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Teaching Routines for Content Areas at the Secondary Level

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INTRODUCTION

Academic failure by adolescents with learning problems in secondary schools is well documented (e.g., Boyer, 1983; Deshler & Schumaker, 1988; Goodlad, 1984; Powell, Farrar, & Cohen, 1985). The reasons for this failure are often varied, exceedingly complex, and highly interrelated (Sinclair & Ghory, 1987). Recent research on low-achieving adolescents has indicated that these students' problems are related primarily to three major factors that appear singly or in combination: (a) learning inefficiencies or disabilities inherent in the student, (b) complex curricular and setting demands in secondary schools, and (c) ineffective teaching practices (Deshler, Schumaker, Lenz, & Ellis, 1984).

The first factor, the learning deficiencies evidenced by at-risk adolescents, has received significant attention from researchers, resulting in a profile of these youths that reflects a reduced probability of success for this population in mainstream secondary learning settings. First, these students' performance on reading, writing, and math achievement tests plateaus at approximately the fourth- or fifth-grade level when they reach the tenth grade in school (Warner, Schumaker, Alley, & Deshler, 1980). Thus, the "performance gap" between their skills levels and their grade level in school continues to grow as they move from one high school grade level to the next and curricular demands escalate (Schumaker & Deshler, 1988). Second, these students often lack much of the prior knowledge of facts and concepts necessary for benefiting from the secondary curriculum (Bos & Anders, 1987). Third, they tend not to use effective strategies for coping with specific academic demands (Carlson, 1985) and often fail to invent strategies when approaching novel tasks (Ellis, Deshler, & Schumaker, 1989; Warner, Schumaker, Alley, & Deshler, in press). Fourth, these students often have difficulty in taking notes from lectures (Carlson & Alley, 1981), tending only to write what the teacher writes on the board (Bulgren, Schumaker, & Deshler, 1988). Fifth, when asked to write a paragraph or theme, these students generally write incomplete sentences or poorly structured complete sentences containing many spelling and grammatical errors; in addition, their written products suffer from lack of organization (Deshler, Kass, & Ferrell, 1978; Moran, Schumaker, & Vetter, 1981; Schmidt, 1983; Schumaker, Deshler, Alley, et al., 1982). Sixth, the majority of these students are concrete thinkers (Skrtic, 1980) and have difficulty making complex discriminations between main ideas and details as well as important versus unimportant information (Carlson & Alley, 1981; Lenz, 1984). Seventh, these students tend not

to generalize newly learned skills across settings, conditions, and time unless they are specifically taught to do so (Ellis, Lenz, & Sabornie, 1987; Schmidt, 1983). Finally, they tend not to be motivated to learn (Seabaugh & Schumaker, 1981a, 1981b). In essence, research has shown that these students are severely deficient in the critical skills required for coping with the rigors of the secondary curriculum and associated higher-order learning tasks.

The second factor that often precipitates the failure of low-achieving adolescents relates to the complex curricular and setting demands in secondary schools. Putnam (1988), for example, found that success in secondary grades depends upon students' ability to gain information from textbooks that are often both poorly organized and written, typically with an eleventh-grade reading level. In addition, the classroom lectures and discussions from which they are expected to gain information (Schumaker, Wildgen, & Sherman, 1980) often are characterized as lacking: (a) advance organizers and postorganizers, (b) appropriate pacing to permit notetaking, (c) adequate instruction on prerequisite vocabulary, and (d) sufficient repetition of information (Lenz, Alley, & Schumaker, 1987; Moran, 1980). Grades in secondary content courses are largely dependent on students' ability to succeed on tests that contain primarily objective-type questions and require about 40 responses about factual information (Putnam, 1988). Grades on written products depend mainly on students' ability to write correctly spelled words and grammatically error-free, long sentences (Moran & DeLoach, 1982). In short, success in secondary schools is, in large measure, directly related to a student's ability to acquire, manipulate, store, and express or use large amounts of information that can be obtained only from sources that do not allow for learning inefficiencies in key areas.

