ABSTRACT
        This pamphlet offers guidelines for educators who
want to improve their use of strategy instruction with students who
have inefficient and/or ineffective learning strategies. Specific
examples of strategic teaching are provided for improving general and
academic performance, and suggestions are given on how to create a
strategic environment consistent with strategic teaching. The
pamphlet begins with an outline of the steps in acquiring a learning
strategy. It then discusses strategies for improving general
performance, including strategies in the areas of organization, time
management, memory, test taking, social skills, speech, and
handwriting. Strategies for improving academic performance in the
areas of reading and writing, spelling, mathematics, and other
content areas are then described. Suggestions for creating a
supportive environment for strategy learning in the home and school
are provided. Guidelines for teaching strategically are noted, such
as use of advanced organizers, brainstorming, motivating and
activating students, modeling, providing feedback, and use of
post-organizers. (Contains 55 references.) (JDD)

FASTBACK

345

ED355682

Learning Strategies for Problem Learners

Thomas P. Lombardi

EC301912

PHI DELTA KAPPA
EDUCATIONAL FOUNDATION

ERIC

THOMAS P. LOMBARDI

Thomas P. Lombardi is professor of Special Education at West Virginia University. Previously he was an assistant professor at the University of Arizona, director of education and training at the Arizona Children's Colony, and a special educator in Connecticut.

Lombardi received his Ed.D. in Special Education from the University of Arizona, M.Ed. in rehabilitation counseling from Springfield College, and a B.S. in special and regular education from Southern Connecticut State University. He has done post-doctoral study in learning strategies at the University of Kansas and in special education technology at the University of Kentucky.

Lombardi has published widely in education journals. He is author of *Career Adaptive Behavior Inventory, Special Students and Our Schools,* and *ITPA: Clinical Interpretation and Remediation.* A certified Strategy Intervention Model trainer, he provides training and consultation for schools and industry.

Lombardi was named Outstanding Teacher three times by the West Virginia University College of Human Resources and Education, and in 1989 was a finalist for the West Virginia Professor of the Year Award. Active in a number of professional organizations, he has received both leadership and research awards from the West Virginia University Chapter of Phi Delta Kappa.

Series Editor, Derek L. Burleson

Learning Strategies for Problem Learners

by
Thomas P. Lombardi

Table of Contents

Introduction

Most students know or are taught informally how to process information and develop a strategy or organized plan when confronted with a social, academic, or job-related problem. Others, however, find this cognitive process to be quite difficult. They read assigned material over and over but cannot remember the main ideas. They have good oral vocabulary, yet their oral and written reports are simplistic and boring. They may study hours for an upcoming test, but their performance does not meet their own or their teacher's expectations.

There is growin body of research (Ellis et al. 1991; Harris 1988; Pressley et al. 1989a) to support the contention that one of the major differences between effective students and ineffective students is their understanding and use of successful learning strategies. Deshler and Lenz (1989) define a strategy as "how an individual approaches a task: it includes how the person thinks and acts when planning, executing, and evaluating performance on a task and its outcomes" (p. 205).

A number of strategy training models have been proposed and researched, including academic strategy training (Lloyd 1980), reciprocal teaching (Palincsar and Brown 1984), specific learning strategies (Deshler and Schumaker 1986), and directed discovery (Meyers, Cohen, and Schleser 1989). Although there are differences in the models, all agree on two major points. First, there are a number of students, often described by such terms as at-risk, unmotivated,

developmentally immature, learning disabled, etc., who are deficient in their use of learning strategies. These students can be found in both regular and special education programs. Second, these students can be taught learning strategies that will help them approach tasks more efficiently and effectively, thus improving their chances for success. Although much of the strategy intervention research has been targeted at older students, it is the author's contention that the teaching of learning strategies also can benefit younger students. This fastback is written for teachers and others responsible for students who have inefficient and/or ineffective learning strategies. It provides no quick-fix solutions, but it does offer guidelines for educators who want to improve their use of strategy instruction. Specific examples of strategic teaching are provided for improving general and academic performance, and suggestions are given on how to create a strategic environment consistent with strategic teaching. Throughout, the focus is on how to learn, not what to learn.

9

Learning Strategies Principles

Learning strategies are those processes or techniques that one uses to accomplish a particular task. They are a road map for the thinking process. The different models for teaching learning strategies are all designed to replace inefficient and ineffective learning with strategies that lead to success and a higher level of performance. At the heart of the various models is the use of good principles of teaching. Some of these principles advocated by specialists are summarized here (see Deshler and Shumaker 1986; Swanson 1989).

Demand students' involvement. This is probably the most important aspect of strategic learning instruction. There are a number of motivation techniques reported in the literature, but essentially the goal is to make students see how the strategy will aid them with specific problems.

Identify and teach prerequisite skills. Although strategy instruction can occur at almost any age (counting with your fingers is a fairly universal strategy for two- and three-year-olds), many do require certain prerequisite skills. A sentence-writing strategy can be enhanced if students first learn to identify nouns, verbs, and prepositions.

Learn the strategy. It is important that the teacher master the strategy in order to model it with ease. Students must be able to see the strategy steps performed in a natural, comfortable manner. Mastery of the strategy allows the teacher to focus on instructing students.

Recognize and reward student effort. Students with learning problems have a history of failure. The teacher must be sensitive to this

and provide praise and positive feedback for even modest accomplishments.

Require mastery. Students must learn their strategies at a level that allows them to perform the strategy automatically. Research indicates that without this level of performance, very little is generalized to a real application. Let students keep their own charts to record their progress in learning the strategy. However, the teacher must establish the level of performance. With some strategies it is not unreasonable to establish a 100% performance level.

Integrate instruction. Although there usually are several steps in acquiring mastery of a learning strategy, they are not always linear or sequential. For instance, the ability to generalize is usually the last step but may be introduced at any step along the way, especially if prompted by the student. The ultimate goal is to have students incorporate the strategies into their information processing system.

Provide direct explanation. Teachers should emphasize the cognitive processing involved in applying learning strategies. In order for students to learn the steps of a particular strategy, they may have to use visual imagery, hypothesize, or connect new information to prior knowledge. The teacher should demonstrate and encourage the use of these cognitive and metacognitive processes.

