SECONDARY EDUCATION AND BEYOND:
PROVIDING OPPORTUNITIES FOR STUDENTS
WITH
LEARNING DISABILITIES

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Chapter 6

Learning Strategies: Tools for Learning to Learn in Middle and High Schools

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Marianne waited for her parents outside the school building. She had just completed her first IEP meeting as the "meeting facilitator." All that practice on the Self-Advocacy Strategy[1] with Mr. Hart and the other students in her class had really paid off. She had been really scared in practice during her turn as the facilitator but watching the other students as each one took turns as facilitator had helped. The videotapes of the practice sessions had been fun to watch. Everyone had laughed at Jeffrey when he put on glasses and carried Mr. Hart's briefcase for his role as the school psychologist.

Being in charge of the meeting for "real" had been REALLY scary at first. Marianne felt better having her folder and notes with her so she could follow the agenda and share what she thought everyone needed to know about her goals and how she learns best. To begin the meeting, Mr. Hart asked Marianne if she would share information from the inventory she had completed. Marianne had shared what she had written down about her reading and writing skills, what worked for her and what didn't, and the learning strategies she wanted to learn during the year. Since she had learned the Sentence Writing Strategy last year, she said she wanted to learn the Paragraph Writing Strategy this year. Marianne shared how well the Sentence Writing Strategy had worked for her in English and how excited she was to begin learning more strategies. She also said she wanted to learn the FIRST-Letter Mnemonic and Test Taking Strategies this year. Mr. Bergman asked Marianne to describe the Sentence Writing Strategy, and, when she had done that, suggested she use it in writing the reports required for his science class.

Marianne thought Mrs. Hazelwood, the school counselor, had been really nice when she reminded the psychologist that "the team needed to hear from Marianne about her career interests first" and not just from her parents. Marianne thought she was going to die when her mother started to talk about all the family's relatives who were in health occupations when Marianne said that was her long term career goal, but the "eye contact" Marianne made with her mother seemed to help cut that short.

Marianne was glad when the meeting was finally over, but was surprised that so much time had gone by. It seemed to be over very quickly. Everyone seemed to be excited about the plan they had made for the year. Marianne was a little embarrassed that her mother had tears in her eyes when she shook hands with the teachers and the principal at the end of the meeting, but she guessed that her mother was proud that it had gone so well, at least that was what both her mother and father kept saying. Mr. Emerson, the principal, said he was "really impressed" with how well Marianne had done as facilitator. Being facilitator was usually his job, and he said that Marianne had done "as well as he had ever done" even though this was her first time in that role. She had been concerned before the meeting that the adults would ignore what she had to say and pretend that she wasn't there like they did when she went to the IEP meeting in fifth grade, but that didn't happen, and she was glad. In fact, Mr. Hart had written down almost everything she said just the way she said it on the plan which made her feel good. Mr. Bergman, the science teacher, had winked at her when he shook her hand after the meeting and whispered, "Nice job, Marianne!"

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THE PURPOSES OF LEARNING STRATEGIES INSTRUCTION

For students with learning disabilities, like Marianne, participating in planning their own educational experiences can be a critical element in their journey to become independent learners. Another critical element is the learning strategy instruction they receive since such instruction offers new ways to succeeding in general education courses. First, it provides them with a validated means of being efficient, effective, and ultimately independent as learners. Second, it offers long-term benefits of learning to think and act "strategically" that can continue through post secondary training experiences and on into adulthood as individuals are faced with new and evermore complex problems to solve. Third, it offers students a growing sense of independence and control over their own learning processes. Related to this last factor is the increased emphasis that a learning strategy instructional approach places on students to assume greater amounts of personal responsibility during the middle and junior high school years. This is seen as especially important given that many students with learning disabilities possess poor organizational skills and thus they often arrive at middle (junior high) school ill-prepared to act responsibly. Acting responsibly covers not only getting to school/class on time, keeping track of books and assignments, knowing the dates of upcoming assignments and tests, and taking home the necessary materials for information to enable them to complete assignments properly. In short, when the instructional emphasis shifts to teaching students how to approach tasks strategically, changes can be noted in the degree to which students act responsibly.

