students experiment with everyday materials, scientific equipment and bits of the natural world. It is not a book-centered approach. The teacher's role is to guide students through the steps of prediction, observation, demonstration and confirmation. As the students handle and record, the link between reason, imagination and the physical world is strengthened.

The units work well with non-verbal or bilingual students. Research has been done with 31 of the units to evaluate the effectiveness with exceptional children. The ESS/Special Education Teacher's Guide has recommendations for matching specific units to age levels and handicapping conditions. Results of research indicate that the use of ESS increases inference making and verbal expression.

Activity cards are available at minimal cost through Grant Wood AEA at a cost of $.25 to $1.00 per set:

Brine Shrimp	Mealworms
Structures	Colored Solutions
Batteries and Bulbs	Changes
Drops	Match and Measure
Mobiles	Balancing
Clay Floaters	Attribute Games and Problems

For more information you may contact:

1. Dean Hartman, Science Consultant
2. Sue Jorgensen, Special Education Consultant

Human Science Program (Hubbard, Northbrook, Ill.; 1979) Individual modules. Ability level: Grades 5-8. Interest Level: Ages 11-15 (and above). Costs can be obtained from Dean Hartman, GWAEA Science Consultant.

There are three levels of this program, designed to be used over a three-year period. However, there is not straight linear progression of the modules, so they may be interchanged to suit the population. There are a total of 15 modules, each requiring from six to nine weeks to complete if the class meets five hours per week. Each module is made up of 30 to 50 activities that deal with the central theme of the module in a variety of problem concepts. The modules can be modified to suit the needs and/or abilities of the individual or group. Further individualization occurs with student (or group) choice of activity and self pacing.

The various modules key in on one or more specific areas of science; e.g., Level I, Sense or Nonsense uses activities in life and behavioral sciences as a major content source and includes activities in physical science, earth science, history, fine arts and language arts. The activities involve reading, writing, and listening skills as well as qualitative and quantitative observations. Audio and audio-visual materials are part of a module kit, as are certain of the lab supplies. At the completion of each module the student is involved in a self-evaluation.

Although aimed at the middle-school/junior high population, this program is suitable for high school classes as well. See attached chart.

For more information you may contact:

1. Phyllis Langenhan, Special Education Consultant
2. Dean Hartman, Science Consultant
3. Mt. Vernon Middle School, Mt. Vernon, Iowa
4. Can be viewed at Science Education Center, University of Iowa. Contact Dan Sheldon, 353-4481.

Ideas and Investigations in Science - Earth Science (Prentice-Hall; 1977) Textbook, student workbooks. Ability Level: Grades 5-7. Interest Level: Junior/Senior High. Price Range: Text and lab book, $12.25; 4 workbooks option, $2.16 each.

There is a textbook with accompanying student data book for laboratory exercises plus four workbooks with experiments (titles: Physical Geology, Foundations and the Solar System, Geodynamics, Meteorology and Oceanography). The Earth Science is part of a series by Bernstein and Wong. Other units are Life Science and Biology. The textbook and lab book are one alternative and the four workbooks are consumable and can be used instead of the text.

Human Science Program - Modules

	MODULES	DESCRIPTION	PROBLEM AREAS OR CLUSTERS
LEVEL I	SENSE... OR NONSENSE?	The senses and introductory ideas of perception in humans	Sensing Extending the Senses Making Sense
	GROWING	Growth, development, and nurturance in human and nonhuman organisms	Growing Bigger Growing Older Growing More Growing Different
	MOTION	The effects of the movement of objects by forces and the movement of human ideas and images	Moving Bodies Moving Forces Moving Ideas and Images
	BEHAVIOR	The techniques and methods for studying behavior are used with a variety of organisms.	Observing and Describing Behavior Patterns and Variations Investigating Behavior
	LEARNING	Students practice craftsmanship and other skills and reflect upon their personal learning experiences.	Learning Skills Signs and Symbols Learning and School
	SURROUNDINGS	Life spaces of a variety of organisms are considered in these introductory environmental experiences.	My Life Space Open Spaces "Far Away Places"
LEVEL II	PERCEPTION	Exploration of the nature, subjectivity, and uses of perceptions by human and nonhuman organisms	"Seeing" "Seeing" Things Differently Exchanging What We "See"
	RULES	The study of natural phenomena that exhibit regularity and of rules that govern human social interaction	Personal Rules School Rules Moving Rules Hot Rules Community Rules Plant Rules Electrifying Rules Floating Rules
	WHERE DO I FIT?	Students view themselves in different contexts as they undergo adolescent changes.	Where Do I Fit as a Person? Where Do I Fit as an Organism? Where Do I Fit in the Future?
	INTERRELATIONSHIPS	Relationships within the environment are explored with an integrative focus.	Interrelationships: plant/environment animal/environment human/environment animal/animal animal/human human/human
	REPRODUCTION	Reproductive behavior in human and nonhuman organisms	What's Going On Inside? What's Going On Between Us? How Does Reproduction Affect the Family?
LEVEL III	CHANGE	Changes in the properties and behavior of nonhuman organisms, humans, and the nonliving world	Change In Nonhuman Organisms Change in Humans Change in Nonliving Things
	FEELING FIT	Health and health related concerns of adolescents	What Makes Me Healthy? How Does My Health Depend on Others? How Does My Community Protect My Health?
	INVENTION	The operations, personal significance, and social impact of selected developments of the scientific and industrial revolutions	How Has This Invention Brought Us Closer Together? How Has This Invention Made Life Easier? How Has This Invention Affected the Length of Life?
	KNOWING	Students experience different ways of knowing that meet different human needs and purposes.	Knowing the Past The Heavens Above The Human Body Materials and Shapes Knowing About People Knowing About Mars Notions of Motion Whatever the Weather

The program emphasizes experiences with science rather than reading. The units offer short readings, photographs, drawings and numerous illustrated laboratory steps. It is designed to be motivating and enriching--and appears that it could be just that. The program is quite complete conceptually and would not be just supplemental reading material. Room for activities must be provided, while there is little need for much specialized science equipment. Teacher supervision and guidance are quite essential.

I would caution each teacher to examine carefully the series before implementing it. It is an attractive, well organized material that could be very successful in a regular Junior High level science program, or a self-contained program if one is willing to invest quite a bit of time and space to the science curriculum.

For more information you may contact Ron Murdock, Special Education Consultant.

Individualized Science Instructional System (Ginn & Company) Kit includes student booklets, teacher manual, tests. Interest level: 9-12 grades. Price Range: For complete mini-course, price varies from $33 to $103.

Isis is designed for secondary (9-12) students, and is a comprehensive science program. Materials are available for full-year courses in biology and general science. Additional units can be purchased in the areas of physical, earth, chemistry, and physics. Isis consists of 23 mini-courses with each focusing on a particular topic. There are no predetermined or required sequences and no prerequisites. Titles can be mixed and matched according to a particular science program and the interests of your students. A full year or semester science course can be built by sequencing selected mini-courses. The teacher also may use selected titles to supplement a science program.

Each module contains student books, teacher's edition, and tests. Several modules include cassette tapes, games, charts, and apparatus. Most of the material that is needed to complete activities is usually available in the science room. The student booklets contain: (1) core activities that present skills to be learned by all students; (2) excursion activities that present topics of high interest; and (3) advanced activities.

Isis is currently being used by College Community High School and Junior High. The science teachers seem to be very enthusiastic and highly recommend its use.

Teachers and consultants that have used Isis indicated that the following units seem to be more readily adaptable for special education use:

Mini-Course Title

Heart Attack
Know the Bug
Ways We Learn
Buying and Selling
Stormy Weather
Using the Skies
Sounds of Music
Household Energy

It was indicated that the Unit Generation Link was difficult and complex.

It should be noted that Isis may be dropped by Ginn, because it does not seem to be a money maker. However, it is felt by those in the field that, because of the quality of the material and its adaptability to special education programs, another company will pick up and distribute Isis.

For more information you may contact Conn Thomas, Special Education Consultant.

Laboratory Science and Art for the Blind, Deaf, and Emotionally Disturbed Child (A Mainstreaming Approach) (University Park Press, 233 E. Redwood St., Baltimore, Md. 21202; 1978) Written text with illustrations. Ability Level: K-6. Interest Level: K-6, Secondary special class students. Price Range: $24.50 (hardcover).

This volume presents a successfully tested series of lessons in laboratory sciences and art for mainstreamed classes (grades K-6) in which there are deaf, blind, and emotionally disturbed children of average intelligence. This program is based on the Science Curriculum Improvement Studies (SCIS). Dr. Hadary has developed a summary training program for elementary teachers. The activities are also appropriate for learning disabled students and normal classrooms. This is one of a few sourcebooks for elementary teachers who wish to adapt science and art lessons for children with the special needs while they continue to teach the regular class students at the same time.

The materials presented in the book are based on the standard elementary school science curricula and can be readily adapted to the special needs of individual class situations.

The introductory section of the book covers the needs of special children in the area of language, cognitive, intellectual, and social development and also explains how to use the materials in mainstreamed classes for fulfilling human potentials of all students. The remaining sections of the book include suggested curriculum units in both science and art.

This sourcebook would be appropriate for mentally handicapped students in special classes.

Some of the units are listed below:

Shapes
Using a Balance
Balloons and Gases
Solutions and Mixtures
Electric Circuits
Energy Transfer
Archimedes Principle

For more information you may contact Faye Dykstra, Special Education Consultant.

Life Activities and Explorations (Houghton Mifflin Co., 1900 S. Batavia Ave., Geneva, Ill. 60134; 1975) Text and workbook. Ability Level: 5th grade reading with technical terms. Interest Level: Grades 7-12. Price Range: Cloth $8.57; Paper $7.20; Teacher's Edition $10.74; Lab Supplement $3.00.

Contents: Unit 1 - How Plants and Animals Behave
Unit 2 - How Living Things Function
Unit 3 - How Living Things Reproduce
Unit 4 - How You Can Keep Healthy

Life is organized around a series of hands-on activities, called Explorations. They are arranged in clusters; each cluster is introduced by a reading which is brief, simple and stimulating. The main purpose is to start students thinking about a topic and to introduce a necessary minimum of technical terms required to study it. It is not necessary to read all of them, but even including the technical vocabulary, they are at a fifth-grade reading level.

Once students have completed the reading, they move immediately into the Explorations and get actively involved. Each cluster of related Explorations is followed by an informal quiz called "Check Yourself" and frequently by a Research You Can Do that suggests ways to pursue the topic more. Each chapter ends with a Use Your Wits! section that substitutes a puzzle or a game for the conventional chapter test. They are not only fun to do, but also permit students to share what they have learned in a non-competitive way. The primary goals of the program are to help students:

1. Develop and maintain a high degree of motivation with regard to both science and the learning process in general.
2. Master fundamental learning skills, particularly the important scientific skills of observing, describing, quantifying, organizing data, predicting, testing, and generalizing.
3. Relate science concepts to the students' immediate concerns, interests and experience.
4. Develop a more positive self image and a higher degree of confidence in themselves and in their ability to handle schoolwork.

5. Identify and appreciate their individual abilities and aptitudes, and the interests of others.
6. Be aware of themselves as organisms in a community of organisms sharing a closed ecosystem.
7. Develop a sensitivity to the environment and an appreciation of life in all its forms.