A third factor that may contribute to student failure in secondary schools is the application of ineffective or inappropriate teaching practices by many teachers responsible for content instruction (e.g., chemistry, social studies, English literature) (Cuban, 1984; Cusick, 1983). Secondary teachers often report that their primary role is to serve as "content experts" who have major responsibility for delivering accurate and current content information to students; in addition, they do not feel responsible for spoon-feeding students who are ill prepared to learn (Lieberman & Miller, 1978). Consequently, secondary teachers do not exhibit much variation in the pedagogical approaches they employ; the predominant instructional method used by these teachers is the lecture (Goodlad, 1984; Moran, 1980; Schumaker, et al., 1980). Although lecturing, per se, is not an ineffective format, Moran's (1980) and Lenz's (1984) research studies have underscored the failure of many secondary teachers to incorporate effective teaching skills within their lectures (e.g., organizing statements, clarifying questions).

Mainstream secondary teachers' reliance on the lecture may be the result of the fact that many preservice curricula offered by schools of education prepare secondary teachers to be primarily content rather than instructional experts. Specifically, the overwhelming majority of course hours taken by secondary trainees are in the content areas; relatively few deal with instructional methods (Scanlon, 1982). In short, many secondary teachers lack the technical teaching skills required to facilitate learning for all students, especially students with disabilities (McKnight, 1980).

Any combination of these three major factors in the learning situation can result in several potentially negative ramifications for student achievement and school adjustment. For example, suppose that one of the factors causes an increased number of students to be referred for special education services (Mellard & Deshler, 1984). Once students are placed in special education classes, much of the responsibility for their total educational program is shifted from regular class teachers to the special class teacher, including delivery of content information (Alley & Deshler, 1979). Allington (1984) strongly questioned the ability of special class teachers to teach appropriately all

content subjects when they are not certified to do so. Furthermore, when the policy of readily referring students with learning problems to special education is followed over time within a given school building, it often becomes the accepted norm that the special class teacher carries the major responsibility for educating low-achieving students. Such a mind set might preclude the introduction of instructional changes in the regular classroom to accommodate students with learning problems. Additionally, unless the majority of teachers within a given school building assume some responsibility for low student achievement and modify their instructional practices accordingly, it becomes difficult if not impossible to reintegrate at-risk students who have been receiving services in the special classroom into the mainstream curriculum (Licopoli, 1984). Finally, the high dropout rate among high-risk populations is reported to be, in part, due to the existing environment in secondary schools that is predominantly unfriendly to learners with problems (Howe & Edelman, 1985).

The challenges related to educating at-risk students must be addressed. While the solution to these challenges will be multifaceted, a significant part of the solution will be found in designing instructional practices that will improve the technical teaching skills of secondary teachers as well as provide at-risk students the skills they need to succeed in mainstream learning environments. Improving the technical skills with which teachers teach content will go a long way toward enabling students with disabilities to benefit from the information taught in the content classroom. As the needs of low-achievers are better met in the regular classroom, there will be less need to refer large numbers of students for special services. Equally important, students who are referred to special classes can be taught specific strategies for enabling them to cope independently with regular class instruction instead of becoming dependent on tutoring from the special education teacher for content classes. In addition, the probability of mainstreaming success after special instruction will be improved because of more accommodating learning environments in mainstream classes.

A NEW INSTRUCTIONAL MODEL FOR AT-RISK STUDENTS

Staff members of the University of Kansas Institute for Research in Learning Disabilities (KU-IRLD) have designed a new instructional model for at-risk secondary students that takes into account these students' need to learn techniques for independently succeeding in mainstream environments as well as their instructional needs within these environments (Deshler & Schumaker, 1988). In this model, hereafter referred to as the Strategies Intervention Model (SIM), special education teachers and mainstream teachers maintain different roles as they work cooperatively to improve the performance of low-achieving students in mainstream classes. In this model, the special education teacher's major role in the support class is that of the "learning specialist," one who teaches students how to learn and how to succeed in the mainstream. In turn, the major role of the teacher in the mainstream class is to deliver content to the students in such a way that students can understand and remember it. The partnership between the two teachers comes through their communication about: (a) the setting demands in the mainstream course of study, (b) the skills needed by particular students, (c) students' progress, and (d) techniques that can be used to help at-risk students.