If you think this sounds too good to be true, think again. Thousands of students with learning disabilities have been successfully learning to use learning strategies and to become independent learners in schools all across the country. In the sections that follow, what strategies are, the rationale behind strategy instruction, how strategies are taught, types of learning strategies, an example of a student's journey with regard to learning strategies over several years time, the evidence that supports use of strategies with students who have learning disabilities or those who are at-risk for school failure, and suggestions for putting strategy instruction in place will be described.

By now, you are probably wanting a description of what learning strategies are. Strategies are tools that students can use to approach tasks in content classes or other learning situations. They aren't tools in the sense that a wrench or a hammer are tools, but they are helpful tools for learning and solving problems. A strategy is the way a person thinks and acts when completing a learning task like getting information out of a textbook chapter or studying for a test. The significance to the student of having a set of learning tools for fulfilling the demands of a classroom situation cannot be overstated. With learning strategies, students can utilize skills to master the information that is being taught in science or social studies or language arts classes, and, most importantly, to do this on their own. When students use the skills they have learned in a strategic manner, they become independent as learners. An example of a student's use of a learning strategy in the general education setting may be helpful.

Dana read the question printed in her social studies book, "What are the two major industries in our state?" She knew the answer to this question. Dana's seventh grade teacher, Mrs. Peterson, had reminded the class to use complete sentences in writing their answers. Dana closed her eyes and thought through the steps in the Sentence Writing Strategy. "PENS" is the memory device she used to recall the steps because each of the letters in "PENS" stands for a step in the strategy. She said to herself, "'P' stands for 'Pick a formula,'" and looked at her card and chose the second simple sentence option of the four listed on the card: "S S V." She thought to herself, "That would be the best choice since the answer to this question has two subjects." Quietly to herself she said the second step in the strategy, "E stands for explore words to fit the formula." She thought to herself, "I want to write this sentence about the two most important industries in this state, so I should use the words 'manufacturing and agriculture' as my subjects. I want to use 'are' as the verb. 'Are' is not an action verb, but a linking verb," she reminded herself. "The rest of the sentence will be words from the question," she thought. "That will be easy!" Next, Dana instructed herself to do the third step in the strategy, "Note the words." Dana wrote the words she had chosen for the sentence on her paper: "Manufacturing and agriculture are the two most important industries in our state." She thought about step four in the strategy: the "S" step in "PENS," called "Search for the Verbs and Subjects." Dana knew that she was improving in her ability to identify subjects and verbs. She read her sentence again to make sure she knew which word was the verb and to check whether her sentence fit the formula she had chosen.

Mrs. Peterson stopped by Dana's desk to ask,

"How is the strategy working for you, Dana?"

"Great," was Dana's reply as she showed Mrs. Peterson the four answers she had written on her paper.

"Those are very good sentences, Dana. You are doing an excellent job using 'PENS!' The strategy seems to be working well for you," Mrs. Peterson stated and moved on to answer another student's question.

Many people ask, "How is learning strategy instruction different from other interventions that may be used for students with disabilities?" One difference is that each strategy includes a very explicit set of steps for completing a classroom task. Thus, students are taught how to complete particular tasks in successful ways. Instruction in the use of learning strategies also requires intense practice sessions until students have mastered the strategy. Students need to become highly engaged in the task (e.g., reading a section of a chapter in science) to the extent that they are not only thinking about the task, but also about how they are responding to it. This requires a higher level of thinking than students are often asked to engage in and will seem strange to them at first. It also requires some balancing or shifting of focus back and forth on the students' part because thinking about both the task and how one is thinking about it at the same time is almost impossible.

This process of shifting focus, called "strategic thinking," gives students an important problem-solving skill that can be adapted to lots of different uses. An example may be helpful. If you've ever been in a situation and found yourself getting frustrated, then a little angry, and have stopped to tell yourself, "Hold it. Take a deep breath and count to ten! How can I think about what is happening here in another way? Instead of getting angry, maybe I should...," in an effort to control yourself from getting angrier and to get yourself to proceed productively, in that moment you were using strategic thinking. Strategic thinking is thinking about the situation you find yourself in, looking at your options for dealing with the demands in the situation, and making a decision about what may be your best option. In learning situations, strategic learners think about what they've been asked to do, think about the different ways they might do the task at hand, and select what they consider to be the best approach. In work or social situations, the same kinds of strategic thinking apply. Learning strategy instruction gives the student a process for strategic thinking AND a set of options, the strategies, from which to choose the best approach given the demands of the situation. Students who master learning strategies have a whole box of "tools" at their command as they approach new tasks.