Comments: This is a biology program for the non-academic or underachieving student. It works well not only with students who lack verbal, mathematical, and scientific skills, but also with students who lack motivation. The basic approach is to involve students directly in "hands-on" activities that are particularly interesting and relevant to them. There is, accordingly, a minimum of background reading.

Each reading in the Teacher's Edition is introduced by an Overview, Behavioral Objectives, Materials List and Timetable as well as teaching modes.

The text is presently being used by the Special Education Teachers at City High in Iowa City, Iowa, and science curriculum coordinator for the district in a team teaching situation. They feel it has been extremely successful with the students and plan to continue with it next year.

For more information you may contact Mary Sires, Special Education Consultant.

Me and My Environment (Hubbard, P.O. Box 104, Northbrook, Ill. 60062 312-272-7810) Kit of hands-on materials and A-V materials plus student worksheets. Ability Level: Mildly mentally handicapped (ages 13-16). Interest Level: Same. Price Range: $400-$500 per unit for 5 units.

This program is a three year sequence for the mildly mentally handicapped (ages 13-16). As a follow-up to Me Now, students move sequentially through an exploration of their environment and their interrelationships with it. Through inquiry activities, students learn that they can have some degree of control over their environment but that they need to act responsibly toward their environment. Through multimedia activities, students master useful concepts and learning skills with a minimal dependence on reading for success. A detailed teacher's guide makes it possible for the teacher with no special training in science education to use the program successfully. All materials unique to this program are available in a kit.

Me Now (Hubbard, 2855 Shermen Rd., Northbrook, Ill. 60062) Kit of hands-on materials and audiovisual material plus student worksheets. Ability Level: Special child (age 9-13). Interest Level: Ages 9-13. Price Range: $200/unit (4 units) plus $300 for torso used in 3 units.

Me Now is a complete multimedia approach to life science designed and articulated specifically for the needs of the special student and the special teacher. The inquiry method is used

to learn about the student's own mind and body with emphasis on basic body functions. Students are led from simple to more abstract concepts to assure a measure of success for all students. The use of worksheets, posters, pictures, film loops, functioning torso models, experiments and oral inquiry techniques minimize the dependence on reading skills to achieve success. Me Now was designed as a two year sequential program for special and learning disabled students (ages 10-13). Extensive teacher's guides provide lesson plans, objectives and teaching strategies and techniques, so that the nonscience oriented teacher can use the program successfully. A kit of materials unique to the program is available; unit titles: (1) Digestion and Circulation, (2) Respiration and Body Wastes, (3) Movement, Support and Sensory Perception, and (4) Growth and Development.

Pathways to Health Series (Globe Publishers) Individually bound soft cover texts. Ability Level: Reading level grades 4-5. Interest Level: Junior/Senior High. Price Range: $2.10 per copy; teaching guide for series free on request.

The Pathways to Health Series includes six individually bound soft cover texts. The series is written on a 4th to 5th grade reading level. However, because of the appearance and content of the material, the series is appealing to secondary students. The chapters are approximately 4-6 pages in length and colorfully illustrated by graphs, tables, pictographs, and photographs. Study questions are included at the end of each chapter.

Comments: This series could be used in cooperation with Health or Science classes or as a total science program. The consumer education text could be used easily as a supplement to an economics oriented class. The mental health text could be used easily as a supplement to a psychology oriented class.

Texts:	Drugs, Alcohol and Tobacco	$2.10
	The Pollution Problem	2.10
	Protecting Your Health	2.10
	Safety and First Aid	2.10
	Mental Health	2.10
	Consumer Education	2.10

Teaching guide for the series free on request.

For more information you may contact Conn Thomas, Special Education Consultant.

Pathways in Science Revised Education (1975) A Complete Secondary School Program (Globe Book Company; 1975) Text and laboratory workbook. Ability Level: Grades 7-9, reading level 6-7. Interest Level: Junior/Senior High students. Price Range: $1.68 to $6.00 (see below).

This series is a science program for average and below average students. There are three textbooks in each of four science areas: biology, earth science, chemistry, and physics. There is a laboratory workbook to go with each text. There are 10

experiments in each workbook. All texts are available in English or Metric Measurements. There is a teacher's guide which covers the entire series. All texts and workbooks are sold separately.

Every textbook follows the same format. Every topical section is separate and headed by a numbered heading. The chapters are short with summary questions at the end. Short phrases under You Know Now periodically identify major concepts discussed in the text.

The earth science and biology programs are good basic introductions for students who are educationally handicapped. The content of the books is acceptable to most science teachers, but should be supplemented with other sources. It could be used at the rate of one book per quarter.

The cost of a textbook is between $4 and $6. A laboratory workbook is $1.68. Texts are availble in either hard or soft cover. The textbooks and teacher's guides are available for inspection from Grant Wood Area Education Agency Curriculum Laboratory.

For more information you may contact Fay Dykstra, Special Education Consultant.

Science Activities for the Visually Impaired (SAVI) (Under development by Lawrence Hall of Science, Univ. of Calif., Berkley, Ca. 94720) Activity folios, teacher's guide (currently). Ability and Interest Level: ages 9-12. Price Range: SAVI Set I Activities $20/3 sets (minimum order).

Trial versions of the first 16 activity folios (without equipment) are available at cost. The Structures of Life module includes: Origin of Seeds, Seed-Grams, The Sprouting Seed, Growing Further, Roots, Meet the Crayfish, Crayfish at Home and Snail Pull. The Scientific Reasoning module includes: Jump It, Howdy Heart, Balloon Tockets, Ice Cube Keeper, Plane Sense, Rafts, Drive a Nail and Slide the Sled. The program is currently in the developmental stage with nationwide field testing. To receive the SAVI newsletter write:

SAVI
Lawrence Hall of Science
University of California
Berkley, Calif. 94720

Science For You - You Can [See, Do, Learn, Explore, Discover, Experience] (Steck-Vaughn; 1979) Workbook. Ability Level: Grades 3-5, Junior High EMR. Interest Level: Upper Elementary-Junior High. Price Range: Approx. $1.95 each.

These workbooks are based on the Steck-Vaughn Science Series by Kay L. Ware and Gertrude B. Hoffstein. They provide a hands-on experience in science with simple concepts suitable for junior high age mentally disabled students. Each book

includes both physical and biological sciences and shows how living things are related to each other and to the physical environment.

For example, the lessons in You Can Do are: The Earth Is Always Changing; Animals Are Important; Animals and People Need Plants; Weather Is Clouds, Wind, Rain and Snow; The Earth Moves In Space; and There Are Many Kinds of Sounds.

Each page has suggestions to the teacher for classroom use of the picture, which may involve identification, observation, discussion, or a simple experiment. There are questions to provoke thought and often the student is instructed to color the objects.

For more information you may contact Phyllis Langenhan, Special Education Consultant.

Self-Paced Investigations for Elementary Science - SPIES (Ginn & Company, 1250 Gairwood Ave., Columbus, Ohio 43216; 1976) Softback text modules. Ability Level: grade 5-6.

This program was designed for fifth and sixth grade to encourage students to learn about various science areas through hands-on investigations. The format is guided learning with instructions for experiments and questions about the results used to guide the student through the conceptual learning. There is little previous science knowledge required. The stated goals are: (1) to arouse curiosity and enthusiasm, (2) to make students aware of their abilities, (3) to help students relate to their environment, and (4) to help students develop responsibility. There are nine modules, each based on a particular science content area. Module titles are: Ecology, Matter, Matter Everywhere, You and Me, Light and Sound, Plants and Animals, Force/Work/Energy, Earth/Weather, Oceans/Space and Skill Builders.

Space Ship Earth Series (Houghton Mifflin Co.; Physical Science 1974, Life Science 1975, Earth Science 1976) Textbook plus laboratory workbook supplement with teacher editions and progress tests (duplicating masters) available. Ability Level: Reading Level 4-8. Interest Level: Secondary.

Textbooks: Physical Science
Life Science
Earth Science

Materials that are included are:

1. Teacher's Edition includes student text and teacher's guide. Includes schedules, a master materials list, strategies, resource materials, objectives, and enrichment ideas.
2. Textbook contains many colorful illustrations, hands-on activities, puzzles, and games. Activities are designed to relate to personal, family and social situations.

Each chapter begins with an illustrated short story, which is related to the main theme of the chapter, followed by a brief overview. Sections called "Experiences," make up the major part of the chapter. Each Experience section includes a brief reading, a group of activities, and a short quiz. At the end of each chapter, a brief summary is included.

3. Laboratory Supplement Book, to be used with textbook, includes write-in spaces, tables, and graph grids for recording activity data.

4. Progress Tests provide duplicating masters for chapter, mid-year and final tests.

Comments: A good basic science series. The reading level varies in each text from 4th to 8th grade ability. However, it appears to cover most areas required in physical, life, and earth science classes. The physical appearance and material presentation are aimed at most secondary students. Actual reading assignments are short, print is fairly large, there are many visuals, and appearance would be acceptable to secondary students.

For more information you may contact:

1. Conn Thomas, Special Education Consultant
2. Dean Hartman, Science Consultant

SPBE and PACE (University Book and Supply, Cedar Falls, Iowa [being revised]) Activity centered, can be individualized. Ability and Interest Level: Grades 10-12.

Each of these programs consists of 20 or more packets that key in on specific objectives and concepts in the subject area (biology or chemistry). The work is self-pacing and can be individualized to meet the needs and/or the abilities of the student or groups of students. There are many laboratory activities to develop the concepts. Optional activities are provided for enrichment and some sections can be omitted if time or limited student ability warrants this. Both programs can be used successfully in the regular classroom for a wide range of students. Materials required are usually standard for high school science labs. Should not be used without the help of a science teacher.

For more information you may contact Phyllis Langenhan, Special Education Consultant.

This Is Your Body (New Readers Press; 1976) Soft cover text. Ability Level: Reading level 4.8. Interest Level: Grades 4-12. Price Range: $1.95 each.

Publisher's Description: "A simple, diagramed approach to exploring the body's inner workings. Beginning with an uncomplicated explanation of cells, this book progresses through digestion, circulation, respiration, skin, hormones, senses

and reproduction in the same easy-to-understand language. Even reluctant readers will find the systems of their bodies fascinating subjects to read about and study."

From my review of the material, I feel that the above description is accurate. The visuals presented are very useful and understandable. The book could be used in special education programs or in conjunction with health or science classes.

For more information you may contact:

1. Ron Murdock, Special Education Consultant
2. Mary Sires, Special Education Consultant

Values For Health (Fearon-Pitman Pub., Inc., 6 Davis Drive, Belmont, Calif. 94002; 1976) Text workbook (consumable). Ability Level: grades 4-9; readability is grades 4-6 by the Fry Formula. Interest Level: Junior/Senior High. Price Range: Student paperbound, $2.46 to $3.00; individual teacher's guide, $1.00 each.

This is a six volume text workbook series meant for grades 4 to 9. The books are sequencial, but not graded. It is based on nine major development strands: The Human Body, Personal Health, Safety, Growth and Development, Nutrition, Disease Prevention and Control, Feelings and Emotions, The Family Community Health, and Substance Abuse. Each strand is developed in all of the six books and expanded in each along separate lines.