Promote generalization. Unless strategies are used in a variety of situations, students may not see their relevance and will fail to generalize their use. Teachers should follow up and reinforce the use of learning strategies whenever an opportunity presents itself. And parents should be encouraged to do the same at home. Sometimes it is helpful to have students perform a task with and without using the strategy, so they can judge for themselves the value strategies have in achieving a successful performance.

Encourage adaption and development. Once a strategy is learned and generalized, it should become a functioning part of a student's mental processing. Modifications to fit time factors, content, or environmental situations are appropriate. The ultimate goal is to have

students understand the entire process of acquiring learning strategies and be capable of developing their own.

Steps in Acquiring a Learning Strategy

The time involved in acquiring the steps of a learning strategy will vary depending on the difficulty of the strategy as well as on the students' learning rate. Regardless, each lesson should begin with an advanced organizer and conclude with a review of accomplishments. The advanced organizer prepares students to be actively involved with the objectives to be learned and gives an overview of expected performance. The review allows both the teacher and students to determine whether they have met the expectations. Throughout the strategy intervention, students should keep their own records of progress.

The following steps should be used in teaching learning strategies:

Step 1: *Determine if the strategy is needed.* There are many reasons why students have difficulty learning. An inefficient or ineffective strategy is only one of these reasons. So the first step is to make sure there is a need for the strategy. Use formal or informal tests as well as your own observations to determine whether you are assessing the strategy (or more likely, lack of strategy) the student is using to accomplish the task in question. Once the need is determined, share your findings with students.

Step 2: *Describe the strategy.* This step is designed to give students a sense of the strategy. Compare it to the strategy the students are currently using. Let them know what they can realistically expect in terms of improved performance if they do learn the strategy. Get their commitment, and commit yourself to the effort. Let them know their responsibilities.

Step 3: *Demonstrate the strategy.* This is the heart of strategy instruction. Many teachers have not been trained or feel uncomfortable about "thinking out loud." However, it is necessary for students to experience the modeling process. They need to know and see how the strategy is supposed to work. They need to witness your cogni-

tive and metacognitive functioning. It may be necessary to provide several demonstrations before students are ready to move on to the next step: practice.

Step 4: *Practice the strategy*. Students need to practice the strategy until they perform it automatically. Learning tasks should begin at an easy level so students can concentrate fully on the strategy. Gradually, as they become comfortable with the strategy, the learning tasks should increase in difficulty until they are at the students' instructional level. At this step, there will be considerable variance in the rate of student progress. Thus, more personalized instruction will be necessary.

Step 5: *Use the strategy*. At this step, students should be ready to apply the strategy to the task or situation in which they had been experiencing difficulty. They also should be giving themselves prompts and reinforcements, relying less on the teacher for this support. The teacher should continue to monitor the correct use of the strategy as well as be available for personal assistance as needed.

Step 6: *Generalize the strategy*. For strategy instruction to be worth the time and effort, students must be able to generalize the strategy to a variety of situations and settings. The teacher must continue to monitor the students as to where, when, and how the strategy can be used. Research (Barkowski et al. 1987) indicates that strategies are better generalized when students believe use of the strategy accounts for their better performance.

Step 7: *Adapt the strategy*. As the strategy becomes an ongoing part of students' problem-solving techniques, they will probably be able to adapt it in some way. Mnemonics may no longer be needed; time lines may be altered; and strategy steps may even be collapsed. This is to be expected. When a student progresses to the point of adapting a strategy, it is an indication t   : ~ strategy has been incorporated into the student's problem-solving process at an automatic level.

١٥

Strategies for Improving General Performance

There are many strategies or skills that we use in coping with everyday aspects of our lives. Sometimes they are referred to as life skills. They often make the difference between success or lack of success in our performance. Unfortunately, many students with academic, social, and vocational problems have difficulty acquiring and using these skills. What follows are some strategies for improving these skills. The examples given are treated only briefly here. Readers interested in a more comprehensive discussion should follow up with the appropriate references at the end of this fastback.

Organizational Strategies

An effective strategy for promoting good organization is to use some visual representation of what is to be accomplished. They may be logs, time lines, charts, color codes, guided notes, or even simple stick-ons. Another basic strategy is to have students keep a notebook for each subject. In the front of each notebook is a pocket labeled "Work To Be Completed." In the back is a similar pocket labeled "Completed Work." Teachers and parents should monitor and reinforce the use of these strategies. For a comprehensive discussion of these and similar strategies, see Shields and Heron (1989) and Birnbaum (1989).

Time Management Strategies

Failure to manage one's time efficiently can result in poor performance. Strategies to manage time better include use of time grids, calendars, mechanical timers, and appointment books. One strategy to use for tasks at home, school, or work is the Priority Time Chart. In their assignment notebooks, have students make four categories: "Important and Urgent," "Important and Non-urgent," Non-important and Urgent," and "Non-important and Non-urgent." As activities, assignments, and requests become known, students write them down under one of the four categories. They soon begin to realize that some of the things they have been doing could be postponed; others they must attend to immediately; and still others they must give careful thought to but not execute until later. This strategy not only promotes better time management but forces students to make decisions about what is to take priority. A study of college students in a course that stressed similar time management strategies indicated better study habits, improved academic performance, and increased motivation (Congos and Smith 1983).

Memory Strategies

Too often, poor memory is used as an excuse for poor performance. Yet there is a growing body of research showing that memory can be improved (Pressley et al. 1989*b*). Some of the promising strategies for improving memory include the use of mnemonics, especially for remembering names or the order of things; pegboard or association strategies that help to transfer lists from short-term to long-term memory; and categorizing for remembering ideas and words by grouping. The use of clustering or chunking ideas together to make a whole can be especially helpful. For example, students visualize columns and assign each column a main idea. As new information is received, it is placed in the appropriate column. This strategy is actually a combination of visualizing and categorizing.

15

14

The use of computer-assisted instruction (CAI) to improve memorization of factual information holds much promise. Stevens and his colleagues (1991) have developed a series of CAI programs titled *Waiting to Learn*, which uses a constant time delay, prompt-fading strategy to improve memory of spelling words. It is a tutorial strategy, not just drill and practice. The CAI format allows teachers to enter factual information to be learned for almost any topic.