As you may be able to imagine by now, the process of learning to use strategies does not happen overnight. Another dimension that characterizes strategy instruction is that it may take longer than other interventions. The disadvantage is the amount of time required; the advantage is that strategic thinking skills are lifetime skills. They are not a "quick fix" to get through a test on Friday. Instead, strategies require a longer time investment with a much bigger pay-off down the road. Strategic thinkers are better students, better workers, and better decision makers.

While strategies aren't the solution to every learning problem, they do provide an important solution to a problem that is common to many adolescents with learning disabilities: these students typically will have difficulties succeeding in general education courses. Any student may benefit from use of strategies, but students with learning disabilities or other at-risk learners benefit especially from using them. These students, like the ones in the following examples, typically have inefficient learning patterns.

Greg has a great deal of difficulty keeping himself and his assignments organized. Though his eighth-grade teachers and his parents remind him often, he can't seem to stay organized for more than about three hours at a time. He often loses something important that he really needs for a particular class. He rarely remembers what he needs to do for homework or when the next test is coming up. To this point, both Greg and the adults in his life have spent amazing amounts of time trying to keep him organized, though nothing seems to have worked for more than a day or two.

Sarah spends long hours preparing for tests. Sarah and her mother often spend four or five hours preparing the night before a test, and Sarah and Mrs. Shanley, the resource room teacher, usually spend a couple of hours studying the day before. Nevertheless, Sarah often receives a poor grade on the test, not because she doesn't know the information, but because she becomes anxious in the testing situation in the classroom and sometimes puts her answers in the wrong places, doesn't write an answer, or doesn't finish the test.

Jose struggles with writing tasks. He writes very slowly, and the poorly organized paragraphs that result are not what he had in mind to say. His ideas become all jumbled as he attempts to write them down, and sometimes the paragraphs do not make sense when he is finished.

Learning strategy instruction might be an

appropriate solution for each of these student's learning difficulties. Their use of learning strategies may enable them to be more efficient and effective learners. Strategies may also assist students in becoming independent learners. Independence is important for success as an adult. For example, in the case of Greg, the teacher might want to teach him The PROJECT Strategy (Hughes, Ruhl, Deshler, & Schumaker, in press) This strategy was designed to improve student organizational skills relative to completing assignments. Each of the letters in the mnemonic "PROJECT" prompts the student to do certain things (i.e., P = Prepare [get forms ready; listen for assignments]; R = Record and ask [record assignment using abbreviations; ask teacher for clarifications]; O = Organize [break assignment into parts]; J = Jump to it! [tell yourself to get going; say affirmations]; E = Engage in the work [review requirements of the assignment; do the work; ask for help if needed]; C = Check your work [check work against the requirements; check for quality; reward yourself; store it and remember to bring it to school]; T = Turn it in and evaluate [check your grade; figure out how to do better; store the assignment]. When students with LD are taught this strategy, both the quantity of assignments they complete and the quality of their work improve dramatically.

The instructional services that students with learning disabilities receive for their learning problems often have the effect of making them more dependent than independent. The "quick fix" solutions that get students through immediate demands in general education classes exemplify such services. Each new demand becomes a crisis for the student who lacks the skills to deal effectively with learning challenges. The instructional services these students receive often become a cycle of crisis-to-crisis interventions that never address the students' long-term needs for independence, but instead encourage students to rely more and more on adults. As they grow older, some students respond to the desire to become more independent by choosing to refuse support services, no matter what. Others continue to be dependent on adults to "bail them out" and abdicate the desire for greater independence. The real hazard in the dependency cycle option is that students may miss important opportunities to learn independent problem-solving skills that will have life-long benefits and may carry the paradigm of dependency into adult life.

There are several other reasons for involving students in learning strategy instruction. In addition to making coursework easier, learning more efficient, and increasing independence, strategies are aids to students' organization and management of learning tasks. First, strategies can aid students' organization and management of learning tasks because they promote a systematic, orderly approach to learning. Second, because strategies are "portable, adaptable and combinable," they may be used in a wide variety of situations: in school, on the job, in post secondary training, in social settings, and in daily-living situations. In daily-living situations, for example, students may use strategies to paraphrase directions for completing a tax form, write a rationale for why they are qualified for a particular job on an application form, or recall the steps in cardiopulmonary resuscitation. Once students learn to use learning strategies well and become "strategic thinkers," they are in a much better position to respond to the broad array of problems that will come their way throughout life.