Issues from Values For Health are aimed at helping students clarify their own values and thinking. It is aimed at helping students get a better understanding of their own values by asking them to examine physical, psychological, social and moral aspects of health in relation to their own lives.

Due to the low readability, pleasing format, and topics made relevant to students, this series would be an excellent tool for teaching Health as well as Science concepts via Health units.

For more information you may contact Ruth Runde, Williamsburg Work Study Program, Williamsburg, Iowa, or Mary Sires, GWAEA Special Education Consultant.

The Wonders of Science (Steck-Vaughn; 1977) Workbook. Ability Level: Grades 4-5. Interest Level: Junior/Senior High. Price Range: $1.95 each.

Titles:
- The Human Body
- Water Life
- The Earth and Beyond
- Land Animals

Workbooks were developed for students with learning difficulties to fill in a curriculum area often missed in special programs. The science concepts covered are mostly biological. It is clearly laid out and easy to follow. There is a unit test for

each booklet, large print, and plenty of room to write in the workbook itself. While science is the subject area covered, its main thrust may very well be language arts. Each reading of about 1/2 to 3/4 page is followed by 1-1/2 pages of follow-up exercises. These are of the following types: (1) look up the meanings of the words and write them, (2) find the sentence in the reading with these words in it and copy all the sentence (poor exercise), (3) write in missing letters of vocabulary words, and (4) comprehension questions. It is in many respects a language arts/reading program with science as its subject.

It would recommend it for use in self-contained programs whose students are not getting much science or for programs that need language arts materials disguised as science for their students. I would caution against assigning all the exercises as they are.

For more information you may contact Ron Murdock, Special Education Consultant.

SOCIAL STUDIES

INTRODUCTION

The content of social studies courses places the teacher at the secondary level in a unique position to have a very significant effect on both handicapped and non-handicapped students. In no other course does the student have the opportunity to discuss, as a part of the curriculum, how people are alike and different. It would be very natural to include in this discussion the subject of stereotyping and fears about handicapping conditions that individuals often have.

The social studies teachers may wish to expand this type of discussion by conducting activities designed to make students aware of their own individual differences and what it must be like to be handicapped. Such activities could include: (1) simulation of handicapping conditions, (2) showing films portraying handicapped individuals, (3) assigning readings about handicapped persons, and (4) asking a handicapped person to speak to the class. Counselors and special education teachers can help social studies teachers plan and implement such units. Many may have suggestions of books and films available that would be appropriate.

The Social Studies section begins with a vignette describing a student who is enrolled in a secondary general education social studies class. Observations include some of the problems which handicapped students may experience in completing the required tasks of the course.

The majority of the section is composed of "Helpful Hints" which a secondary social studies teacher can use to modify the curriculum if a student with learning problems is placed in his/her class. These suggestions are applicable not only for students identified as "handicapped" but for other students who demand special instruction due to their unique learning characteristics. The suggestions are arranged in order from those that require the least amount of modification to those that require the most.

The "Helpful Hints" are divided into two categories: (1) techniques to modify assignments and tests so students can complete them using their learning strengths to their best advantage and (2) teaching strategies for adapting the curriculum to meet the needs of handicapped students. The "Hints" can be applied to all courses in the social studies curriculum: economics, world history, U. S. history, consumer economics, and so forth.

If a teacher needs to program for a student who is either visually or hearing impaired, we recommend that the area consultant be contacted for specific suggestions and materials.

After the "Helpful Hints" section is an interview with John Heinzerling, a learning disabilities resource teacher who describes ways teachers are individualizing instruction in social studies courses at Hoover High School in Des Moines, Iowa.

Finally, an annotated bibliography is included listing instructional materials and references for secondary social studies teachers to use when individualizing the curriculum for the handicapped.

SOCIAL STUDIES

PROBLEM:

Tom, a ninth grader, is a highly motivated, responsible student and is well liked by other students because of his sense of humor. Tom enjoys social studies because of the interesting topics and is articulate in the class discussions. Although he easily understands spoken language, he has difficulty reading materials at ninth grade level. His reading is slow and laborious because he "sounds-out" unfamiliar words and, therefore, loses the meaning of much of what he reads.

Tom performs very well when, instead of taking a test or completing a written assignment, he is required to construct a map, interview people in the community, or watch a film and give an oral report on it.

OBSERVATIONS:

Many students experience difficulty in social studies because of the reading requirements. The special vocabulary used may also be hard for them to understand. Words such as "latitude," "economy," "loyalty" and "unions" are abstract terms and have no meaning unless they are presented in real-life situations.

Problems are compounded when a student has difficulty completing written assignments, taking lecture notes, or paying close attention to the lecture.

Because class discussions are an important part of social studies, students who are inept at verbalizing their thoughts or who lack confidence to participate are at a particular disadvantage.

Any combination of the above problems will hinder a student's performance in social studies classes.

HELPFUL HINTS:

Modifying Assignments, Tests and Student Responses

1. Allow the students to do fewer questions.

   a. Circle certain questions for the student to complete.

   b. Assign only the "odd" or "even" questions.

2. Allow the student to use filmstrips or other visual aids that stress the same concepts as the lesson, rather than requiring him/her to read the assignment or rely on notes he/she took during lecture.

3. If a student with reading problems is required to read a lengthy novel such as Centennial, have peers or teacher aides tape record the book. Allow the student to listen to the tape and give oral book reports to the teacher once a week for 5-10 minutes. The students should be encouraged to listen to the tape at home, in study hall, in the library, or while other students are reading during class. (Some books may already be taped. These would be available from agencies who supply them for visually impaired students. The resource teacher or area consultant should be contacted to locate these resources.)

4. Teach the student how to use the Index to locate answers to questions. For example, if a student is asked to list Roosevelt's Five Points of the New Deal, show the student how to find "New Deal" in the Index.

5. Show the student how to use bold face headings, topic sentences, and summaries written in margins of textbooks to help him/her locate answers to questions and to get the "main idea" of the paragraph. New textbooks published since 1978 may include these margin summaries; these are very brief descriptions of content on the page.

6. Design homework or test questions using easier vocabulary. In this way a student with reading problems is not penalized because of his inability to read and comprehend the questions.

7. In assignments, textbooks or tests, color code or underline important words or phrases so that the student is visually aware of their significance.

8. If the student has reading problems, substitute projects for written assignments or reports. These projects may include oral reports, posters, charts, drawings, models, collections,

and so forth. For example, rather than writing about the Civil War battles, have the student make a map of locations of battlefields, or a chart depicting the effects the war had on the economy of states in the North and South. For a unit on the city, alternative assignments could be giving an oral report on a city's scenic attractions or drawing a chart illustrating the decision-making process in the city government.

Alternative assignments must take into account the specific disability of the student. In the above examples, a visually impaired or severely physically disabled child might not be able to draw the maps or charts, but might be able to interview people or listen to tapes pertaining to the content and then either report back to class or tape record an oral presentation.

9. Alter the test format.

   a. Give shorter tests by asking fewer questions. Use double spacing rather than typing a test with single spacing, which will result in the same number of pages in the test but fewer questions. In this way, it is not so obvious that the student has a shorter, different test.

   b. Permit oral responses.

   c. Give the test orally--put the questions on language master cards or tape.

   d. Utilize true-false, matching, fill-in-the-blank, or multiple choice tests rather than essay tests.

   e. Allow students to take "open book" tests. Use the same test for the entire class, but allow some to use their books. Students really learn material this way, because they hear it in class, review it when they search for the answers to questions, and then write it.

   f. On essay tests, rather than writing complete sentences, allow the student to answer questions in topical outline form. Many students have difficulty writing lengthy descriptive sentences; a topical outline is faster and requires less writing.

Other modifications pertinent to social studies are listed in this handbook in the Language Arts unit. Refer to the "Written Expression" section for additional suggestions.

Teaching Strategies

1. Have an aide or another student tape reading assignments or the lectures from the class. The student can then listen to the material for independent study or for future discussion.

2. Tell the students to read the end of the chapter questions and the chapter summary before beginning to read the chapter. These pinpoint the main ideas of the chapter and help them locate important details in the content.

3. Use the resource teacher, an aide, or a volunteer to assist the student in reviewing the vocabulary or study questions so that the student is able to participate in class discussions.

4. Allow the student more time to complete assignments. The student should be encouraged to take the material to study hall or home to read an assignment, listen to a tape, or write answers to questions.

5. Introduce new vocabulary prior to having students read. Keep and review the vocabulary lists. Have the student take the lists home to study.

6. Avoid forcing some students to read aloud. For a student with reading problems this is very embarrassing; in addition, comprehension will most likely be poor when reading aloud.

7. Make good use of discussion periods before, after, and during reading. Clarify, explain, and relate by making your own contributions and through the use of skillful questioning.

8. Preview materials, asking yourself:

   a. What terms may be confusing?

   b. How can I relate these concepts so students can understand them?

   c. Are there examples of practical every-day situations provided?

   d. What skills must a student already possess to be successful in using this material; e.g., reading level?

9. Directions for assignments may need to be given in one or more ways--orally, in writing, taped, or by example.

10. When lecturing, try to make examples relate to every-day life. Give practical applications with which students have had experience. In discussing unions and why members strike, for example, have students clip articles from the newspaper which describe a situation like this in their community.

11. If the text is too difficult, use a material written at the student's reading level that covers the same topic. Allow the student to read this instead of the class assignment. See the bibliography or special education teacher for suggestions.

12. In grading, provide different ways for students to earn points for their final grade. Tests and written assignments may be one portion. Other requirements might be long-term projects such as making tables, maps and charts which are relevant to the unit of study or panels, presenting oral reports, participating in class discussions and keeping a current events daily journal.

13. Use peer tutors to assist students having problems with assignments. At Hoover High School in Des Moines a group of boys needed a service project as a requirement for their earning their Eagle badge in Boy Scouts. These boys worked after school with other students who needed questions or assignments read to them, answers written for them while they dictated their ideas, or assistance in completing projects.

14. Prepare study guides which break down a chapter or material point by point. The page numbers in the text(s) where the correct answers can be located could be placed at the end of each question.

15. Provide the student with study questions or ask him one or more questions before he begins a reading assignment to help him organize his thinking and direct his reading. (Use the blackboard, duplicated study work sheets; ask the student to read for the "main idea," and so forth.)

16. Provide summarizing and organizing activities such as writing summary paragraphs, making outlines, planning and making murals and dioramas, keeping notebooks, journals, and so forth.

17. For students having difficulty with note-taking:

    a. Provide an outline where the student can add brief notes during lectures.

b. Ask a peer to take notes during class using carbon paper. Give the carbon copy to the student who has note-taking problems.

c. During an oral presentation, write and/or underline key words or phrases on the blackboard or overhead transparency.

d. Provide the student with "concept" cards. Before each class period, make notes of the concepts which will be presented during class on separate file cards and give them to the student to use during class. For the last five minutes of class, ask the student to review the cards with you. The student then returns the cards to you to use with another student or they may be given to the student to review at home or with a peer.

   Concept cards may be very useful for studying for a test.

   As the student becomes more adept in the use of "concept cards," he should be encouraged to make them for himself, checking with the teacher after class to see that he accurately noted the concepts presented.