Other persons also play critical roles in this model. The students must not only be willing and motivated participants, they must take major responsibility for their learning and performance. Administrators, school psychologists, other support staff, family members, and personnel in other community agencies also can play an important part in a SIM program.

How teachers, students, and others interact to promote successful participation of at-risk adolescents within the

mainstream curriculum as well as facilitate their successful transition to postsecondary life has been the subject of a programmatic line of research for 8 years at the KU-IRLD. The products of this research have served as building blocks for the comprehensive SIM program. As the roles of participants in a SIM program are described in the following sections, the components of the model are clarified.

The Role of the Learning Specialist

The learning specialist's major responsibility in a SIM program is to teach students specific strategies by using a validated instructional methodology. Usually, this instruction takes place in a support class (e.g., a special education classroom, a strategies course, a remedial course). The strategies to be taught include: *learning strategies*, which enable students to learn and perform academic tasks; *social strategies*, which enable students to interact effectively with others; *motivational strategies*, which enable students to motivate themselves and exercise self-control; *transition strategies*, which enable students to solve their own problems and plan for the future; and *executive strategies*, which enable students to analyze a task, then select, adapt, or invent a strategy for use, and evaluate the results of applying the strategy (Schumaker, Deshler, & Ellis, 1986).

The instructional methodology used in teaching these strategies comprises eight major instructional steps to: (a) obtain a pretraining measure of the students' skills and gain the students' commitment for learning; (b) make the students aware of the strategy steps, where the strategy can be applied, and how the strategy will benefit them; (c) demonstrate for students how to use the strategy; (d) ensure that the students understand and can name the strategy steps; (e) ensure that the students master the use of the strategy in simplified materials/situations; (f) ensure that the students master the use of the strategy in materials and situations similar to those encountered in mainstream environments; (g) obtain a posttraining measure of the students' skills; and (h) ensure that the students generalize the use of the strategy to the mainstream (Deshler, Alley, Warner, & Schumaker, 1981). The materials and procedures to be used by the learning specialist in these undertakings have been empirically validated in a series of studies (e.g., Clark, Deshler, Schumaker, Alley, & Warner, 1984; Hughes, 1985; Robbins, 1982; Schmidt, 1983; Schumaker, Deshler, Alley, et al., 1982; Schumaker, Deshler, Denton, et al., 1982). Some of the materials have been published for teachers' use (e.g., Hazel, Schumaker, Sherman, & Sheldon-Wildgen, 1981; Hughes, Schumaker, Deshler, & Mercer, 1988; Lenz, Schumaker, Deshler, & Beals, 1984; Nagel, Schumaker, & Deshler, 1986; Schumaker, Denton, & Deshler, 1984; Schumaker, Hazel, & Pederson, 1988; Schumaker, Nolan, & Deshler, 1985; Schumaker & Sheldon, 1985; and Van Reusen, Bos, Schumaker, & Deshler, 1987)[1]; others currently are being prepared for publication.

In addition to fulfilling the major role of teaching strategies by means of intensive instruction, the learning specialist also must perform other functions that ultimately facilitate this major role. One function is to create a strategic environment within the support service setting. The strategic environment serves as the context in which specific strategies can be learned and generalized most effectively. In other words, if strategies are taught in an isolated fashion, unrelated to the solution of day-to-day problems within a broader context, students will have difficulty generalizing mastered strategies. Therefore, the learning specialist must model the use of strategic approaches to new problems and engage the students in strategic activities whenever possible in order to teach the students the generality of the approach to life situations.