Test-Taking Strategies

There is no substitute for studying and knowing the material in order to do well on a test. However, there are strategies that can help students to do even better. (See fastback 291 *Preparing Students for Taking Tests*, by Richard Antes.) These include carefully reading the directions, skipping questions in a timed test if not sure of the answer and then going back to them if there is time, answering all questions unless there is a penalty for guessing, and reviewing all answers. One popular strategy, which uses the mnemonic *PIRATES*, has been successful in raising students' test scores by at least 10 points (Hughes et al. 1988). PIRATES stands for:

Prepare to succeed.
Inspect the instructions.
Read, remember, reduce.
Answer or abandon.
Turn back.
Estimate.
Survey.

Even performance on oral tests can be improved by good strategy instruction. Carlisle (1985) suggests that students do the following:

1. Clarify the question to ensure understanding.
2. Keep answers as simple as possible.
3. Organize and outline the answer as it is presented.

4. Remain flexible but be prepared to support your answer with experiences.
5. Quote authorities.
6. Maintain a calm, friendly manner.
7. Admit lack of knowledge but comment on related areas.

Scruggs and Mastropieri (1992) offer a variety of strategies that can be used for classroom tests, standardized tests, and general all-purpose tests. They also contend that these strategies can be taught by parents as well as by educators.

Social Skill Strategies

Often students with learning problems also have problems interacting with peers and others. There are several strategies for teaching positive social skills. These include cooperative learning, mutual interest discovery, and contextual intervention. Cooperative learning requires students to work together to accomplish shared goals. Mutual interest discovery allows students to explore group projects with peers who have similar interests. Contextual intervention involves teaching social skills in the context of family, peers, and classroom. Carter and Sugai (1988) offer several social skill strategies including modeling, correspondence training, rehearsal, and positive practice. Modeling exposes students to displays of appropriate behavior. With correspondence training, students self-monitor their social behavior and later submit verbal and/or written behavior reports. Rehearsal and positive practice may take the form of students watching a video-tape that teaches "good listening" skills, which are then reinforced by parents and teachers when good listening skills are demonstrated.

With the current emphasis on mainstreaming students, strategic placement can be a very useful strategy. Strategic placement involves putting students who lack social skills in situations with students who display appropriate social behavior. These students serve as models and reinforce appropriate social skills. Another strategy, called

SLANT, is designed to increase social acceptance of students (Ellis 1991). It can be used in almost any situation involving student interaction. The mnemonic stands for:

Sit up.
Lean forward.
Activate your thinking.
Name key information.
Track the talker.

Speech Strategies

Many students, not just those with learning and social problems, are uncomfortable speaking before a group. Suid (1984) offers a series of strategies that start off with games or group-speaking activities and gradually lead up to students speaking alone before a group. Another strategy uses the acronym *SPEECH* as a mnemonic for the six steps in preparing an oral presentation (Lombardi, in press).

Select your topic.
Prepare pertinent data.
Edit your speech (clarity, conciseness, continuity).
Enhance your speech (gestures, emphasis).
Crosscheck your speech.
Hear yourself (rehearse your speech).

Handwriting Strategies

Many problem learners, and others for that matter, fail to write legibly. Their lack of handwriting skills often detracts from their other work. Bing (1988) offers some general strategies for improving handwriting, as well as specific strategies for circumventing the problem. The general strategies include:

1. teaching proper posture, pencil grip, paper position, and basic strokes;

2. providing handwriting models in the form of alphabet charts;
3. using shaping techniques;
4. using prompts and fading techniques (allowing students to trace letters and words, then gradually fading parts of the words until there is only an arrow or dot to start students in the correct position);
5. assigning smaller amounts of written work or giving additional time for completion;
6. requiring the same work from students with handwriting difficulties as the rest of the class, but not critiquing their handwriting skills;
7. teaching proofreading skills;
8. requiring students to generalize new handwriting skills;
9. providing supervised practice for short periods of time each day.

Common circumventing strategies include using the typewriter or computer, giving oral reports or tape recording them, and using a writing buddy (a student who does the actual writing using the notes provided by the student with poor penmanship).

Strategies for Improving Academic Performance

The most visible characteristic of problem learners is their poor academic performance. However, there is a growing body of research to support using learning strategy approaches to help students learn *how to learn* in the academic areas (Polloway et al. 1989). The principles guiding the learning strategies approach are the same as those associated with best teaching practices. Thus learning strategies and teaching strategies reinforce each other. This is not to say that using strategies alone will solve all academic problems students have, but it does appear that strategies will help improve academic performance for many students. Some of these strategies are described in this chapter.

Reading and Writing

In *Illiterate in America* (1986), Jonathan Kozol states that millions of adult Americans are unable to read well enough to function independently in today's society. Many of the functional illiterates whom Kozol is writing about were no doubt problem learners in school. For whatever reason, the reading instruction they received did not take — at least not at a level that would allow them to function successfully in the adult world. So the challenge to educators is how to create a nation of effective and fluent readers.

In the past it was generally assumed that reading was essentially word recognition and learning how to decode words. Today most

authorities in teaching reading agree that reading is a much more complex process involving the reader, text, comprehension, and the reading task itself. Students must use various strategies before, during, and after reading. They may *skim* before reading, *monitor* during reading, and *reflect* after reading.

One of the time-honored reading strategies is the *SQ3R* method. Teachers often use this strategy with all their students, with or without reading problems. The steps for this strategy are:

Survey: Preview the introduction or first sentence of each paragraph.

Question: Ask questions about each paragraph or major heading.

Read: Read quickly to find answers to the questions raised and formulate additional ones.

Recite: Answer the questions in one's own words.

Review: Write or give oral responses to all that has been learned.

Word identification and reading comprehension are two major problems experienced by students with reading disabilities. Lenz and colleagues (1984) at the University of Kansas Institute for Research on Learning Disabilities developed a strategy for identifying unfamiliar words in content materials using context clues, separating the word into parts, and using available resources. Known by the mnemonic *DISSECT*, the steps in the strategy are:

Discover the context.
Isolate the prefix.
Separate the suffix.
Say the stem.
Examine the stem.
Check with someone.
Try the dictionary.

A study involving 12 adolescents with learning disabilities (Lenz and Hughes 1990) indicated the strategy was effective in reducing

reading errors in all subjects. However, the study noted that separate but simultaneous attention was needed for dealing with comprehension problems.