SOCIAL STUDIES

An interview with: John Heinzerling
Hoover High School
Des Moines, Iowa

Helpful Hints:

Assignments and Homework

1. When students are required to read lengthy novels such as Black Boy or Centennial, other students tape the book, so the student with reading problems can listen to the tape in study hall, the resource room, or at home. The student listening to the tape gives an oral report to the classroom teacher once a week for 5-10 minutes. Different students record each book, so that different speakers are taping each chapter. (In this way, the listening is not so monotonous.)

2. For visually impaired students, a peer takes notes during class on special double spaced lined paper which is provided through the Commission for the Blind. Both students get a copy of the notes to study for tests or for reference for homework.

3. More time is given some students to complete classroom assignments. The student may finish the work in study hall, the resource room, or at home.

4. Students are encouraged to use tape recorders in the classroom if they have difficulty with note-taking. The tape can be used as a reference when completing homework assignments or when reviewing for a test.

Tests

1. Some students are allowed to take open-book tests in the resource room. Students really learn the content because they first hear the presentation in class, review it when they are searching for answers, and write it to complete the test.

2. Teachers design two tests, A and B, for a class. Test A is the test in its entirety. Test B is half the test and is given to those students who have difficulty completing the entire test during class. The questions are double-spaced rather than single-spaced and everyone has the exact same number of pages for the test.

3. For some students, a peer, volunteer, or teacher aide reads the test, but the student writes his/her own answers or selects the correct answer.

4. Students are allowed to answer "essay" questions with a topical outline format rather than writing complete sentences.

Grading

1. Grading is based on points which can be earned from tests, assignments, daily journals, and projects. The current events journal may cover a subject such as the Olympics or the Iran situation; the student writes daily accounts of what he has heard on the news or read in the newspaper.

2. Handicapped students are graded on the same basis as non-handicapped students. Tests may be shortened, or the manner in which the student responds altered, but students are required to complete the same tasks and are graded on the same scale.

Study Skills

1. Students are taught how to use the index of their textbooks to locate answers to questions.

2. Students are encouraged to read the bold type headings which serve as a guide in locating information either for outlining a chapter or answering study questions.

3. Students are taught to read the summaries provided on the margins of pages of textbooks. These sentences briefly summarize the content of paragraphs on the page. When students utilize these margin summaries, it is easier and faster for students to answer questions and get the main ideas on one page.

4. Students learn how to outline what they have read by skimming a page and then jotting down two of the most important facts or concepts on each page. When doing this with a group of students, each student shares what he/she has written. In this manner they learn important information from one another.

5. Students sometimes read the end-of-the-chapter questions or the chapter summary before they read the chapter. This helps them pinpoint details which they should locate as they read.

6. Another study technique the students enjoy is the following: When a student has finished reading a chapter, he/she is asked to write ten questions which would be important to ask someone. This forces the student to read the content carefully. Many students enjoy doing this task, because they are reviewing the material without even realizing it. They also like to see how tricky they can make their questions!

Teaching Strategies:

1. Teachers use "word banks" which are lists of terms which are introduced in a chapter. The students usually have 12-20 words in their "word banks" each week. These words are all related to a specific idea and as the teacher discusses them, the students write definitions, examples, and so forth. Each student has a paper with the word banks double spaced on the paper, so the student has ample room to write their meanings.

2. Teachers use real-life examples and explanations whenever possible. In consumer business practical applications of skills are used frequently. For example, separate booklets are provided for each student to complete when studying about automobile insurance or a no-fault insurance policy. (Insurance companies can be contacted to obtain these workbooks.)

   In economics, students may be asked to make a report on a specific product. The student is asked to go into the business community, conduct an interview, prepare an outline, then present the information to the class.

   Guest speakers are frequently invited to come to the classroom to duscuss their work. This is much more meaningful than reading about the business. Also students can ask questions and get immediate answers from a source with experience in the field.

3. Teachers frequently provide an outline of the day's presentation on the chalkboard for students to follow. A dittoed outline with space provided for students to take notes would also be helpful.

4. Teachers allow and encourage students to tape record class presentations to use in reviewing and outlining the content for homework, assignments, or studying for a test.

Final Note:

Teachers should present a unit on stereotyping. Not all teachers are comfortable doing this, and they must feel confident and certain of their own attitudes and feelings before introducing this unit to a class. Many handicapped students want to help other handicapped students. The teacher needs to provide the opportunity for students to talk about and learn how to accept one another in spite of their individual differences.

SOCIAL STUDIES

Exerpted from
"Teaching the Mildly Handicapped: A Shared Responsibility"

An interview with: Ginny Renda and John Staffenbeal
Social Sciences Team Teachers
Goodrell Junior High School
Des Moines, Iowa

Is it too time consuming to teach handicapped students with "regular" students?

No, we haven't changed our content, goals, or skills. We change the activities. We have more group work, library work, films, and other audio-visual presentations.

The first month of each year is devoted to teaching the fundamentals: basic skills such as note-taking, using correct sentence structure, math skills, and so forth. We start out at about a sixth grade reading level.

After the first month, we divide students into three groups, depending on their performance in these introductory activities.

We do a lot of our own diagnosis.

What about Structuring for Success?

We believe that you get what you expect; students will work up to your expections of them.

At the first of the year we give assignments at which all students can succeed. Each assignment is given two grades: one is for completing the work on time, following directions, and so forth; the second grade is in regard to how well the assignment is done.

A taste of success is, for many, a new experience.

What teacher characteristics are most important to teach handicapped children who are integrated into general education classrooms?

The teacher must understand where the child is coming from. Not all students have the same skills, backgrounds, and needs.

Each day when the class arrives, one of us teachers greets each student. We make them feel wanted and welcomed. A "team" of two teachers helps.

One student may relate to one teacher better than to another. Students have to feel they can come to one of us for help.

How about coordination between other teachers; i.e., general and special education?

It's total open communication. There's real give and take involved.

We try to accent the good deeds of special education students as well as their needs or problems.

With so many students coming and going, it's hard to tell whether a student is a "special education" or "regular" student.

What about poorly motivated students?

We use three skill groups; each has the same general basic requirements. Students are able to move up and back from one group to another, but, once moved, they must stay in a new group for at least one week to give it a chance.

We give daily grades, as many as possible, for a wide variety of activities. Tests are our area of least emphasis: each may be taken in a variety of ways.

What about grades?

We don't change our system at all for special education students. We use the same philosophy for all students.

Sometimes we weight specific activities, but not students. With a special education student who can't maintain a "C", we may go to a Pass-Fail approach.

We also provide a number of activities within a unit with points assigned to each activity. Points can be earned for a wide variety of things.

Students know what's going on and what they have to do. 50 minutes is also a long period for just sitting, so we plan 3 to 4 activities per class; that gets students up and around.

Do you have to "water down" your course content?

No, you don't have to lower your expectations or "water down" the content at all. You plan what content, skills, processes, and outcomes you want for a unit and simply use a variety of ways to

achieve each of them. There may be five ways to present the same thing.

Students are not "lock stepped" together. With a one month unit, some may complete the basics in a week; they may then do additional library study, etc., on the same area of study. Others may take the entire month to grasp the basics.

Could one teacher do what you two do?

The team situation certainly is better. However, yes, one teacher could. The management would be different; the teacher would need to be better prepared than ordinarily.

Good organization would be mandatory.

What about a student's self-concept?

It's certainly one of the most important qualities you want to develop. It's basically everyone's problem. All must work to develop "good" feelings about one's self.

Success is our best weapon. Treat all students the same; there are no favorites.

How about competition among/between students?

Our basic groupings take care of that. With so much movement it's hard for students to know what is which and what each other are doing.

Students are never in the same group twice. We mix them up pretty well.

How do you deal with attitudes of non-handicapped toward the handicapped?

Early in the year we talk to the whole group. We discuss that we all make mistakes. Those that make fun of others are insecure themselves.

How do you keep so many students busy working and using good study habits?

For each unit we make up a unit calendar; if it's a one-week unit, we use a one-week calendar. If it's a six-week unit, we use a six-week calendar. Each student knows what he/she is to do each day.

We also use the same routine each day.

Our expectations and how they can be met are all clarified at the start of each unit. Students know what is expected of them.

Each student also keeps a notebook which we check each day. This contains his lecture notes, unit outline, films, and audio-visuals available, alternate activities, and so forth.

We also give points (grades) for organization. This we stress a great deal.

This interview is available on a 3/4", 30-minute video-cassette. If you live in Iowa, contact your Area Education Agency Special Education Division, because they have a copy of the tape.

SOCIAL STUDIES BIBLIOGRAPHY INDEX

Search Visuals
Vocational Related Social Studies

Practical Skills

Allyn & Bacon History Series
The American Dream
Basic Skills in Getting Around
Car Care for Safety
First Aid As It Happens
How To Register and Vote
Search Visuals
Sound Page - Social Studies
Vocational Related Social Studies

World History

Challenges of Our Time
Sound Page - Social Studies
Springboards Reading Laboratory
Vocational Related Social Studies

SOCIAL STUDIES

BIBLIOGRAPHY

Allyn & Bacon History Series (Allyn & Bacon) Paperback books. Readability: 10.0 - 12.0. Price Range: Below $10.

Title	Content
Founders and Forefathers	Making of America
Slavery and Segregation	History of Slavery
Modern Politics in America	Political Structure
Race, Poverty and Youth	Modern Problems

American Adventures Series - Filmstrip History of the United States (Scholastic Book Services) 4 cassettes, 4 filmstrips, 1 teacher's guide per set. Price Range: $100-$150.

Title	Content
A Nation Conceived & Dedicated	Pre-Revolutionary War
Old Hate - New Hope	Revolutionary War
Between Two Wars	Pre-Civil War
Yesterday, Today, Tomorrow	1938-1970

The American Dream - This Land Kit (Scholastic Book Services) 1 cassette, 35 books, 35 logbooks, 1 record, 4 posters, 1 filmstrip, 1 teacher's manual. Price Range: $100-$150.

Through plays, stories, poems, articles and pictures, this book deals with the "new nation - America" and about its dream and the way our country has lived up to, or failed to live up to, that dream.

The American People (Steck-Vaughn) Workbooks. Price Range: Under $10 per book. Two levels available.

The exercises in these two workbooks are divided into three types. Some are designed to improve reading comprehension. The Vocabulary study is intended to improve word understanding, and the final exercises review the information of the chapters.

Basic Illustrated History of America (Pendulum Press, Inc.) 4 copies per set. Readability: approximately 4.0. Price Range: $150-$200 per set.

Includes Answer Key, Student Activity Book and Illustrated Textbook with the following titles for each set: The New World; The Fight for Freedom; The United States Emerges; Problems of the New Nation; Americans Move Westward; Before the Civil War; The Civil War; The Industrial Era; America Becomes a World Power; The Roaring Twenties and the Great Depression; World War II; America Today. Together with the student activity booklets, which provide reading guidance, these twelve titles depict American history factually and interestingly.

Basic Skills in Getting Around (CEBCO Standard Publishing) Workbook. Price Range: Under $10.

The activities and exercises in this book are designed to develop skills that are useful for traveling from place to place. The book covers such topics as reading road signs, using different kinds of maps, understanding travel itineraries and reading timetables. From one to three worksheets are devoted to each main area.

Car Care For Safety (Eye Gate Instructional Materials) 7 filmstrips with four corresponding cassettes and seven filmstrip guides. Price Range: $50-$100.