Additionally, the learning specialist must promote students' independent functioning in academic and social realms. In partial fulfillment of this goal, the learning specialist must refrain from tutoring students in content subjects to

avoid encouraging the dependence that typically results from such tutoring. Also, the learning specialist must deliberately involve students in planning their instructional programs, setting their own learning goals, and advocating for themselves in instructional planning sessions (Van Reusen et al., 1987). Finally, the learning specialist must require students to think and act on their own rather than performing tasks for the students. For example, when asked a question, the teacher should redirect the question in a way that students can answer it themselves. Materials and equipment should be accessible to students so that they can obtain needed resources and start work on their own. Academic work should never be done "for" students. They should be given the tools to complete the work independently.

In addition to these complex responsibilities within the support setting, the learning specialist also must perform a leadership role outside the support setting to promote a cooperative partnership with mainstream teachers. A set of "Teaming Strategies" have been developed and validated for use in this partnership. These strategies allow learning specialists and mainstream teachers to work together to identify mainstream setting demands, discuss and solve problems, negotiate conflict, and encourage the use of validated instructional techniques in mainstream classrooms (Knackendoffel, 1989). To summarize, the learning specialist must create a strategic environment in which a specialized set of curriculum materials is used in conjunction with a validated instructional methodology designed to promote students' independent functioning in mainstream classes. Additionally, this teacher must work cooperatively with mainstream teachers to ensure that the goal of independent student functioning is met.

The Role of the Mainstream Teacher

The major role of the mainstream content teacher is straightforward; it involves the delivery of content to students so as to promote: (a) their application of strategies learned in the support setting, (b) their understanding of the content information, and (c) their recall of that information. Occasionally (e.g., in the case of an English teacher who needs to teach students how to write complete sentences), the mainstream teacher also may be responsible for teaching a particular strategy — for example, the Sentence Writing Strategy (Schumaker & Sheldon, 1985).

To promote the use of strategies learned in the support setting, mainstream teachers can rely on a variety of cueing devices to remind students to use the strategies when appropriate; they can also structure their delivery of content so that strategies can be applied easily. For example, a teacher can organize a lecture into four major sections, orally cue students to use the Listening and Notetaking Strategy (Robinson, Deshler, Denton, & Schumaker, in preparation) before the lecture begins, and cue students when a transition is being made during the lecture to each of the four major sections.

To teach strategies in large classes, which are so prevalent in the mainstream at the secondary level, mainstream teachers can use a variety of instructional arrangements and techniques. To promote students' understanding and retention of the content of lectures and other lessons, mainstream teachers can use teaching routines or devices designed specifically to easily be integrated into the mainstream class routine while promoting gains in student performance. These routines and devices, as well as the cueing techniques and instructional arrangements that can be used by mainstream teachers, are described in detail later in the chapter.

The Role of Students

Two types of students have been served successfully in SIM programs: students who qualify for special services in support classes and other at-risk students. Normally, handicapped students have been served both in support classes and in mainstream classrooms. Other at-risk students (i.e., low-achievers, those at-risk for dropping out of school)

traditionally have been served in mainstream classrooms, but some educators now are designing support-class settings (e.g., courses in learning strategies) for these students as well. Thus, students typically enrolled in a SIM program have roles to fulfill in both settings. In the support service setting, students are responsible for (a) planning their instructional programs, (b) specifying what they will learn and how fast they will learn it, (c) learning specific strategies to mastery, (d) recording their own progress, (e) evaluating their own progress, and (f) changing goals accordingly. In the mainstream setting, they are responsible for applying, adapting, and inventing strategies where they are needed and for monitoring and evaluating their own progress. Thus, students within a SIM program assume an active role in their learning; they are viewed by educators as persons who can learn to succeed independently instead of being dependent entities whose lives must be arranged for them.