The essence of teaching reading is helping students to *comprehend* what they have read. Because of the complex nature of comprehension, a combination of strategies is usually needed. Reciprocal teaching (Palincsar and Brown 1984; Palincsar 1988) provides such a combination dealing with summarizing, question generating, clarifying, and predicting. With reciprocal teaching, the teacher first discusses why some text is difficult to understand and how various strategies can help in the understanding process. Students take turns playing the teacher leading group discussion. For example, the student leading the group may first *summarize* the major parts of what was read. Then the rest of the students are *questioned* as to what they felt were main ideas and details. *Clarifying* unfamiliar words and misunderstandings may lead students to reread or seek help from a dictionary, encyclopedia, or the teacher. Finally, the group is encouraged to *predict* upcoming content, thus giving them a reason to continue reading.

Poor writing skills may well be the most prevalent academic problem of students with learning difficulties. It certainly is one of the most obvious. Studies indicate that simply asking students to write more does not produce better writers.

Two strategies to help students improve their writing are the *Sentence Writing Strategy* and the *Paragraph Writing Strategy*. They are both part of the Strategy Intervention Model developed at the University of Kansas and require formal training for individuals who plan to use them.

The *Sentence Writing Strategy* guides students in writing four types of sentences: simple, compound, complex, and compound-complex. Students learn to use a formula for the type of sentence they plan on using. Eventually they learn to use all the sentence types in a paragraph. The *Paragraph Writing Strategy* is a natural extension of sentence writing. It allows students to expand their creative writing skills

to a more advanced level. Students learn how to write descriptive, enumerative, sequential, comparison, and cause-and-effect paragraphs.

Ford (1990) uses a problem-solving strategy for teaching the basic components of good writing. At the *prewriting stage*, the teacher presents a problem to be solved and asks students to develop a similar problem. In the example given by Ford, the problem has to do with ordering from a menu in a restaurant or from a store catalogue. Menus and catalogues are passed out to each student. They then use the *writing stage* to put down their problems on yellow paper to remind them that it is only a first draft. At the *conference stage*, students meet in pairs or small groups to share their written problem and discuss ways it might be improved, if it is feasible to answer, and whether there are any spelling, grammar, or punctuation errors. Students then *revise and edit* their problem based on comments and suggestions from the small group. Finally, in the *publication* stage, problems are carefully written on the front of cards, answers on the back, and the student author's signature in the corner. A file box of problems is then available for students to pull out and answer. If they have difficulty with the problem, they go to the student author for help. This writing strategy requires little intervention from the teacher, combines functional and creative writing, and serves as a great motivator for the students.

Spelling

Many students have spelling problems. It is one curriculum area where being charming and creative does not enhance performance. There are basically two ways to learn to spell: rote memory or using spelling rules. Recently there has been renewed interest in assessing learning strategies that might improve spelling (Dangel 1989; Graham and Voth 1990). Dangel looked at two spelling strategies: student-directed planning and student self-monitoring. In the first, teachers ask students to decide how much time they plan to study their spell-

ing words and then to divide the words into two stacks, easy words and hard words. The teacher recommends to students that they allot twice the amount of time to study the hard words as they do the easy words. During several practice probes, students might decide to switch some of the words from one stack to another. In the self-monitoring strategy, teachers first teach students to use the trace-copy-cover-write technique to study their words and to record the accuracy of their practice. In this strategy, they also continue to divide their words into easy and hard stacks. In general, both of these student-directed strategies proved effective.

Other spelling strategies offered by Graham and Voth include:

1. Use high-frequency words (reflecting student interests and immediate environment).
2. Introduce new words gradually (two or three every day rather than 12 to 15 at the end of the week).
3. Encourage self-correction by the student under teacher/parent guidance.
4. Designate specific times for home/school spelling practice.
5. Make direct use of new spelling words in formal writing assignments.
6. Make direct use of spelling words in everyday writing tasks.

Mathematics

Most students experience a block in their mathematical comprehension at some point in their academic career. It could be addition, division, fractions, algebra, geometry, trigonometry, calculus, or statistics. At whatever level the block occurs, it generates math anxiety. For problem learners, math anxiety often begins early, when they are asked to use mathematics for problem solving. Too often, their instruction has concentrated on computation skills; but they are not able to apply these skills to solve practical, everyday mathematical problems. Success in math requires both computational and problem-

solving skills. They should be integrated and taught simultaneously. There are several strategies to help students integrate computation and problem solving.

Kennedy (1985) describes a math strategy in which students write letters, keep logs, and develop word problems and present solutions in a small group. About 10 minutes before math class ends, all the students write a brief letter about what they learned, what they did not understand, and what they would like to see discussed at the beginning of the next math class. The teacher collects the letters, reviews them, and by the next day usually is able to clear up any problems with a brief explanation. Keeping logs allows students to have a record of their progress and to make other notes on math problems. Meeting in small groups, students learn from each other as they discuss and share their solutions to math problems they have developed themselves. Even when answers are wrong, students are encouraged to write down how they arrived at the answer. Often students learn as much from their errors as from a correct solution.

The increasing availability of computers in schools offers still other strategies for math instruction. Ross et al. (1988) describe microcomputer programs that personalize arithmetic problems. Fifth- and sixth-graders were asked to complete a questionnaire providing such information as their birthday, favorite food, best friend, etc. This information is then incorporated into a computer program so that the numerical values used in the math problems remain the same for everyone, but the story lines are personalized. Results of Ross' research showed that students who worked with the personalized computer math materials averaged 27 points higher on achievement posttests than students who used the conventional computer math program.

A recently published program titled *Strategies Math Series* (Mercer and Miller 1992) provides an excellent sequence of math materials ranging from computational skills to everyday problems and from the concrete level to the abstract.

25

24

Content Areas

In addition to strategies for the basic academic areas, educators also are investigating how strategies might improve student performance in the content areas, such as science, history, and social studies (Wong 1985). Often, learning strategies are taught in isolation with the expectation that they will be generalized to the regular content areas. Unfortunately, this generalization does not always occur. Davis (1990) describes a project in which 20 of the lowest readers in a sample of 160 eighth-graders were taught study skills using content area materials. All of these students had been in remedial reading classes; five of them were identified as having specific learning disabilities. During the first part of the project, each student completed a 15-question survey to assess their knowledge and habits while reading content in a textbook. This was later used by students and teachers as a basis for measuring study skills improvement. Students also completed a three-part contract consisting of:

1. the class and subject area they wished to see improved,
2. a plan to achieve that goal (increasing study time, doing homework. asking questions), and
3. making a commitment (student, parents, and content area teachers signed a contract).