This series of filmstrips will help driving instructors convince students that meeting their responsibility for safety on the road requires not only good driving habits but good car maintenance habits as well. Some of the titles include: Performance for Safety, Seeing for Safety, Tire Care for Safety, etc.

Challenges of Our Time (Allyn and Bacon) Paperback books. Readability: 7th grade. Price Range: Below $10.

These texts constitute a study of major aspects of recent and contemporary history. They deal both with world affairs and with developments in the United States. They are appropriate for use with junior and senior high students. Titles are: Prejudice and Discrimination, Choices and Decisions, Economics and Society, Technology - Promise and Problems, Nations in Action and International Tensions.

Contact Non-Verbal Communication (Scholastic Magazine) 1 filmstrip. Price Range: $10-$50.

Person-to-person communication and body language.

Coronet Social Studies Filmstrips (Coronet Instructional Media) 6 filmstrips, 6 cassettes, and teacher's guide per set. Price Range: $50-$100.

Title	Content
American Indians of the Southwest	Southwest Indian Life
American Revolution - Roots of Rebellion	Revolutionary War
American Indians of the Plains	Plains Indian Life
Famious Patriots of the American Revolution	Biographical
American Families	Modern Life
Tales of Plains Indians	Indian Folk Lore

First Aid As It Happens (Eye Gate Instructional Materials) 6 filmstrips with corresponding cassettes and teaching manual. Price Range: $50-$100.

This series of six sound filmstrips can help to make the teaching of this important subject more realistic and effective. The strips closely follow the organization of any first aid course. Some of the titles include: Bandaging, Artificial Respiration, Bleeding, Wounds and Special Emergencies.

Fundamentals of Geography (Eye Gate Instructional Materials) 5 tapes and 10 filmstrips with teacher's manual. Price Range: $50-$100.

A compact filmstrip presentation of the basic fundamentals and phenomena about the Earth and its place in the universe. The filmstrip series is designed to cover the vital phases of geographic knowledge and set the stage for intensive elaboration and discussion. Some of the titles include: The Solar System and the Universe; Maps, Globes and Graphs; Latitude, Longitude, Time, etc.

Highlights of American History (Janus) Workbooks (2 titles in set). Readability: 2.8. Price Range: Under $10.

This 2-volume set covers American history in a series of short stories about significant moments in the making of America. These events are also illustrated by commemorative postage stamps.

How to Register and Vote (New Reader's Press) Pamphlet. Price Range: Minimal.

This pamphlet discusses the importance of registering and voting. It covers voting requirements, proper marking of ballots, how to work a voting machine, and many other important topics.

Milliken Duplicating Materials - Social Studies (Milliken) Duplicating masters. Price Range: Under $10 per unit.

Title	Content
Maps Unfold the World	Map Skills
The World - Map Reading	Map Skills

Milliken Transparencies & Duplicating Materials - Social Studies (Milliken) Duplicating masters with corresponding transparencies. Price Range: Under $10.

Title	Content
The Constitution	Early Law Making
Map Reading - United States I & II	Map Skills
Map Outlines - Europe	European Boundaries
Map Outlines - United States	American Boundaries
Map Reading - Latin America	Map Skills

National Geographic Social Studies Filmstrips (National Geographic Society) 5 filmstrips, 5 cassettes, teacher's guide in each set. Price Range: $50-$100 per set.

Title	Content
Indians of North America	Indian Life
Transportation in America	Transportation Development
America: Colonization to Constitution	Early American History
Life in Rural America	Rural life styles

Search Visuals (Scholastic Book Services) Transparencies with corresponding spirit masters. Price Range: Under $10.

Title	Content
Social Studies/Reading Skills 5	Social Studies Reading
Reading Maps 3/Vol. 1	Map Skills
Reading Maps 4/Vol. 2	Map Skills
Reading Charts and Tables	Chart and Table Skills

Sound Page Social Studies (R. K. Black-3M Company) Resource book. Price Range: Under $10.

Visuals and narratives to be used with Sound Page Teaching Machine. The areas covered are as follows: "Between Two Wars" covers the period 1914-1938, a well-rounded social and political history of America in the twenties and thirties. Develops concepts of internationalism, isolationism, rights of minorities, women's rights, poverty and depression.

United States History: A Two-Part Series (CAP-Project, Room 117, Roosevelt High School, Des Moines, Iowa 50312)

This mini-course is a thematic arrangement of American history with activities directed to linking the students' lives to experiences of people in the past. The mini-course is designed around concepts and activities. The CONCEPTS comprise the basic content of similar courses taught in secondary schools. The ACTIVITIES found under each concept are designed to assist the teacher teach that concept. The activities are generally alternatives to the reading and writing which often frustrate students with learning problems.

Vocational Related Social Studies (Oklahoma State Board of Vocational and Technical Education, Stillwater, OK) Notebook. Teacher's manual available. Price Range: Under $10.

Units of instruction have been developed in the following areas: General Vocational Material, Government, Social Studies and Industry in Oklahoma.

Where To Go, Who To See, What To Do (Steck-Vaughn) Workbook. Price Range: Under $10 per book.

This is part of the "Family Development Series." It informs the student of social agencies that might be of help to him. The topics include: you and your problems, social services, health and medical services, employment services, legal services, and recreational services.

The materials listed in this bibliography were obtained from the Multi-Media Materials Catalogue, Secondary Level, Grades 7-12, Oklahoma Child Service Demonstration Center, Cushing, Oklahoma.

STUDY SKILLS AND TEST TAKING

INTRODUCTION

The purpose of this unit is to provide general education teachers with suggestions regarding how to help handicapped students deal more effectively with organizational demands, testing requirements and completing classroom assignments. Each section of this unit opens with a vignette, or description of a student experiencing difficulty in coping with traditional classroom practices. A brief summary of observations about students with these problems follows.

After each problem is described, "Helpful Hints" are listed which may be used to make the experience of a handicapped student in a general classroom more successful. Included are suggestions for the teacher to use in working with handicapped learners as well as specific ideas for students to implement. The "Helpful Hints" are listed in order, starting with those that require the least modification on the teacher's part and ending with those that require the most. Be sure to contact the consultant at your Area Education Agency or Department of Public Instruction for specific suggestions regarding adaptations for visually or hearing impaired students.

After the "Helpful Hints" section is a copy of a booklet called "ZAP", which you may duplicate and give to individual students to read if they need to improve their study skills. It includes ideas for math, spelling, listening, test taking, writing, reading, memorizing, and discussing.

The final section is an annotated bibliography of additional resources which may assist a teacher in meeting the challenge of individualizing instruction for handicapped students at the secondary level.

STUDY SKILLS

PROBLEM:

> Kevin is a physically handicapped fourteen year old of average intelligence who has been socially promoted to the seventh grade. He entered Junior High with a record of academic failure and inappropriate behavior. Although Kevin's skill levels are on grade level, he is unable to organize either himself or his material into any type of reasonable order. He uses a "hit or miss" approach to study and frequently forgets assignments and test dates. He is likely to blame his poor work habits on his physical limitations.

OBSERVATIONS:

Some students approach a problem, an assignment, or a task in a disorganized fashion. This interferes with their ability to produce work accurately and efficiently. Developing good study skills among secondary handicapped students is one of the best methods of promoting success in the general education classroom. For a student entering the secondary program with a history of poor study skills, the issue of organizing his/her work becomes increasingly critical.

HELPFUL HINTS:

Study Skills - General

1. Try to provide a time when the student can come to you for additional help with homework. This may be during study hall, before or after school, or during the lunch period.

2. Assign a peer to the student with organization problems. Have the peer help him/her:

   a. find the correct page for an assignment or class discussion;

   b. understand the directions for an assignment;

c. set up the paper properly with date, name, subject, and so forth;

d. organize notebooks or journals so papers are in their proper subject area.

3. Encourage the use of work folders so that loose worksheets may be put somewhere. Suggest the possibility of keeping a loose-leaf notebook with separate sections for class notes, handouts and assignments. Hole punch handouts to fit the notebook.

4. Allow class time for the student to organize work folders and notebooks. For example, tell the students to take five to ten minutes to do whatever they need to that will help them remember what has been covered in class that day or will help them organize themselves. This may include re-reading assignments, underlining key phrases, or sequencing handouts and putting them in a notebook. The only rule is, "no talking."

5. Collect homework assignments when they are due. Have a special place where work can be handed in. If the student has difficulty remembering to hand in work, make a chart with days of the week across the top and subject areas listed down the left side. Have the student bring the chart to you when he/she turns in an assignment. Mark the box of the appropriate day/subject as "completed." This not only helps organize the student, but serves as a positive reinforcement.

6. Structure classroom procedures and develop routines. Start class promptly and be sure students are aware of the materials needed for each class session. Keep materials located in the same area so students know where to find them.

7. When lecturing, develop an outline on the board as you speak. Or hand out a dittoed outline for students to follow and write notes.

8. Daily, assign a student to take notes on class lectures using a ditto master or carbon paper. Copies can be used by students who have difficulty in taking lecture notes. Copies can also be given to absentees.

9. Write homework assignments on the blackboard and have students copy them into their notebooks. Be sure directions are clear.

10. Provide students with oral and/or written directions before they begin an assignment. Tell them what details they should focus on. This will help students read for specific ideas.

11. If the student has difficulty understanding and following directions, provide alternative ways of getting assistance. Have the student:

    a. ask a friend to explain the directions;

    b. signal the teacher for help;

    c. start on another part of the assignment which the student understands, until the teacher can discuss the confusing directions with him/her.

12. Mark papers with colored margin lines or a green dot to indicate where a student is to begin.

13. On worksheets or tests, group similar types of questions or problems together. You may want to outline each section to provide a visual clue for the student to know a different concept or process is used.

14. List for the student the steps he/she must follow in order to correctly complete an assignment. Have the student check off each step as it is completed.

15. Teach the students the SQ3R Study Technique.

16. Teach the students the PQRST Method of Textbook Study.

SQ3R Study Technique

Survey

S

1. Titles
2. Subtitles
3. Pictures & captions
4. Introductions
5. Summaries
6. Maps and charts

Read to get the general idea of the chapter. This tells you what the chapter is about. Now you have an idea of where you are going and what to expect.

Question

Q

1. Make the subtitles into questions.
2. This gives you a real reason for reading.
3. The questions will help you concentrate on the subject you are reading.
4. Work on one subtitle at a time.

Read

R

1. Read to find the answers to the questions.
2. The answers you will find will be the important facts and details.
3. Don't do anything except read.

Recite

R

1. Go back and ask the questions again. Can you answer them? If not, skim to find the answers again.
2. Underline -- Remember! Underline the outline!
3. Do any other work with the chapter which has been assigned.

Review

R

1. Usually class discussion will serve as first review. If you have underlined well, you can review the chapter anytime -- intelligently.
2. Review periodically -- once every week.

THE SQ3R ROUTINE WON'T WORK -- UNLESS YOU USE IT!

This technique was adapted by Jerry L. Johns of Northern Illinois University.

PQRST Method of Textbook Study

Preview

P

Look through the whole assignment. Read the headings if there are any. Read the summary if there is one. Try to get the general idea of the content of the whole lesson. Later you can piece the details into the framework which you have in mind, and the whole lesson will mean more to you.