The Role of Others

As the SIM has evolved, the roles that administrators, school psychologists, other support staff, family members and community agency personnel can play in promoting at-risk students' success within the mainstream curriculum have become clearer. School administrators, for example, can play a critical role in ensuring that the program operates as specified. Not only must they provide the necessary support, they must voice the necessary expectations so that learning specialists and mainstream teachers, in turn, can fulfill their roles and can work together productively. Support staff also can be helpful in promoting the program's success. School psychologists, for example, can help identify mainstream class demands (e.g., the readability level of textbooks, the types and length of assignments, the types of tests given) and ensure that all participants in educational planning meetings (including students and parents) have a voice in making decisions about students' learning. Likewise, scheduling officers can contribute by hand-scheduling (versus computer-scheduling) students' programs so that they can be grouped for appropriate instruction in the support setting as needed. Furthermore, parents can participate by offering support and encouragement in the home and by promoting the generalization of strategies to homework and other situations encountered in the home and community.

Finally, personnel in community agencies can aid the transition of graduates of SIM programs to adult life. For example, personnel in one community mental health center have been working for 4 years with school-district staff to match each SIM student with a community volunteer who serves as the youth's mentor through the transition process. Agency staff recruit and train mentors, have regular contact with mentors, and monitor a youth's progress through a series of goal-setting and evaluation sessions with mentor–youth pairs. This type of program has proved very successful in getting youths involved in postsecondary education and training and employed in meaningful jobs (Moccia, Schumaker, Hazel, Vernon, & Deshler, in press; Schumaker, Hazel, & Deshler, 1985).

An Example of the Strategies Intervention Model

An example of how a SIM program might work for a student under certain circumstances illustrates some of the processes that have been activated in school districts across the nation. Suppose that in a school in which teachers, support staff, and administrators have worked together to promote a SIM program, the school psychologist has determined that students have to be able to memorize lists of items to succeed on a particular biology teacher's tests. A student enrolled in the learning specialist's support class also is enrolled in the targeted biology class. The learning specialist works with the student to determine whether he or she wants to learn a strategy that will help with this class demand. First, a pretest is given to determine how well the student can

organize and memorize lists. Next, the results of the pretest are shared with the student, who decides whether to try to learn a strategy to help memorize lists. Upon deciding to learn the strategy, the student writes a goal to that effect. Then the learning specialist teaches the student (and others who have written a similar goal) the FIRST-Letter Mnemonic Strategy (Nagel et al., 1986), a strategy for (a) organizing information into list form, (b) memorizing the information, and (c) utilizing the information to answer test questions. After working hard over a period of about 3 weeks, the student masters the strategy so that it can be applied to the textbook used in the biology class and the notes taken in that class.

Meanwhile, the learning specialist and the biology teacher work together to ensure that the biology teacher understands the strategy the student (and other students in the class) is learning in order to be better able to facilitate the student's use of the strategy. Whenever possible, the biology teacher presents lecture information in list form and, in addition to writing lists on the board, cues students when lists must be memorized for tests. When time permits, students are helped in designing a mnemonic device for a given list or they are asked to work cooperatively to design the devices themselves. When the biology teacher reviews information the day before a test or when he or she gives students a study guide, the necessary information is provided in list form. The day before the test, the students who have learned the strategy are reminded to use the FIRST-Letter Mnemonic Strategy as they study for the test.

Throughout instruction on each new biology unit, the target student builds up a file of 3″ × 5″ cards containing important lists. The night before a test, in a study session supported by his parents, the student applies the FIRST-Letter Mnemonic Strategy to the lists taken from lectures as well as other lists derived from the assigned textbook chapter to ensure that he or she has memorized the necessary information. As he takes each test, the student recalls information through use of the memory devices he has designed.

Our target student receives grades of As and Bs on his tests. After learning and integrating several strategies like this and applying them to several courses, the student graduates from high school. By working with a mentor, he or she later enrolls in junior college courses, taking biology and other courses at the local junior college and continuing to apply the strategies learned in high school. The support class student has become an independent learner and performer.