Finally, strategies can be used any time a student determines they are appropriate to use. Strategic instruction initially allows for others to prompt or cue students that a task requires the use of a particular strategy, but these reminders are faded as students grow more capable of making decisions about when strategies should be used. Family members can also provide these cues and prompts for the use of strategies in daily life and social situations, again fading their reminders as the student demonstrates personal capacity in using the strategies. The desired goal is student independence in use of strategies any time they are needed.

HOW STRATEGIES ARE TAUGHT

While each learning strategy is designed to address a different setting demand in general education such as reading a passage or taking a test, all strategies are taught using a similar set of procedures. This similarity across the instructional process allows for more efficiency in learning on the part of the student.

The process for learning the strategies is divided into two phases: a learning phase and an applying phase. During the learning phase, the student *learns* about the strategy and *practices* using the strategy under both easy and more difficult conditions. Within the learning phase are seven stages. In the applying phase, the student *uses* the strategy to succeed in classroom and other situations. The applying phase has four parts which facilitate gradual growth in the student's competence as the strategy is used in more settings.

During the first stage of instruction, the Pretest Stage, students are tested to determine current strategies

they use effectively and what strategies/learning habits should be modified or changed altogether. The deficits identified during pretesting relate to specific setting demands in the general education classroom. Once students have completed the pretest process, the teacher shares observations with students regarding both strengths and areas needing improvement. The teacher describes an alternative strategy that will help students meet the demands of the general education setting and also explains how the strategy might be applied beyond the school setting at work, home, or in other situations. The teacher talks about what is required to learn the strategy and the results that other students have achieved using the strategy. The students are then asked whether they would like to commit to learning the strategy in light of this information. If students are interested in learning the strategy, the teacher describes his/her own role and commitment to effectively teach the strategy to the students. The students set goals for learning the strategy and are made aware of the criterion for how well the strategy must be performed before it is considered to have been mastered.

The second instructional stage is the Describe Stage. Here, the teacher describes the rationales for use of the strategy, the characteristics of the strategy, and engages the students in a discussion of where and when the strategy might be used in school situations as well as in work and community settings. The discussion also focuses on current learning patterns of the students and how the strategy may improve their success. The teacher describes the steps in the strategy and presents a memory device to make remembering the steps easy. A final part of the Describe Stage involves the students in setting personal goals for the pace at which the strategy will be learned.

The third stage is Modeling. This is a particularly important stage for at-risk students who tend not to talk themselves through the learning process as effective learners do. For this reason, the teacher's task becomes twofold: visually showing how the strategy is used and "thinking aloud" to demonstrate the mental parts of the strategy. Students observe as the teacher demonstrates how to do self instruction, how to problem solve, how to monitor one's own learning, and how to put all of these elements together in performing the whole strategy to complete a task. Also during this stage, the teacher begins to draw the students into the "thinking aloud process." This guided process may seem strange at first to students who have not used "self talk" in their learning; however, the procedure becomes more comfortable as students practice being reflective.

The fourth stage is Verbal Practice. This stage maximizes use of the thinking aloud/self-talk process in consolidating students' knowledge about the strategy and their own learning processes. This stage requires the students to relate what they are learning to previous learning through the use of their own words. This "verbal elaboration" process engages students in thinking about the strategy, what the steps of the strategy mean to them, and why each is important. The elaboration increases the students' knowledge of the strategy and builds on students' commitment and motivation to learn the strategy. In addition, students verbally rehearse naming the strategy steps. As they gain facility in naming the steps and provide evidence that they understand them, they are ready to begin practicing the strategy.

The fifth stage of strategy instruction is Controlled Practice and Feedback. The practice portion of this stage focuses initially on students' knowledge of the strategy steps through use of materials that are relatively easy. At first, students' concentration needs to be on learning the strategy and not the content of the materials, hence the use of easy materials. As students master using the strategy in easy materials, the focus shifts to increasing the difficulty level of the materials gradually until they begin to approximate the difficulty students would experience in the general education classroom. For each session of controlled practice, there is a corresponding individual feedback session. Instruction in this stage begins with the teacher taking major responsibility for noting the student's strengths and areas needing improvement in each feedback session and gradually shifts such that the student assumes more and more responsibility for evaluating a previous performance.