Question

Q

Think of the questions which are likely to be answered in the lesson. Your reading will have much more purpose. Write these questions when you are first learning this method of study. Later, you only need to keep them in mind. Use them!

Read

R

Read the questions carefully. Read to find the answers to the questions you have raised.

State

S

Go back over the lesson immediately. Check the headings and also your own questions. Ask yourself, "Do I remember what this section was about? or "Can I answer this question?" Put your ideas into actual words. Write out your answer in short form. Later you may say them to yourself or aloud. This step in study is very important. Don't kid yourself into believing that you understand what you have studied unless you can put your ideas into words. This will also help you remember what you have read.

Test

T

Sometime later, and also before an examination, go back to your headings and questions. Quiz yourself. Reread only those parts which you have forgotten. This is the more efficient kind of review. If you have taken steps P, Q and S faithfully, you will find that you do not have too much to restudy.

STUDENTS OFTEN THINK THAT THEY ARE DOING A PARTICULARLY GOOD JOB OF STUDYING WHEN THEY READ THE SAME MATERIAL OVER AND OVER AGAIN. THIS IS NOT TRUE. IF THE RIGHT KIND OF STUDYING IS DONE IN THE FIRST PLACE, THERE WILL BE NO NEED FOR EXTENSIVE REREADING.

This technique was adapted by Jerry L. Johns of Northern Illinois University.

Study Skills - Social Studies

1. Allow time for students to read assignments thoroughly; help each student gauge his/her reading rate to the material being read. For example, if the student is reading a chapter which includes very technical and unfamiliar vocabulary, he/she will need to read it slowly and probably review certain paragraphs. Whereas if the required reading is an article from Time or Newsweek, the student can be directed to skim the article for the main idea or for specific details.

2. Adjust the amount of reading expected of students according to their varying abilities. Naturally, some students are slower readers than others; allow them more time while others complete follow-up activities.

3. Make good use of discussion periods before, after, and during reading. Clarify and explain content by adding your own contributions and through skillful questioning.

4. Preview materials, asking yourself:

   a. What words may cause trouble?

   b. What terms may lead to false impressions or confuse understanding of concepts?

   c. How can I relate the concepts to everyday experiences which students can understand?

5. Whenever appropriate, use audio-visual aids such as films, tapes, maps, charts, and diagrams to reinforce the concepts presented in the reading material.

6. Teach students how to use bold-face headings and margin summaries to answer study questions and "get the main idea" from the reading material.

7. Frequently give students a preview of the content.

   a. Use a preliminary outline.

   b. Use questions written on the blackboard or a dittoed worksheet.

   c. Encourage students to develop questions pertaining to the reading assignment.

   d. Prepare study guides which instruct the student to read for specific ideas.

8. Provide summarizing and organizing activities for the students to do, such as writing summary paragraphs, making outlines, planning and making murals or dioramas, and keeping notebooks or journals.

9. Have students develop vocabulary lists.

   a. Use "word banks" which are groups of words related to the same concept. Supply a "word bank" for each new unit introduced.

   b. Have students define vocabulary words, illustrate their meanings, use them in sentences, and write stories incorporating selected vocabulary.

   c. Have students keep a card file containing vocabulary words with their meanings.

   d. Have students keep a notebook of vocabulary words.

   Students can refer to these materials when completing an assignment or studying for a test.

Study Skills - Mathematics

1. Teach students how to use the index or glossary.

2. When introducing each new unit:

   a. define the technical terms used;

   b. explain the meanings of symbols and formulas;

   c. demonstrate how problems are to be worked;

   d. check each student's understanding of what was taught by having the student show you how to complete a specific problem or by verbally telling you the process.

3. Have students use spiral notebooks for math assignments. The advantage in using a spiral notebook is that students can refer to past assignments to review math processes. Also, all work is kept together in an organized fashion. (Frequently papers from looseleaf notebooks are lost or torn out of the notebook.)

4. Color code sample problems which will visually alert the student to the correct procedure. For example, if the student keeps a spiral notebook, the teacher can write sample problems in red or green. The student can locate the example readily.

5. In the classroom, have an index card file available as a handy reference for students to review how particular math computations are worked. For example, many students have difficulty with fraction computations. On index cards, show sample problems in addition, subtraction, multiplication and division of fractions, showing the step-by-step process.

6. Teach a method for problem solving such as the following:

   S - Skim. Read the problem rapidly.

   Q - What is the question?

   R - Reread for details.

   Q - To answer the question, what math processes should be used?

   C - Carry out the computation.

   Q - Ask yourself, is the answer correct? If the answer possible?

For other study skills suggestions, refer to the Language Arts and Science units of this handbook.

TESTING

PROBLEM:

> Jacob, a tenth grader, is a student with average intelligence and is well known at his school because of his highly developed oral language skills, demonstrated by his performance as a member of the debate team. Jacob's teachers are convinced he has the ability to complete the reading and oral discussion requirements of their courses, but are concerned about his poor performance on many tests.
>
> A majority of the tests Jacob has been required to take are either essay or short answer formats. Teachers have noted that Jacob becomes highly frustrated in a testing situation; they are not certain if this anxiety is due to time constraints, organizational problems, or poor writing skills. Jacob's daily assignments may be somewhat disorganized, but for the most part are quite legible. Several teachers observed that Jacob's assignments are frequently turned in late and that written reports are sometimes not completed.

OBSERVATIONS:

Many students experience difficulty in a testing situation because of the format of the test. For example, a student may understand the material and could give verbal answers to questions, but because of poor writing skills, he/she is unable to answer the questions adequately.

Time limitations are also a problem. Many students become anxious knowing the test must be completed in "X" amount of time.

Another source of difficulty for students is the length of the test. When a student is handed a test booklet with six pages of questions, this in itself can be frustrating and make the student think he/she will never complete it.

And, finally, for many students reading the test may be a forbidding task.

HELPFUL HINTS:

1. Allow the student to respond to test questions in different ways. The student can write answers, give oral answers while a peer, aide or volunteer writes the answers, or tape record answers.

2. If the student has problems reading the test, allow an aide, volunteer, or peer to read the test to the student.

3. Alter the format of the test.

   a. Rather than having the student write complete sentence answers to essay questions, encourage him/her to write answers in topical outline form.

   b. Use multiple choice, true/false, or short answer tests.

4. Reduce the number of test items.

5. Use different levels of questions for different students; some students could answer questions which are more concrete, and others could answer those requiring abstract reasoning.

6. Rather than testing a student at the end of a six-week unit, provide shorter, more frequent tests. These could be administered on a weekly basis; these tests allow the student to demonstrate an understanding of the concepts soon after they are presented. For students who have problems recalling information over a long period of time, this is very effective. It also reinforces concepts taught and provides repetition, which some students need in order to retain and/or generalize a concept.

7. Allow more time for a student to complete a test. Encourage him/her to finish the test during study hall or before or after school.

8. Develop alternate methods of assessing a student's understanding of the material:

   a. Have the student give an oral report to the class.

   b. Have the student give an oral review of the content to the teacher.

   c. Have the student make maps, charts, drawings, booklets, or tapes to demonstrate an understanding of the concepts presented.

Refer to the two hand-outs at the end of this section for additional ideas.

Credit:

Some of the "Helpful Hints" listed in the previous sections were adapted or obtained from:

"Regular Educators and the IEP"
The National Learning Resource Center of Pennsylvania
King of Prussia, Pennsylvania

FACTORS INFLUENCING TEST PERFORMANCE

Examine why a student has difficulty in taking tests by considering these questions when a student does not perform well.

Before the test:

1. Are course expectations clear?
2. Are ideas presented concisely?
3. Are study guides provided?
4. Is the content in the textbook at the student's reading level?
5. Are materials presented in the text and in class presentations related?
6. Are you available to answer questions either before, during, or after class?
7. Are study sessions provided?
8. Does the student use his/her time well?
9. Does the student read the text and/or hand-outs?
10. Does the student review for the test?
11. Does the student have a "good" attendance record?
12. Does the student attend special study sessions?
13. Does the student take adequate notes?
14. Does the student pay attention to class presentations?
15. Does the student have a negative attitude?
16. Does the student have other pressures which might affect his/her performance.

During the test:

1. Are the physical conditions comfortable?
2. Is adequate time allowed for the student to complete the test?
3. Are test questions clearly written?
4. Is the vocabulary too difficult?
5. Does the test cover the material which students expected it to?
6. Are the test directions clear?
7. Is the reading level too difficult?
8. Can the student concentrate during the test?
9. Can the student understand the directions?
10. Can the student respond to the questions in the manner required? (such as, writing answers to essay questions)
11. Is the student anxious or "up-tight" during tests?
12. Is the student well rested?
13. Does the student use his/her time well?

After the test:

1. Do you provide adequate feedback?
2. Is there an opportunity for the student to review the test?
3. Are tests scored correctly?
4. Does the student pay attention to feedback on tests?
5. Does the student review the test results carefully so he/she can learn from mistakes made?

TECHNIQUES FOR PREPARING TESTS FOR SPECIAL NEEDS STUDENTS

I. Format Considerations

Original Format	Format Change	Example or Explanation
1. Matching or Definition	1. Group the matching sets in small groups (5-8) instead of an entire page. Read each item aloud. 2. Give the student the option of taking the test orally. 3. Print only the words on the page and give the definition orally. Assign each definition a number. Have the student write the number of the definition by the word that corresponds to the definition.	3. ___ seambinding ___ casing ___ reinforce ___ notch ___ backstitch
2. Fill in the Blank or Completion	1. Give the test orally. 2. Provide key words on the page to aid the student with spelling. Or, do not take points off for spelling errors.	
3. Multiple Choice	1. Read the test questions aloud as well as all the answers. Allow the students to select an answer as you read. 2. Try asking the questions orally. It may be easier for the student to come up with the correct answer when the other answers are not there to cause confusion.	

Original Format	Format Change	Example or Explanation
4. Spelling Tests	1. Print all of the words on the paper and ask the student to say each word as you point to it.	
	2. Print all of the words on the page and give the students oral instructions such as, circle torque wrench, put an X before ratchet, draw a line through point setter, put a check after dwell gauge, etc.	2. torque wrench X ratchet ~~point setter~~ dwell gauge ✓
	3. Print all words on a page. Give oral instructions as above but instruct students to assign specific numbers to each word.	3. 4 torque wrench 2 ratchet 1 point setter 3 dwell gauge
	4. If possible, use an identification test for their vocabulary words.	
5. Essay	1. Assign the student a secretary (a student) to read the test questions as well as to write down the student's response.	
	2. Tape record the test questions. Have the student use another tape recorder to tape the responses.	
	3. Consider allowing the student to demonstrate knowledge or ability using other evaluation techniques.	3. Design a matching test, have the student apply the skill to a real problem or have the student demonstrate the skill taught.
	4. Have the student give you the answers orally.	

Original Format	Format Change	Example or Explanation
6. Identification or Labeling	Use testing procedures which ask the student to "point to" or "select" the correct item described.	Give the student a diagram, model or object to be labeled. Instead of requiring written responses: a) Have the student point to each part as you say its name. b) Point to each part and ask, "What is this and what does it do?"