TEACHING ROUTINES FOR ENHANCING INSTRUCTION IN MAINSTREAM CLASSES

As described earlier, the role of the content teacher in a SIM program is not only to teach a prescribed body of subject matter to students but to do so in a way that facilitates students' understanding and recall of that content. It was argued further that mainstream teachers can rely on a variety of routines, devices, and instructional arrangements to promote performance gains by students with disabilities. The question then becomes "What form should these routines, devices, and instructional arrangements take?" This question is particularly pertinent in light of the increasingly heavy challenge that content teachers are expected to meet with respect to teaching not only more content but also more advanced and complex content (Powell et al., 1985). These increased pressures have surfaced in recent years as a result of the Excellence in Education movement (Spady & Marx, 1984).

In addressing the question of the form of instructional routines and devices that teachers should use and the need to increase the effectiveness of instruction in content classes, researchers at the KU-IRLD have applied five criteria when designing and researching instructional routines or devices. First, such routines and devices must be straightforward and easy to master in a relatively short time. Second, they must be perceived by teachers as practical and easy to use.

Third, they must be perceived by teachers as being effective for typical students as well as for the students with disabilities who are enrolled in mainstream classes. Similarly, typical students must perceive the teacher's use of the routines and devices as facilitative, not as "extra baggage" that gets in the way of learning. Fourth, the routines and devices must be sufficiently powerful to improve the performance of students with disabilities in mainstream classes in which heterogeneous groupings of students are enrolled. Finally, they must lend themselves to easy integration with current teaching practices. The following sections describe a variety of routines and devices that fulfill these criteria. All have been or are currently being validated experimentally.

Routines for Teaching Strategies in Mainstream Environments

In some instances, learning strategies can be appropriately taught in mainstream classes as well as in support classes, as detailed earlier. For example, learning strategies in the written expression strand of the Learning Strategies Curriculum — for example, the Sentence Writing Strategy (Schumaker & Sheldon, 1985), the Paragraph Writing Strategy (Schumaker & Lyerla, in preparation), the Theme Writing Strategy (Schumaker, in preparation) — can be taught in English and in language arts classes. Strategies that enable students to take notes (Robinson et al., in preparation) and study for tests (Hughes et al., 1988) can be taught in content classes such as history and science. Some school districts have adopted learning strategies classes or study skills classes as a standard part of their curriculum. Large numbers of students and heterogeneous groupings of students usually characterize these mainstream classes. Such characteristics create especially heavy demands on learning-strategies instructors because (a) students must practice using a strategy several times before mastering it, (b) they master the use of a strategy after varying numbers of practice attempts; and (c) they must receive specific, individual feedback about each of their practice attempts to make progress toward mastery. Ensuring mastery and providing individual feedback in large classes is often problematic. Thus, teaching strategies to large numbers of students with a variety of learning characteristics requires special methods. Recently, a number of methods have been validated experimentally for accomplishing this type of instruction, including the use of special feedback systems, cooperative group instruction, and peer tutoring.

Special feedback systems. To determine whether a complex strategy like the Theme Writing Strategy (Schumaker, in preparation) could be taught in mainstream English classes, Howell (1986), an English teacher, taught the strategy to her five classes of high school students (a total of 150 students). She followed the instructions for teaching her students to acquire and generalize the strategy just as a resource teacher would, with one exception. Instead of giving feedback orally after each practice attempt (as a resource teacher might do with a small group of students), Howell provided specific written individual feedback to all 150 students after each attempt via a specially designed Feedback Sheet. The Feedback Sheet contained a list of descriptions of areas where students could do well and a list of descriptions of possible errors. After reading and scoring a theme, the teacher simply checked those items that had been done well and those that needed improvement. She also wrote brief comments on the sheet as needed. The Feedback Sheet allowed the teacher to give the majority of her feedback in written form so that class time could be spent on additional instructional activities, reviewing common trouble spots for the class, and providing oral feedback and help to students having major difficulties. Students were told to review their Feedback Sheets, ask the teacher for help with items that were unclear, and pay particular attention to the Feedback Sheets as they wrote their subsequent papers. Howell found that her students mastered the strategy at levels comparable to those students who had

received individual instruction and individual feedback.