In stage six, Advanced Practice and Feedback, students use the strategy on tasks and materials similar to those assigned in the general education classroom. This offers an opportunity for fine tuning any skills before application in the "real" classroom learning setting. This stage may necessitate that students problem solve how to apply the strategy in poorly designed materials or materials that do not fit the norm of the classroom (as may be the case in doing library research for a term paper, for example). This problem-solving experience is important in giving students alternative ways to meet varied learning demands and a sense of confidence in their own abilities to adapt. As in the previous practice stage, emphasis is placed on students taking on greater responsibility for self evaluation as more and more efficiency is demonstrated

in use of the strategy.

The seventh stage is to Posttest and Make Commitments. The posttest is a confirmation that students have indeed met the mastery criterion set out in Stage One. This juncture serves as an opportunity to reflect on what has been learned about the strategy and about each of the student's own learning patterns. This stage completes the learning phase and serves as a transition to application of the strategy. As students get closure on what has happened with their learning up to this point, they prepare for generalization into the classroom and other situations by making commitments and setting goals for Stage Eight, the applying stage.

While the stages up to this point will have taken several weeks to complete, Stage Eight, the Generalization Stage, has no time frame. It could potentially go on throughout the individual's lifetime as the strategy is applied or adapted across a wide variety of school and life situations. The "early" part of application, however, occurs in the general education classroom as students begin to apply the strategy in that setting. Dana's use of the Sentence Writing Strategy (Schumaker & Sheldon, 1985) in her seventh-grade social studies class described earlier is an example of the early stages of application. This can be a rather precarious phase for the student who is without the reliable support of the strategy instructor or peers who are familiar with the strategy. Though the general education teacher will have knowledge of the strategy and how to prompt students' use of it, there will be differences in teachers' styles and attention to an individual student's needs in the general education classroom. For these reasons, the strategy instructor will work closely with the general education teacher and the student to problem solve ways around any concerns that may arise. Acknowledging this "touch and go" period is important for everyone involved and especially for the student who may tend to revert to less effective practices unless prompted to use the strategy for specific tasks.

As the students begin to use the strategy appropriately and more independently within the general education setting, the strategy instructor and the students may begin to work on self-reflective (strategic thinking) skills again, but with the focus on modification of the strategy or parts of the strategy to a wider range of settings: other classes or settings outside the school such as social situations or work. As the students demonstrate mastery of the strategy in the general education setting and adapt its use to a broader range of situations, planning occurs on long-term use of the strategy. The students and the teacher may think ahead to potential applications and set goals for how use of the strategy will be monitored. They also will conduct regular reviews of the strategy in order to ensure that the strategy continues to be used at criterion levels.

As more strategies are introduced, students are participating in a "larger lesson" (or meta-lesson) about how they learn beyond the actual strategies themselves. Within this larger lesson, students begin to understand the process of their own learning so that, through several instances of mastering first one and then other strategies, students learn a great deal about how to learn efficiently, which learning tasks are easiest or most difficult for them as individuals, how to make adjustments that will increase learning, when to use strategies and when not to use them, and what is required to create a reliable system for dealing with changing educational demands. The knowledge gained from the larger lesson about their own learning patterns that they accumulate from learning and using strategies allows students to take on more responsibility for learning and problem solving in general education and life situations. Built into the instruction on each learning strategy is the gradual turning over of responsibility for guiding the students' learning from the teacher to the students as the students gain confidence and skill in using each strategy. As a result, students are armed with both confidence and skills to meet the general education classroom's demands. The success that students achieve in the general education setting, in turn, reinforces the students' growing sense of independence and control over the process of learning. This activates a success cycle which is very different from the failure and dependency cycle described previously.

TYPES OF STRATEGIES

By now you would probably like to know more about the types of strategies that have been created for students to learn. There are several groups of learning strategies.[2] One group that includes several strategies helps students *acquire information from written materials*. An example strategy from this group is the Paraphrasing Strategy (Schumaker, Denton, & Deshler, 1984). While using this strategy, students read a passage from a general education assignment, identify the main idea and details in the passage, and put the information in their own words. The strategy requires that students become engaged in the author's message

and activate self-talk about what the author is saying. The purpose of the Paraphrasing Strategy is that the students will increase their understanding of what is being read by transforming the authors' words into their own words.