II. Test Adaptations

Adaptations	Example or Explanation
1. State questions as simply and briefly as possible.	1. Use 1- or 2-syllable words whenever possible. Use short, simple sentences. 2. Use concrete terms.
2. Avoid asking questions that require multiple answers.	Original Question: Sometimes, strong storms called typhoons strike the island of Japan. What is a typhoon? How does it differ from a hurricane? What causes such huge storms? What happens to typhoons after they move over land? When do typhoons usually occur? Adaptation: Sometimes strong storms called typhoons strike the island of Japan. 1. What is a typhoon?_____ 2. What causes a typhoon?_____ 3. When do typhoons usually occur?_____ _____ 4. What happens to a typhoon when it moves over land?_____ 5. What is the difference between a typhoon and a hurricane?_____
3. Assign point values to each question and print them on the test.	This strategy helps the student budget time when taking the test. Also, state the maximum number of minutes the student should spend answering each question.

Adaptations	Example or Explanation
4. Try to balance the test items with regard to format and value.	1. This will give the student who has problems in multiple-choice sections a chance to pass on the basis of ability in other sections. 2. If you notice that a student responds much better to one type of test than another, consider preparing tests for that student in the format which assures the best performance.

III. Technical Aspects

Technical Aspects	Explanation
1. Clarity of print: Poor quality print may prove to be insurmountable reading and comprehension barriers for the special needs student.	1. Use typed material rather than handwritten, whenever possible. 2. When using duplicating masters avoid using those which produce copies with indistinct print; e.g., letters smudged, blended together or partially printed, strike-overs, etc. 3. Use pica type rather than elite whenever possible.
2. Copy quality: What might seem insignificant quality flaws are often extremely distracting and frustrating to the special needs student.	1. Use only duplicating masters that provide a clear, sharp copy. 2. Make sure that the duplicator is functioning properly. Stop printing if you notice streaks through the page where print is faded or barely visible/ wrinkles or creases which obscure letters or words. 3. Avoid printing on both sides of the page unless you are using a high grade paper which will not allow the print on the opposite side to show through.
3. Organization: Many students with learning problems have very few, if any, organizational skills.	1. Try to put all of the information that the student will be responding to on the same page. (If a visual requiring an additional page is necessary, direct the students to separate the pages so that they may look at both pages at the same time without flipping back and forth between the two.)

Technical Aspects	Explanation
	2. Number all pages. 3. Ask questions in sequential order. 4. Group questions in the same format together (multiple choice, true/false, matching, fill-in-the-blanks, etc.). 5. Print all instructions for taking the test on the test pages. Review the instructions orally before the students begin the test. 6. Allow plenty of space for the student's response. 7. Provide lines for the responses. 8. Walk around the room during the test to be sure that all students are following the directions accurately. 9. Ask questions which demonstrate application of information to daily-living situations.

IV. Minimizing Stress and Strain

Potential Problem	Possible Solution
Distractions: Visual	1. Place the student somewhere in the room where movement and activity outside the room are least noticeable. 2. Minimize movement and activity in the room during testing sessions.
Distractions: Auditory	1. Try to give all oral instructions at the beginning of the test instead of interrupting the testing session with additional information. However, always encourage individual questions which can be answered quietly at the student's desk or in the front of the room. 2. Require all students to remain quiet until the testing session is over for everyone.
Short Attention Span	1. Keep your tests as short as possible. Give several short tests instead of one very long one. 2. Give short tests over recent material daily or weekly.

Potential Problem	Possible Solution
Fear of Testing Situations	1. Avoid timed tests. When a timed test must be used give point values for each question on the test and announce before the test how many points will be necessary for a passing grade. Instruct students to answer the questions with the highest point value first. 2. Give the students other options for improving their grades if they perform poorly on a test. 3. Always give one or two bonus questions for students who have problems on a specific section.

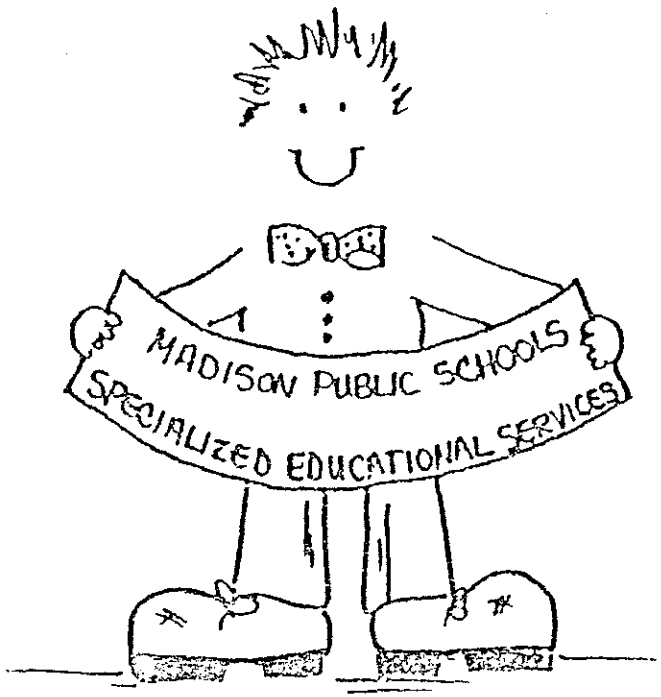
Credit

This hand-out was obtained from:

"Adaptations for Teaching Handicapped Students"
Developed by Madge Regan
Vocational Education Inservice Project
Inservice Training Modules, Special Considerations Sections
University of Kansas

To make it and take it . . .

SEE DIRECTIONS BELOW



SKILLS

ARE

POWERFUL

ZAP
ACTIVITY-3

TAKEN FROM: GUIDELINES TO LEARNING STRATEGIES FOR TEACHERS AND STUDENTS.

To Duplicate: Cut on dotted line, fold and staple.
(Save paper and duplicate pages back to back:
A-B ; C,J-D,I; E,H-F,G.)

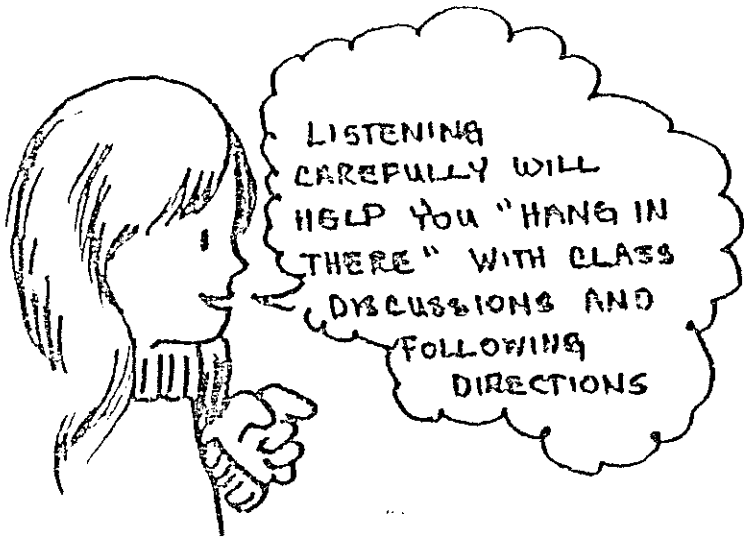
Listening

1. Open your eyes to teacher cueing:

   -looking at you and making faces
   -making gestures
   -pointing where to go
   -pointing where to look

2. Open your ears to teacher cueing:

   -"Get this class..."
   -"Take notes on..."
   -"Listen..."
   -talking in a whisper
   -total silence



B

For Zap

1. Pick a strategy area to work on.

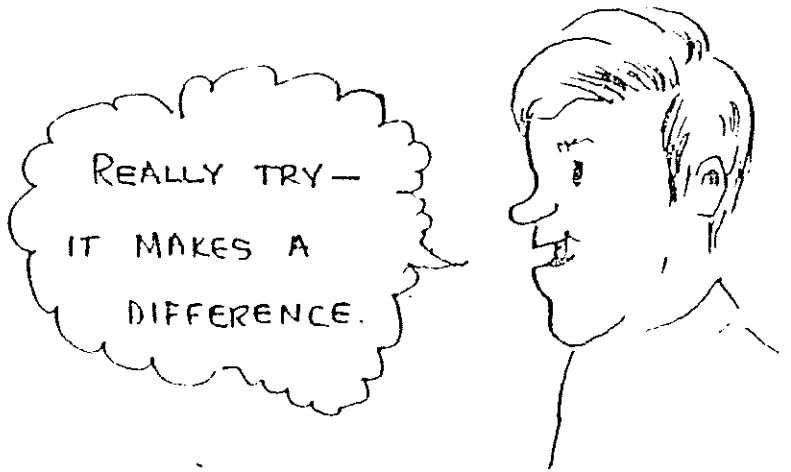
2. Use as many ideas as you can from it.

3. Record how well each one worked for you.

Idea	Rate by Circling		
_____	☺	:|	☹
_____	☺	:|	☹
_____	☺	:|	☹
_____	☺	:|	☹

4. Continue using the ones that worked the best for you.

5. Try other strategy areas.



K

To duplicate: cut on dotted line, fold and staple.

Math

To help you do a better job in math, use these:

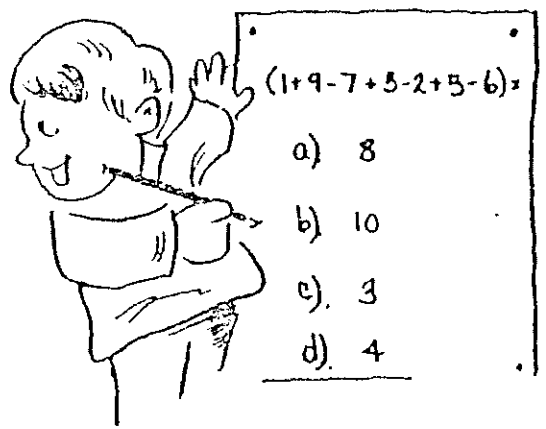
1. If you need addition and multiplication tables,
   USE THEM!!

2. Get help with the reading from
   tutors
   teachers
   other students

3. Make drawings if they help explain the problem.

4. Use scrap paper instead of doing all the work in your head.

5. Use any strategies, examples, or flow charts your teacher has shown you.



J

More Listening

3. Listen to directions carefully by:
   a. giving your full attention whenever the teacher is talking to the class or writing on the board...

      -STOP what you are doing
      -pencil down
      -mouth closed
      -eyes on teacher

   b. ask questions if you aren't sure what the teacher means or you missed what she said.

      *ASK RIGHT AWAY, not in 5 minutes.

   c. take short notes that you can read and understand

      -get down the important points
      -do NOT write every word
      -listen for key expressions:
        "To sum things up..."
        "This is important..."

C

To duplicate: cut on dotted line, fold and staple.

Get Involved In Class Discussions

Here are some ways to get involved. Some are easier than others; try the easy ones first (*).

*1. Questioner..... "What do you think?"
"Why does that happen?"

*2. Complimenter... "I think Pat's idea is super because..."