Cooperative group instruction. Another method for teaching strategies in the mainstream classroom that has been validated experimentally is cooperative group instruction. Beals (1983) conducted a study in which two strategies, the Sentence Writing Strategy (Schumaker & Sheldon, 1985) and the Paraphrasing Strategy (Schumaker et al., 1984), were taught in mainstream English classes. The students were divided into small heterogeneous groups, and assignments were given to the groups. At the end of a given lesson, one group member was selected randomly from each group to perform the target skill for the lesson. The group's grade for the day was contingent on that person's performance. Individual grades also were given for individual accomplishments. At the beginning of each subsequent lesson, group members were required to review and discuss the feedback received by each member on individual work and to help each other understand relevant concepts. Beals (1983) found that all the students (high-achievers, normal-achievers, low-achievers, and students with learning disabilities) showed improvement in their skills and mastered the use of the strategy. The students with learning disabilities achieved at levels comparable to levels attained when similar students were taught the strategies in resource room programs.

Peer tutoring. Peer tutoring also can be used when teaching strategies to large groups of students in mainstream classes. This method has been validated as effective in resource classes; thus, its use in mainstream classes seems to be a logical extension. Keimig (in preparation) developed a method by which learning disabled (LD) students who had mastered the Error Monitoring Strategy (Schumaker, Nolan, & Deshler, 1985) taught this strategy to other LD students in a resource room. Simple instructions were written on cards for the student tutors to follow as they taught each lesson. The student tutors were responsible for providing instruction, answering questions, scoring lessons according to answer keys, giving individual feedback after each practice attempt, and stating that mastery of the skills would be required. The tutors were taught how to perform these teaching tasks in 1½ hours of instruction. Keimig found that the LD students in his study learned to use the strategy at levels comparable to levels exhibited by LD students who had been taught the strategy by a teacher. They also mastered the strategy after comparable amounts of instruction. Keimig's study shows that, given some training, LD students who have mastered a learning strategy can serve as effective instructors of those strategies to other dysfunctional learners.

A logical extension of Keimig's work includes teaching learning strategies to small groups of students enrolled in mainstream classes by student tutors who have mastered these strategies and the necessary instructional procedures. Such an arrangement would allow students with disabilities to "shine" in their mainstream classes and conceivably could enhance their self-concept. Additionally, if supposed "dysfunctional" learners can be successful instructors of learning strategies, other, more functional, learners might be recruited as well to perform some of the teaching tasks that must be carried out in settings with large numbers of students. For example, they might lead verbal rehearsal exercises, check off verbal mastery of the concepts and steps of a strategy, and provide explanations and/or additional feedback on graded work.

Routines for Cueing Use of Strategies

When students with disabilities are taught strategies to mastery levels in support classes, they sometimes fail to generalize the use of those strategies to other classrooms. Several methods involving cueing (i.e., prompting the student to use strategies) in the mainstream classroom have been found to help ensure generalization.

Visual cueing methods. The first type of method involves visually cueing students to use a given strategy. One effective

format for visual cueing (Schmidt, 1983) involves the use of cue cards. The student writes the steps of a strategy on a 3″ × 5″ or 4″ × 6″ card that is affixed to the appropriate textbook or notebook. For example, students who have learned a strategy for extracting important facts from textbook chapters make cue cards that list the steps of the strategy and attach them to the cover of each of their textbooks or use them as bookmarks. Students who have learned a strategy for taking notes during lectures make cue cards listing the steps of the strategy and affix them to each of their notebooks for classes in which notetaking is appropriate. The cards must be assigned a visually prominent place so that the students will see them as the textbook or notebook is opened. In the case of writing strategies, students make a set of cue cards of formulas and rules to which they can refer as they write.