Another strategy in this group is the Visual Imagery Strategy (Schumaker, Deshler, Zemitzsch, & Warner, 1993). It is used to gain knowledge of and remember new information by forming mental images of the content. Students are encouraged to create these images through the use of previously acquired knowledge. Students read a passage while simultaneously creating and describing a mental picture story or "movie" with accurate details. This engagement in visualizing events and in describing stories in their own words assists students in understanding and recalling what has been read.

A second group of learning strategies are those that *enable students to identify, organize, and store important information*. An example strategy in this group is the FIRST-Letter Mnemonic Strategy (Nagel, Schumaker, & Deshler, 1986). This strategy is designed to help students identify the key information to be learned, to organize the information in list form, and remember the list of items through development of a memory device with the first letters of the words that make up the list. Other strategies in this group include the LINCS Strategy (Ellis, 1992), a strategy for learning the meaning of new vocabulary words and the Paired Associates Strategy (Bulgren, Schumaker, & Deshler, in press), a strategy for learning information that is related (e.g., the significant contributions of a certain historical figure).

A third group of learning strategies are those that *facilitate written expression and demonstration of competence*. An example in this group of strategies is the Paragraph Writing Strategy (Schumaker & Lyerla, 1991). Instruction in the Paragraph Writing Strategy enables students to plan and write different types of paragraphs based on typical demands in the general education setting. Other strategies within this group include the Test Taking Strategy (Hughes, Schumaker, Deshler, & Mercer, 1988) which enables students to most effectively express their knowledge in testing situations and the Error Monitoring Strategy (Schumaker, Nolan, & Deshler, 1985) which enables students to identify errors and edit their own writing.

Another group of learning strategies are those that *enhance student performance in solving mathematics problems*. The Strategic Math Series (Mercer & Miller, 1993) consists of a series of seven math strategies that have been designed to enable students to quickly solve computation problems involving basic facts and how to use these strategies in solving story problems.

Students can learn these strategies across the grades in a variety of sequences depending on the demands they are facing in their general education classes and their individual strengths and weaknesses. In some school districts across the nation, strategy instruction begins in the elementary grades and continues through the high school grades as needed by a given student. A case study example might be instructive in understanding the progression of the instruction.

Mike entered sixth grade at Jefferson Middle School after his family moved from Arizona during the summer. He had been receiving services in a learning disabilities program since he was in third grade for problems with both reading and writing. During his sixth-grade year at Jefferson, he received instruction from Ms. Cartwright, a support class teacher, on the Paraphrasing, Word Identification and Sentence Writing Strategies. He used the strategies some in the sixth-grade classroom, but not as consistently as Ms. Cartwright would have liked, and his sixth-grade teachers, Mr. Just and Mrs. Winters, had to remind him often to use the strategies in science and social studies. At the end of the year, Ms. Cartwright recommended that Mike continue to work on these strategies in seventh grade.

During the seventh and eighth grades at Jefferson, Mike improved his use of the Word Identification, Paraphrasing and Sentence Writing Strategies. Through additional practice, he learned to use them automatically and fluently. In addition, he learned the Paragraph Writing Strategy, the Error Monitoring Strategy, Visual Imagery and the FIRST-Letter Mnemonic Strategies. Soon, he began using the strategies in his general education classes and elsewhere whenever possible. For example, Mike developed a memory device for learning the safety rules in shop class that Mr. Stevens, the shop teacher, liked so much that Mr. Stevens shared it with his other classes. Mike used the Sentence Writing and Paragraph Writing Strategies to write letters to a girl he met at summer camp. Mike was especially pleased with his success in writing assignments in English classes, and his teachers commented on his excellent improvement. Additionally, as he learned more strategies, Mike began to isolate parts of the strategic-thinking processes he was using into simple strategies and to use these simple strategies in other situations in a variety of combinations on his own. He was

becoming a lot more confident in his ability to succeed in his coursework, and his grades improved.

During his ninth-grade year, Mike learned the LINCS and Test-Taking Strategies and easily applied them in his courses. He had become very adept at "learning to learn" and was quite good at explaining strategy use to other students.