Using regular science and social studies texts, the teacher taught various strategies based on results of the student surveys. The strategies included many of those already mentioned in this fastback. After only one quarter, 13 of the 20 students improved their grade in social studies, and all 20 improved their grade in science.

In his article, "Jamestown II: Building a New World," Sanchez (1987) presents a unique simulation strategy that enables students to understand and appreciate the dangers and uncertainties during the early colonization of America by focusing on colonization in the future. The simulation is an excellent example of using cooperative learning strategies to promote critical thinking skills. Students can

work in pairs or small groups. The simulation premise is that due to overpopulation, starvation, and pestilence, the United States is planning to build a space colony on Mars, tentatively named "Jamestown II." Students are presented with eight tasks or decisions. The first four are to be answered before the space trip; the second four are to be dealt with once the colonists are on Mars for a while:

1. estimating the cost of the proposed colonization,
2. identifying the jobs and prerequisite skills needed by the 500 colonists who will be going,
3. deciding on the essential supplies needed to be taken on the first trip,
4. proposing laws and rules that will govern the colony,
5. preparing a speech for the 200 colonists who are unhappy and wish to return to Earth,
6. deciding on the action that must be taken against two saboteurs,
7. convincing the Martians that the colonists will not harm them,
8. writing a letter to the President of the United States about the success or failure of the trip as well as recommendations for any future trips.

The strategies used in carrying out this simulation are an exciting way to make content areas come alive.

27

Creating a Supportive Environment for Strategy Learning

Learning and using productive strategies require a supportive environment. Brozo (1990) describes high school students in unsupportive environments who feign sickness, cheat, or become behavior problems as coping strategies for covering up their poor performance in reading, writing, or math. In contrast, the strong supportive home environment Sally Osbourne enjoyed gave her the strategies she needed to graduate from Harvard, despite having a learning disability. In her earlier years, her mother would read to her, talk her through school projects, and constantly remind her that she was capable (Levine and Osbourne 1989). Across the country, business and industry also are recognizing the importance of a positive work environment in fostering productivity.

Home Environment

Parents are a child's first teachers. Whether the home environment parents create is good, bad, or indifferent, it is nevertheless a critical factor in the teaching and learning process (Strom 1984). There are many things parents can do to make the home environment conducive to using the learning strategies described in this fastback. Some of the things parents can do are:

23

1. Provide a specific time and place for their child to study and do homework assignments. Also discuss with the child's teacher what amount of time is reasonable for study and homework.
2. Monitor their child's television viewing, both time spent and programs selected.
3. Display their own love and excitement for learning. Children do emulate their parents as they grow older.
4. Provide the tools to support learning, such as books, dictionary, encyclopedias, and computers.
5. Hold their child responsible for reasonable tasks. Reasonable tasks should be a joint decision between parents and child.
6. Cue their child as to when to use strategies they know. For example, a visual cue in the form of a bookmark with *DISSECT* written on it can help the child when confronted with an unfamiliar word. Or a verbal cue, "Remember *SLANT*," can remind the child how to respond when carrying on a discussion with another person.
7. Model strategies themselves, for example, "thinking out loud" when working on a solution to a problem.
8. Listen to their child when he or she talks or reads. Also listen for what is not said.
9. Prepare a "home" report card to give to their child's teachers or principal to let them know about progress at home in areas of mutual concern. Before doing this, parents should discuss it and ask their child to agree to it.
10. Initiate and maintain a collaborative relationship with their child's teachers and other school staff on matters relating to the child's learning and other concerns.

Mary Seman, a colleague of the author at West Virginia University, has developed a strategy for homework, which uses the mnemonic *HOMEWORK*. The steps of the strategy can be taught by either parents or teachers. The steps are:

29

H: Have a regular time and place to work each day.

O: Organize a monthly, weekly, and daily calendar.

M: Mark each assignment in a separate notebook and/or on a personal calendar.

E: Elect to do the shortest assignment first.

W: Write the estimated time to complete each assignment.

O: On with it, get started on the assignment.

R: Record with a check mark when items are completed.

K: Keep homework in a designated place at home.

A second mnemonic for this homework strategy is *RATE*. The steps are:

R: Read the directions for the assignment.

A: Ask the teacher or parent if you don't understand the assignment.

T: Take all necessary materials home.

E: Examine the calendar daily.

The pamphlet series, *Special Students and Our Schools* (Lombardi 1984-89), offers many suggestions for modifying the home environment to promote optimal performance for a wide range of special education students.

School Environment

The instructional environments of schools and classrooms can either support or impede the use of strategies. A supportive classroom environment is one in which the teacher frequently models strategies — and not just when formally teaching them. Students should observe their teachers "thinking out loud" in order to see how a learning strategy works.

Seating arrangements are another element of the classroom environment. They should be flexible in order to accommodate cooperative learning, peer tutoring, and total group presentations.

In some schools, students with learning problems leave their regular classes to attend resource rooms or other special environments. It is important that all school personnel working with these students communicate with each other and with parents so there is consistency in the strategies being taught and used and consistency in the environments.

A key element of strategic teaching and learning is fostering independence and responsibility. Teachers should have students develop individual folders and charts so they can monitor and record their own progress. To remind students about various learning strategies they can use, teachers can create displays to place around the classroom. One source of ideas for such displays is a booklet published by the Florida Diagnostic and Learning Resource System, East Associate Center, 2700 St. John St., Melbourne, FL 32940-6699. Phone: (407) 631-1911. Some of the formats for these displays include banners, bookmarks, box displays, bulletin boards, charts, mobiles, and posters.

The principal also has a role in creating a supportive environment that maximizes students' learning time and strategy use. Seifert and Beck (1984) offer these suggestions to principals:

1. Reduce the use of the intercom for non-essential announcements, which interrupt teachers and students.
2. Limit the number of classroom interruptions by office aides, secretaries, and students.
3. Limit the number of pep assemblies, entertainment programs, and special interest programs, which remove students from their learning environment.
4. Reduce absenteeism by contacting and working with parents whose children are frequently absent.

If concern for the learning environment pervades the classroom, the school, and the entire school district, then instruction in learning strategies will be maximized for all students. Even some state depart-

ments of education, as in Florida and West Virginia, have made a commitment to ensure that all students with special needs, who can benefit from instruction in learning strategies, will receive such instruction.