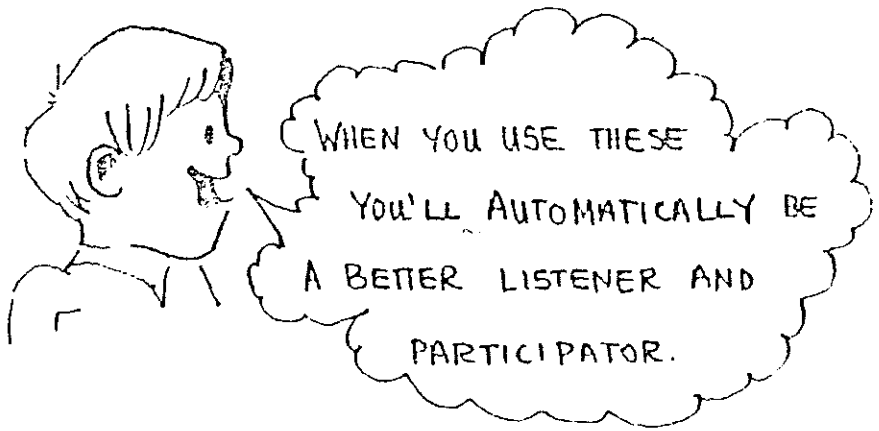
*3. On Tasker..... "Hey, our question was..."
"We're getting side-tracked."

4. Builder..... "Going back to Pat's idea..."

5. Cross Examiner. "I can't quite agree with Pat because..."
"Why do you say..."

6. Involver..... "What do the rest of you think about this?"

7. Big Thinker... "Hey, I have an idea. I wonder if..."



D

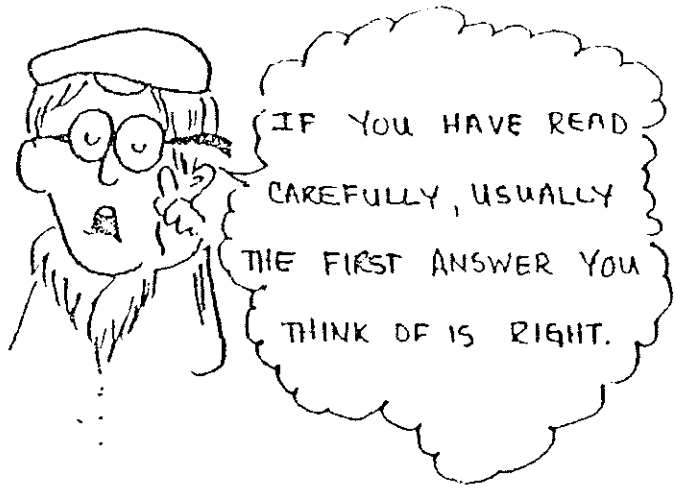
Test Taking

When you take a test, these ideas will help you:

1. For True-False questions
   -you have a 50-50 chance of getting them right
   -any part that is false makes the whole thing false
   -sentences that contain "always" or "never" are usually false

2. For Completion questions
   -write in any answer that could give you credit
   -do this kind last; you might find the answer someplace else on the test

3. For Multiple Choice questions
   -make sure you are answering the question
   -cross out the choices that can't be right
   -select the answer that seems most possible



I

To duplicate: cut on dotted line, fold and staple.

Reprinted by permission from ZING Curriculum Guide, Special Education Services, Madison Public Schools, 545 West Dayton Street, Madison, WI 53703

Writing

When you need to write, try these:

1. To write your best:

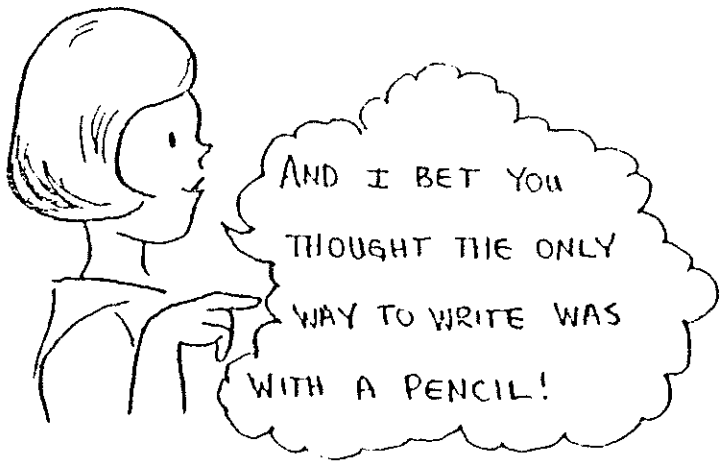
   -write slower
   -use a pencil
   -match your best handwriting
   -relax before and while writing
   -check how hard you are pressing
   -check how tight you hold the pencil

2. In a group, let someone else do the writing while you help in other ways.

3. Grab someone to write down ideas for you.

4. Use a tape recorder if your teacher says OK.

5. Use a typewriter if your teacher says OK.



H

Spelling

1. Try these ideas to help you spell:

   a. Spell it like it sounds (dickshon aire)

   b. Use spelling rules (i before e except after c - chief)

   c. Put down the first letters you are sure of and then draw a line and later ask your teacher (The panda may become xt_____ soon.)

   d. Ask the teacher or other students for help.

   e. Try different spelling and pick the one that you think is best (alwyz, allways, always)

E

To duplicate: cut on dotted line, fold and staple.

Reprinted by permission from ZING Curriculum Guide,
Special Education Services, Madison Public Schools,
545 West Dayton Street, Madison, WI 5370

1. Try these to memorize "IT" (words, ideas, dates, number facts, names...)

   a. Look at "IT", close your eyes, make a picture in your mind.

   b. Say "IT" over and over.

   c. Write "IT" down, perhaps many times.

   d. Memorize a part of "IT", then another, put them all together.

   e. Think of something super silly. Make "IT" part of that super silly thought.

F

If you have trouble reading something, try these:

1. Let your teacher know! It's no big deal and chances are he or she does know but forgot-- and needs reminding.

   * We Are Here To Help YOU!

2. Listen carefully to any discussion about it before you read.

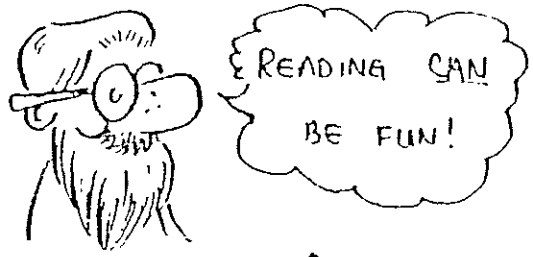
3. Ask your teacher if you can read with a friend.

4. You will be able to read some of it if you:

   -read for short periods of time
   -use a card or marker
   -concentrate on meaning by guessing what it might say
   -break down what you don't understand into a page, a paragraph, a sentence; and then put them together

5. Focus on:

   -the big idea
   -how the author supports it
   -the details



G

To duplicate: cut on dotted line, fold and staple.

Reprinted by permission from ZING Curriculum Guide, Special Education Services, Madison Public Schools, 545 West Dayton Street, Madison, WI 53703.

STUDY SKILLS AND TEST TAKING

BIBLIOGRAPHY

Best methods of study (4th ed.) (S. Smith) New York: Barnes & Noble, Inc., 1970 (College Outline Series) (may be a later edition)

Designed for the college freshman or high school senior. Gives both generalized and content-specific ideas. Can be used as reference, or as an outline for systematic study.

Better work habits (rev. ed.) (R. Salisbury) Chicago: Scott, Foresman & Co., 1966.

Workbook for high school students. Each section tells about the importance of the topic and how it affects what the student must/should do. A "problem index" is useful for reference. Answers to short exercises are provided.

Higher grades through better notes: Simplified note taking (J. H. Butler & T. J. Jacoby) Palo Alto, Calif.: Fearon Publishers, 1965.

For the high school and college student. Adaptable downward. A simple, but relevant book that presents note taking in various circumstances; e.g., field trips, lectures, as well as in various written materials.

Homework: How to study and remember (H. L. Collier) Phoenix: O'Sullivan, Woodside & Co., 1976.

Designed to help parents prepare their children for developing good study skills, positive attitudes, and self-confidence in learning. For teachers and parents as a guide for improving existing study habits of grade and high school students. (Some problems seem oversimplified, but in general very well done.)

How to help your child learn: A handbook for parents of children in kindergarten through grade 6. Washington, D.C.: National Education Association, 1960 (may be out of print).

Contains practical suggestions for parents. Suggestions for each content area and homework and reporting. Excellent book.

How to study (2nd ed.) (C. T. Morgan & J. Deese) New York: McGraw-Hill, 1969.

". . . presents specific instructions for planning and use of time, getting the most out of a textbook [SQ3R], outlining and taking notes, and preparing for and taking examinations. It also gives directions for dealing with special problems such as studying foreign languages, the sciences and mathematics, and for writing themes and reports (p. x)."

Provides many examples and some exercises. Also provides charts of basic materials or procedures.

Written for the college level, but adaptable to secondary and upper elementary.

How to study: High school edition (T. F. Staton) Circle Pines, MN: American Guidance Services, Inc., 1959.

See his programmed instruction book. Essentially the same information, but in a "reading" format.

How to take tests (Prepared by Altoan Programs Co.) Palo Alto, Calif.: Fearon Publishers, Inc., 1963.

A slim aid, programmed to provide an overview of the essentials of test-taking. Secondary/college level. Can be used earlier if test types are used. Assumes prior study of material.

How to take tests (J. Millman & W. Pauk) New York: McGraw-Hill, 1969.

Deals with Test-Wiseness as defined as "the ability to use characteristics of tests and test-taking to reach the full potential of one's knowledge and aptitudes (p. xiii)."

Does not deal with study, but with how to show what is known.

This book could easily serve as a syllabus for a course on test-taking.

Improving study and homework behaviors (S. Zifferblatt) Champaign, Il.: Research Press, 1970.

A humorously presented approach for parents to assist them with helping their children improve study and homework behaviors. Well and frequently illustrated.

A semi-programmed text that could serve as the basis for a course for parents.

Emphasizes charting, motivation, and SQ3R.

Programmed study technique (How to study workbook) (T. F. Staton) Circle Pines, MN: American Guidance Services, Inc., 1964 (with Instructor's Manual-IM)

Programmed with a red key plastic overlay to make answers appear. Designed to be used in a class, or independently. IM used for class activities, and contains typical student responses to questions in text. Recommends directed practice in class of that method can be used independently.

Studying a textbook: Exercises in chapter study and textbook reading (F. L. Christ) Chicago: Science Research Associates, Inc., 1966.

A workbook in which ". . . the student is first introduced to the technique of previewing a textbook to discover what it contains and how it is organized, and then he is introduced to

the use of the SQ3R method through sample chapter-study assignments. The exercises in SQ3R are based on twenty-five exerpts from leading textbooks on English, science, social studies, mathematics, music, and art."

An initial description assists the student.

Using reading to teach subject matter: Fundamentals for content teachers (A. Burron & A. L. Claybaugh) Columbus, Ohio: Charles E. Merrill Publishing Co., 1974.

". . . the emphasis of the book has been placed on achieving more productive teaching of subject matter through the application of a few basic ideas in reading rather than on teaching reading through the subject-matter fields."

Aside from presenting some "bad" old information about individual student reading assessment (the IRI), this book is very helpful in providing a background of understanding and assistance for teacher, parent, or older student.

Study skills guide (T. Barnstorf) Minneapolis: Burgess Publishing Co., 1977.

Designed for the UMD college student, but much is adaptable downward. Could/does form the basis for a course.

The bibliography was obtained from:

Virginia Brown
PRO-ED
7701 Cameron Road #109
Austin, Texas 78752