In grades 10 through 12, Mike grew a lot in size and maturity. This was evident in his needing less and less time in the support class with Mrs. Miller who said he had "matured into using strategic thinking at a deeper level." At one of their scheduled monitoring sessions to see how Mike was doing at the end of eleventh grade, Mike had told Mrs. Miller that he was not using the strategies at all any more. When they talked about this more, and Mrs. Miller checked with Mike's English and History teachers, Mike was surprised to find that he was using the strategies, but he did not have to think about using them any longer—they were part of what he always did; "they had become automatic."

As part of planning for his transition from high school, Mike decided he wanted "a regular job with regular hours" after having the experience of working in a restaurant for awhile and made plans to enter vocational training to learn architectural drafting. He knew his math skills were pretty good, but he would have to "invent" some strategies for the kinds of writing and spelling that need to be done on architectural blueprints. His aunt who is an architect, really encouraged him and said she would help him find a job when he finished the program. He had enjoyed working with computers and thought he would be able to succeed at the technical college in a nearby city the fall after he graduated from high school. He took a summer job at a lumber yard so he could get "a feel for building materials."

Mike knew there were support services available to him at the technical college when he started classes in the fall, but he thought he would try to succeed without them for the first part of the semester, at least. After his first test in the introductory drafting course, he decided he had better check in on the program right away. He was surprised to learn that the tutor for the drafting program was aware of learning strategies. She shared some of the strategies other students had used for the introductory course he was taking. He showed the tutor his old notebook containing notes about the learning strategies he had learned at North High School. Mrs. Miller had told him he might need his notebook in college, though he really had not believed her. Mike was eager to find out more about the learning strategies for introductory drafting and to use the computerized study materials that were available for that class from the support services program. He set up an appointment to attend the study group for the drafting class.

ARGUMENTS THAT EXPLAIN AND EVALUATE STRATEGIES INSTRUCTION

By now you may be wondering why learning strategies instruction is the way it is and how effective it is. About seventeen years ago, researchers at the University of Kansas set out to learn more about secondary students with learning disabilities. One of the researchers' tasks was to discover the kinds of problems that these students encountered in school, and, particularly in general education classes. The results of their studies indicated that students with learning disabilities were struggling with understanding what was read from textbooks, writing sentences, paragraphs, and themes, taking tests, listening and taking notes, to name a few of the concerns. The researchers also learned that the methods being used at the time to provide support services for these students seemed to be having no real lasting effects at improving students' skills, and the students with learning disabilities were becoming increasingly more dependent on support personnel for assistance while continuing to perform poorly in their classes.

To address these problems, the researchers set about developing methods for strategy instruction that would help these students succeed in general education classes and become more independent as learners. A "learning how to learn" focus was applied in developing a wide range of strategies specifically designed to meet the types of demands that students were experiencing in secondary school classrooms. This "learning how to learn" focus comes from cognitive theory, a theory of how learning occurs. Research on this theory has provided a great deal of practical information about what can be done to enhance learning. Strategies instruction is based on cognitive theory and research related to it.

The process of developing each of the strategies included validating the instructional methods associated with the strategy as effective means for students with learning disabilities to learn to succeed at classroom tasks. The instructional methods described in the third section of this chapter, "How Strategies are Taught," were found to be effective if students with learning disabilities had certain prerequisite skills. A total of fifteen research studies have been conducted (see Deshler

and Schumaker, 1988, and Schumaker and Deshler, 1992 for reviews). Each study has demonstrated that learning strategy instruction allows students with learning disabilities to succeed on tasks like those they might encounter in general education classes and to do so on an independent basis.

While no formal studies have been conducted on the long-term effects of learning strategy instruction, the levels of independence achieved, or just how students become strategic thinkers and apply these skills to post-secondary education, daily living, and employment situations, case examples are very encouraging. Senior high school teachers report that students with learning disabilities who have received strategies instruction from middle school onward require little, if any, support services by the time they are in the eleventh grade. Many of these students become very capable of meeting learning demands without assistance from support services personnel. They also demonstrate abilities to creatively apply strategic thinking to a wide range of situations.

MAKING IT HAPPEN IN SCHOOLS

Putting together middle or secondary school services for at-risk learners is not a simple task. Assuring that these services emphasize independence and long-term skill development is even more complex. Developing services that enable students to learn strategic thinking skills that can be applied in school and life situations requires collaboration among educators, students, families, and community members.