Teaching Strategically

Strategic teaching is much more than simply teaching learning strategies. It embodies all that we know about effective instruction. Strategic teaching is knowing what to do, when to do it, and with which students. Strategic teaching is using those learning strategies that will help students learn and use curriculum content. The strategies are not a curriculum unto themselves; rather, they guide students in how to learn, not what to learn. A good overview of strategic teaching is found in *Teaching Effective Learning Strategies* (Williams and McIntyre 1991), one of the volumes in the Phi Delta Kappa Hot Topics series.

Some of the techniques of strategic teaching include: careful planning, advanced organizers, brainstorming, student motivation, student activation, modeling, feedback, and post-organizers. Following is a brief explanation of each of these techniques.

Careful Planning

Careful planning is a prerequisite to effective instruction. For every hour of effective instruction, a teacher usually spends several hours of preparation. Polloway et al. (1989) offer a planning model for strategic teaching that includes everything from seating arrangements to evaluation of instructional goals. Following is an abbreviated version of the planning model.

33

Precursors to Teaching	Teaching	Follow-up
Physical (classroom arrangements)	Instructional practices (appropriate learning stage)	Feedback (informational)
Psychosocial (student variables)	Student activation (academic learning time)	Data management (analysis)
Management (classroom rules)	Specialized techniques (specific learning strategies)	Communications (parents)
Instructional dimensions (acquiring materials)	Self-regulated instruction (self-monitoring)	Environmental analysis (reflection)
	Monitoring of progress (precision charting)	

Careful planning, as illustrated in the above model, means seeing the whole picture and envisioning what should be accomplished by the end of the lesson, unit, and academic term.

Advanced Organizers

Advanced organizers are intended to help students anticipate what should be occurring during a particular instructional period. They also serve as reminders to the teacher. Lenz et al. (1987) developed a series of advanced-organizer procedures for regular teachers who had special students mainstreamed into their classrooms. These procedures should prove equally effective for anyone using strategic teaching.

1. Inform students of the purpose of the advanced organizer.
2. Identify the purpose of the learning task.
3. Identify subtopics of the learning task.
4. Provide background information.

5. Clarify the parameters of the task in terms of the action the teacher will take.
6. Clarify the parameters of the task in terms of the action the students will take.
7. State concepts to be learned.
8. Clarify concepts to be learned.
9. Motivate students by using relevant rationales.
10. Introduce and/or repeat new terms or words.
11. Provide an organizational framework for the learning task.
12. State the outcomes desired as a result of engaging in this learning activity.

Brainstorming

Brainstorming is a good strategy to use to find out what students already know and/or how they feel about a topic. It also requires students to reflect and use analytical skills. For students who are reluctant to participate in brainstorming, Blachowicz (1986) suggests a strategy called "exclusion brainstorming." With this strategy, the teacher first writes the topic on the chalkboard and under the topic writes a series of words, some of which clearly fit with the topic, others that clearly do not fit with the topic, and still others that are ambiguous. The teacher asks students to draw a line through or exclude those words they think are not related to the topic and to circle those words that are or could be related to the topic. Then the teacher asks students to explain why they chose the way they did. By structuring involvement in this way, reluctant students soon discover they know more than they thought they did about the topic.

Student Motivation

Motivating students who have often experienced failure in school and other settings is a difficult task. Part of the motivation problem is that these students seldom have been invited to offer any input into

their own educational or career plans. One motivation strategy, developed by Van Reusen et al. (1987), is called *I PLAN*. The strategy requires the collaboration of teachers and parents and is designed for students when preparing for and participating in any kind of educational or vocational planning conference. The basic steps for students to follow are:

Inventory your strengths, weaknesses, goals, and choices for learning.

Provide your inventory at the planning conference.

Listen and respond.

Ask questions.

Name your goals.

There are also a series of substeps in this strategy that deal with students' active behavior during the conference.

In a study with junior high students with learning disabilities, those students receiving the *I PLAN* strategy instruction made an average of 109 contributions during their Individual Educational Planning conference, while students who received only an overview for their planning conference averaged only 31 contributions (Bos and Van Reusen 1989). The key to motivating students is their active, meaningful involvement in all areas that effect them.

Student Activation

Strategic teachers are always encouraging their students to become independent learners and insist that they take an active role in the learning process. One of the strategies used to activate students is the *Three Statement Rule* (Schumaker and Sheldon 1985). The rule states that the teacher will make no more than three statements without having a student make a response. The response may be oral or written. This rule, if applied to all teaching, would go a long way in ensuring active involvement of students in the learning process.

Davey (1986) also emphasizes active involvement of students in her *Textbook Activity Guides (TAG)*, designed to help students learn from textbooks. A series of codes, used to designate common *TAG* strategies, are written on assignment sheets that students must complete.

P: Discuss with your partner.

WR: Provide a written response on your own.

SKIM: Read carefully for purpose stated, discuss with your partner.

MAP: Complete a semantic map of the information.

PP: Predict with your partner.

With *TAG*, students become more actively involved in the use of text material. They also incorporate cooperative learning as well as self-monitor their understanding of the text.

Modeling

Teachers, parents, and significant others recognize they are role models for students. What they don't always recognize is that modeling is a major teaching strategy. It allows students to see what is expected of them. It draws attention to aspects of a task or behavior that may have been overlooked without the model. A major form of modeling is for the teacher or parent to "think out loud" so students can follow the thinking process. The teacher also should encourage students to ask questions during the modeling process lest they forget once the modeling is completed.

Schumaker (1989) refers to modeling as "the heart of strategy instruction." She recommends four instructional phases for modeling:

Phase 1: Advanced Organizers
- Review previous learning: "Let me go over this step again so it's clearer."
- Personalize the strategy: "Tell me why you think this strategy will help you."

- Define the content: "How is thinking aloud important to you?"
- State expectations: "What do you think I'm going to do?"

Phase 2: Presentation
- Think aloud: "Okay, let me see, if I do this, then . . . Hey, it worked!"
- Self-instruct: "Okay, now I will use the strategy."
- Problem solve: "Hmm, this doesn't work. What should I do?"
- Self-monitor: "How did I do on that? Let me check that again."
- Perform task: Now, I need to do. . . ."

Phase 3: Student Enlistment
- Prompt involvement: "Tell me what you're thinking."
- Check understanding: "Explain what you are supposed to do here."
- Correct and expand responses: "Let's try it again. This time, remember to. . . ."
- Engineer success: "Great. you did it. This is going to be easy for you."