This collaboration needs to occur at several levels. The first of these levels is collaboration within the school district. The role of central office administrators is important in making the school district's commitment to life-focused outcomes and to removing barriers that may stand in the way of implementing strategic instruction. Administrators must look at students' experiences throughout the entire school program and across buildings. For example, because reading is a skill that requires several years to master, a good deal of coordination is necessary to assure that reading programs emphasize a continuous progression in terms of reading skills development. This ongoing progression in skill development is necessitated by the complexity of the tasks involved in reading well. No one would consider not teaching reading in grades 4 and 5, for example. Central office administrators are responsible for assuring that skill development in reading occurs in elementary and middle school buildings, and as needed at the high school level, and that programs are of high quality and build on prior learning. Administrators must ensure that support programs, such as those emphasizing strategic instruction, are carried out across buildings so that they will be maximally beneficial to students and focused on the long-term outcomes that are so important for young people with disabilities. These administrative personnel are in the best position to provide opportunities for district-wide planning and remove scheduling barriers and other limitations to development of programs that span across buildings within the district.

Building administrators carry out much the same role at the level of the individual school. They are involved in arranging planning time for teachers, working with families and students within their buildings, and affirming the school's commitment to provide quality services for all its students including at-risk learners across the grades within a given school.

Teachers across the school district, including those in general education and support services roles, need to plan collaboratively to provide for unique learning needs of students. In some districts, this planning occurs as part of curriculum planning or school accreditation activities. In others, collaborative planning for at-risk students is carried out as a targeted activity in its own right. In either case, planning for implementation of learning strategies instruction and methods of communicating progress of individual students is an appropriate task for such educator groups. Doing this type of planning across the whole school district will help to assure that services are well coordinated and encourage long-term outcomes. Plans developed for the entire school district need to be considered within individual buildings as well. Building personnel will need to develop more detailed plans for how student needs will be addressed at each school site.

A second level of collaborative activity occurs among the students and their families and educators. At this level, educators provide information about learning strategy instruction to students and their families, and engage in discussions about what this means to students' long-term success and to the families' role in the educational process. This provides families an opportunity to discuss concerns they might have about learning strategies instruction, to see how this method of serving young people with disabilities fits into the total school program, and to learn about the process of planning for post-school outcomes.

The third level of collaborative activity is more individualized to each student. At this level, collaboration might occur between any number of

people and would typically facilitate students' generalization of strategies in non-school situations. For example, collaboration might occur between a student and his employer. In such a situation, the student might ask his/her employer to assist him/her in developing some strategies for carrying out work-related tasks. In another case, a support services teacher, the student, and a post-secondary training program instructor might meet to plan for use of strategies in the post-secondary setting. A third example might include a parent, the student, and a youth program leader (e.g. Boy Scouts, YMCA, or a church program) planning for the student's use of strategies in giving a speech or presentation to the youth group.

Clearly, making strategy instruction work successfully for students with learning disabilities requires commitment, collaboration, and effort on the part of administrators, teachers, parents, students, and others in the students' lives. Fortunately, strategy instruction is one case where efforts yield positive outcomes in terms of student grades, feelings of competence, self- esteem, and overall attitude toward learning.

Note

Individuals interested in receiving more detailed information about the Strategies Intervention Model including staff development sessions or a listing of research reports and other materials available may write to the Ms. Janet Roth, Training Coordinator, Center for Research on Learning, University of Kansas, 3061 Dole Human Development Center, Lawrence, KS 66045.

Footnotes

[1]The Self-Advocacy Strategy is a motivation strategy intended to involve students in key aspects of the planning process and is intended to increase the students' commitment to their educational program. The memory device, "I PLAN," is used to help the students recall the five steps in the strategy: "I" which stands for "Inventory your strengths, weaknesses, goals, and choices for learning;" "P" is for "Provide your inventory information;" "L" is for "Listen and respond;" "A" is for "Ask questions;" and "N" is for "Name your goals" (Van Reusen, Bos, Schumaker, and Deshler, 1994).

[2]The Learning Strategies Curriculum of the Strategies Intervention Model described herein is one example of several available models of instructing students in use of learning strategies that are described in the education literature (e.g., see also Englert, Harris, Graham, Palinscar, Pressley).

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