Phase 4: Post-Organizers
- Review the model: "Great job! Let's review a little. What is the strategy?"
- Personalize the strategy: "When could you use this strategy?"
- Give direction: "It's important for you to memorize all steps of the strategy. Can you tell me why?"
- State expectations: "I expect you to master and use this strategy by (give date)."
- Cue progress checks: "What do we do when you complete this part?"

Modeling "thinking out loud" can be used as a natural outgrowth of "how to" questions from students. At first, teachers may feel awkward doing this; but with practice it becomes routine. Students soon

will begin to use the model to express their own thought processes. Some students may need to see or hear a model several times before being comfortable enough to try it on their own. Prompts may be needed in the beginning; but as students become more assured, the prompts gradually should be faded.

Feedback

Feedback must be individualized for each student. In general, it should be frequent and positive, but also corrective when necessary. Students need feedback on what they are doing right and what they are doing wrong. And they need to see and understand how to correct what they did wrong. One useful strategy for positive feedback is public posting. Posting of quality work for all to see on a bulletin board or even on the refrigerator door at home publicly acknowledges a job well done.

Lipson and Wickizer (1989) stress the importance of feedback in reinforcing reading comprehension. In their study, they intentionally interrupted students' reading periodically and encouraged them to talk about what they were thinking while they were reading. The ensuing dialogue gives the teacher an opportunity to offer feedback on the students' use of various comprehension strategies. Positive feedback should not be reserved just for completing an assignment or project successfully; it also should be given to recognize the quality of their cognitive activity at each step along the way.

Post-Organizers

In strategic teaching, post-organizers are just as important as advance organizers. They provide a summary of what has been accomplished so far and also serve as a transition to what students will be doing next. Post-organizers can serve as prompts for main ideas, note taking, and clarification questions. The following example of a post-organizer is taken from the *Test Taking Strategy* (Hughes et al. 1988):

Today, I've demonstrated how to use the *TEST TAKING STRATE-GY* on a test. You also tried some of the steps. Since you did so well on your first try with the strategy, I'm sure you'll master it in no time. Next time we meet, you will work on memorizing the *"PIRATES"* steps so you can tell yourself how to do the strategy. (p. 44)

Post-organizers are part of strategic teaching. Teachers and parents must allow sufficient time for post-organizers when planning instruction.

Developing Your Own Strategies

This fastback has presented several learning strategies for problem learners. Many more can be found in the literature. Some of the best strategies may be those that teachers and parents develop on their own (Lombardi, in press). Below are some guidelines to follow when developing your own learning strategies.

1. Are you sure the problem is the lack of an effective learning strategy?
2. Does the student have the prerequisite skills and knowledge to learn the strategy?
3. Can the strategy be used in a variety of environments — school, home, workplace?
4. Are the steps in the strategy properly sequenced?
5. Does the strategy activate the student to do something?
6. Does the strategy contain some remembering device, such as mnemonics or prompts?
7. Are there no more than eight steps to the strategy?
8. Does the student understand all the concepts and words used in the strategy?
9. Can the strategy eventually be personalized or adapted and still be effective?
10. Does the student want to learn the strategy?

If all these guidelines are met, then some student somewhere is going to benefit from the effort. Ideally, students with learning problems eventually will be able to develop their own strategies. Making students effective and independent learners is the goal of strategy instruction.

42

References

Antes, R. *Preparing Students for Taking Tests*. Fastback 291. Bloomington, Ind.: Phi Delta Kappa Educational Foundation, 1989.

Barkowski, J.G.; Carr, M.; and Pressley, M. " 'Spontaneous' Strategy Use: Perspectives from Metacognitive Theory." *Intelligence* 11 (1987): 61-75.

Bing, S.G. "Handwriting: Remediate or Circumvent." *Academic Therapy* 23 (1988): 509-14.

Birnbaum, B.W. *Increasing Organizational Skills and Homework Productivity with Ninth-Grade Emotionally Handicapped and Regular Students*. ERIC Document No. 321-428, 1989.

Blachowicz, C.L.Z. "Making Connections: Alternatives to the Vocabulary Notebook." *Journal of Reading* 29 (April 1986): 643-49.

Bos, C.S., and Van Reusen, A.K. *Partner Project II: Enhancing Motivation Toward Learning*, Final Report. Tucson: University of Arizona, 1989.

Brozo, W.G. "Hiding Out in Secondary Content Classes: Coping Strategies of Unsuccessful Readers." *Journal of Reading* 33 (February 1990): 324-28.

Carlisle, K.E. "Learning How to Learn." *Training and Development Journal* 39 (1985): 75-80.

Carter, J., and Sugai, G. "Teaching Social Skills." *Teaching Exceptional Children* 20 (Spring 1988): 68-71.

Congos, D.H., and Smith, S. "An Alternative for Teaching Learning Skills: College Students Create Their Own Study System." *Journal of Learning Skills* 2 (1983): 35-42.

Dangel, H.L. "The Use of Student-Directed Spelling Strategies." *Academic Therapy* 25 (1989): 43-51.

4 6

Davey, B. "Using Textbook Activity Guides to Help Students Learn from Textbooks." *Journal of Reading* 29 (March 1986): 489-94.

Davis, S.J. "Applying Content Study Skills in Co-listed Reading Classrooms." *Journal of Reading* 33 (1990): 277-81.

Deshler, D.D., and Lenz, B.K. "The Strategies Approach." *International Journal of Disabilities, Development and Education* 36 (1989): 203-24.

Deshler, D.D., and Schumaker, J.B. "Learning Strategies: An Instructional Alternative for Low Achieving Adolescents." *Exceptional Children* 52 (1986): 583-90.

Ellis, E.S. *SLANT: A Starter Strategy for Class Participation.* Lawrence, Kans.: Edge Enterprises, 1991.

Ellis, E.S.; Deshler, D.D.; Lenz, B.K.; Schumaker, J.B.; and Clark, F.L. "An Instructional Model for Teaching Learning Strategies." *Focus on Exceptional Children* 23, no. 6 (1991): 1-24.

Florida Diagnostic and Learning Resource System, East Associate Center. *Creating Visual Displays for a Strategic Learning Environment.* 1991-92. 2700 St. John St., Melbourne, FL 32940-6699.

Ford, M.I. "The Writing Process: A Strategy for Problem Solvers." *Arithmetic Teacher* 38 (November 1990): 35-38.

Graham, S., and Voth, V.P. "Spelling Instruction: Making Modifications for Students with Learning Disabilities." *Academic Therapy* 25 (1990): 447-57.

Harris, K.R. "Learning Disabilities Research: The Need, the Integrity, and the Challenge." *Journal of Learning Disabilities* 21 (1988): 267-70.

Hughes, C.A.; Schumaker, J.B.; Deshler, D.D.; and Mercer, C.D. *The Test Taking Strategy.* Lawrence, Kans.: Edge Enterprises, 1988.

Kennedy, B. "Writing Letters to Learn Math." *Learning* (February 1985): 59-61.

Kozol, J. *Illiterate in America.* New York: Doubleday, 1986.

Lenz, B.K., and Hughes, C.A. "A Word Identification Strategy for Adolescents with Learning Disabilities." *Journal of Learning Disabilities* 23 (1990): 149-59.

Lenz, B.K.; Alley, G.R.; and Schumaker, J.B. "Activating the Inactive Learner: Advance Organizers in the Secondary Content Class." *Learning Disability Quarterly* 10 (1987): 53-68.

Lenz, B.K.; Schumaker, J.B.; Deshler, D.D.; and Beals, V.L. *The Word Identification Strategy.* Lawrence: University of Kansas, 1984.

44

Levine, S.L., and Osbourne, S. "Living and Learning with Dyslexia." *Phi Delta Kappan* 70 (April 1989): 594-98.

Lipson, M.Y., and Wickizer, E.A. "Promoting Self-Control and Active Reading Through Dialogues." *Teaching Exceptional Children* 21 (Winter 1989): 28-32.

Lloyd, J. "Academic Instruction and Cognitive Behavior Modification: The Need for Attack Strategy Training." *Exceptional Education Quarterly* 1 (1980): 53-63.

Lombardi, T.P. *Special Students and Our Schools*. Wood Dale, Ill.: Stoelting Publications, 1984-89.

Lombardi, T.P. "Teachers' Develop Their Own Learning Strategies." *Teaching Exceptional Children* (in press).

Marsh, H.W. "The Big Fish-Little Pond Effect on Academic Self-Concept." *Journal of Educational Psychology* 79 (1987): 280-94.

Mercer, C.D., and Miller, S.P. *Strategic Math Series*. Lawrence, Kans.: Edge Enterprises, 1992.

Meyers, A.W.; Cohen, R.: and Schleser, R. "A Cognitive-Behavioral Approach to Education: Adopting a Broad-Based Perspective." In *Cognitive Behavioral Psychology in the Schools: A Comprehensive Handbook*, edited by J. Hughes and R. Hall. New York: Guilford, 1989.

Palincsar, A.S. "Reciprocal Teaching." In *Strategies for Teaching Reading as Thinking*, edited by A.S. Palincsar, D.S. Ogle, B.F. Jones, and E.G. Carr. Elmhurst, Ill.: North Central Regional Educational Laboratory, 1988.

Palincsar, A.S., and Brown, A.A. "Reciprocal Teaching of Comprehension: Fostering and Monitoring Comprehension Monitoring Activities." *Cognition and Instruction* 1 (1984): 117-75.

Polloway, E.A.; Patton, J.R.; Payne, J.S.; and Payne, R.A. *Strategies for Teaching Students with Special Needs*. Columbus, Ohio: Charles Merrill, 1989.

Pressley, M.; Goodchild, F.; Fleet, J.; Zajchowski, R.; and Evans, G.D. "The Challenges of Classroom Strategy Instruction." *Elementary School Journal* 89, no. 3 (1989): 301-42. a

Pressley, M.; Scruggs, T.E.; and Mastropieri, M.A. "Memory Strategy Research in Learning Disabilities: Present and Future Directions." *Learning Disabilities Research* 42, no. 2 (1989): 68-77. b

Ross, S.M.; Padma, A.; Morrison, G.R. "Personalizing Math Problems: A Modern Technology Approach to an Old Idea." *Educational Technology* 28 (May 1988): 20-25.

Sanchez, T. *Jamestown II: Building a New World*. Eric Document No. ED 289793, 1987.

Schumaker, J.B. "The Heart of Strategy Instruction." *Strategram* 4 (1989): 1-5.

Schumaker, J.B., and Sheldon, J. *The Sentence Writing Strategy*. Lawrence: University of Kansas, 1985.

Scruggs, T.E., and Mastropieri, M.A. *Teaching Test-Taking Skills: Helping Students Show What They Know*. West Lafayette, Ind.: Brookline Books, Purdue University, 1992.

Seifert, E.H., and Beck J.J. "Time-on-Task Observations: How Principals Can Improve Instruction." *NASSP Bulletin* 68 (April 1984): 29-34.

Shields, J.M., and Heron, T.E. "Teaching Organizational Skills to Students with Learning Disabilities." *Teaching Exceptional Children* 21 (Winter 1989): 8-13.

Stevens, K.B.; Blackhurst, E.A.; and Slaton, D.B. "Teaching Memorized Spelling with a Microcomputer: Time Delay and Computer-Assisted Instruction." *Journal of Applied Behavioral Analysis* 24 (1991):153-59.

Strom, R.D. "The Home-School Partnership: Learning to Share Accountability." *The Clearing House* 57 (March 1984): 315-17.

Suid, M. "Speaking of Speaking." *Instructor* 93 (May 1984): 56-58.

Swanson, H.L. "Strategy Instruction: Overview of Principles and Procedures for Effective Use." *Learning Disability Quarterly* 12 (1989): 3-16.

Van Reusen, A.K.; Bos, C.S.; Schumaker, J.B.; and Deshler, D.D. *The Educational Planning Strategy*. Lawrence, Kans.: Excellenterprises, 1987.

Venkatreman, N., and Prescott, J.E. "Environment-Strategy Coalignment: An Empirical Test of Its Performance Implications." *Strategic Management Journal* 11 (1990): 1-23.

Williams, S., and McIntyre, S., eds. *Teaching Effective Learning Strategies*. Hot Topics Series. Bloomington, Ind., Phi Delta Kappa Center for Evaluation, Development, and Research, 1991.

Wong, B.Y.I. "Potential Means of Enhancing Content Skills Acquisition in Learning Disabled Adolescents." *Focus on Exceptional Children* 17 (1985): 1-8.

46

PDK Fastback Series Titles

47

Fastback Titles (Continued from back cover)