Another type of visual cueing technique was built into one of the strategies, the Test Taking Strategy (Hughes et al., 1988). To perform the first step of the Test Taking Strategy, students must write a cue word on their test papers before they begin taking the test and applying the strategy. Each letter of the cue word represents something the students must do or attend to as they take the test. Thus, in effect by writing the cue word in a visually prominent place, the students cue themselves to use the strategy.

The mainstream teacher's role with respect to these visual cueing systems is to encourage their use; that is, mainstream teachers must be aware of the rationale for using these visual cueing devices and must allow their use. They also must be sensitive to adolescent students' need to "be like" other students and, therefore, avoid drawing attention to the fact that they are different because they use these visual cueing devices.

Verbal cueing methods. Another type of cueing that has been found effective in encouraging generalized use of a learning strategy is verbal cueing. For one verbal cueing technique, the mainstream teacher is designated as the person who supplies the cues. For example, if the student has mastered the Sentence Writing Strategy (called PENS by the students), the teacher surreptitiously says to the student, "Be sure to use 'PENS' on today's assignment" after giving the class an assignment to write a paragraph. Specifically, the mainstream teacher's role with verbal cueing consists of being aware of the strategies a student has mastered, matching those strategies appropriately to given assignments, and remembering to cue the student before she or he begins a task.

The other verbal cueing technique that has been found to be effective (Keimig, in preparation) involves student peers. Here, students who have learned a strategy in the special class also learn to cue each other to use the strategy in other classes and to help each other when needed. For example, two students who have learned the Error Monitoring Strategy (Schumaker, Nolan, & Deshler, 1985), a strategy for detecting and correcting errors in written work, can learn to become responsible for cueing each other to use the strategy any time written work is assigned in the classroom. That is, the students can be responsible for discriminating the conditions for which the use of the strategy is appropriate; in addition, they can be responsible for briefly communicating to each other about those conditions ("We should use the Error Monitoring Strategy on this assignment"). The mainstream teacher must allow the students to be seated close enough to each other that they can cue each other without disturbing others and let them briefly chat at the beginning of an assignment so that they can determine which strategies are most applicable and whether certain adjustments need to be made in the strategies.

Routines for Teaching Content

As emphasized earlier, the primary role of most secondary teachers is to convey information in such a way as to ensure that students understand it and remember it. When students with disabilities and other at-risk students are enrolled in content courses, the teacher's

TABLE 1
Routines for Teaching Content

	When used	Purpose	Teacher materials	Student materials
Survey routine	At the beginning of a unit of instruction	To provide an overview of the unit/chapter and the information to be learned	Textbook, "TRIMS" Planning Sheet	Textbook, student worksheet
Concept teaching routine	After the survey routine	To introduce the major concept in the unit	Completed concept diagram	Blank concept diagram
Advance organizer routine	At the beginning of a lesson	To provide an overview of the lesson	AO planning sheet	Paper and pencils
Verbal enhancement routine	At particular points during a lesson	To make abstract information more understandable and memorable	Understanding devices planning sheet	Paper and pencils
Visual enhancement routine	At particular points during a lesson	To make abstract information more understandable and memorable	Visual depictions (pictures, diagrams, tables, concept maps)	Paper and pencils

role becomes more complex. Thus, in classrooms where these types of students are being educated, effective techniques or teaching routines that correspond to their particular characteristics are needed. Recently, a number of specifically designed routines have been proved effective for helping at-risk students learn in mainstream environments (Table 1).

The advance organizer routine. One routine that has been shown to be effective in enhancing the performance of students with disabilities in mainstream classrooms entails the presentation of a prescribed set of information as an advance organizer for a lesson. An advance organizer has been defined as information that is delivered "in advance of and at a higher level of generality, inclusiveness, and abstraction than the learning task itself" (Ausubel & Robinson, 1969, p. 606). The purpose of the advance organizer is to strengthen a student's cognitive structures, which are defined by Ausubel (1963) as the student's knowledge of a given subject matter at a given time with regard to its organization, clarity, and stability. For students with a paucity of background knowledge or an inability to organize information such that it can be easily retrieved, and for those with poor motivational and/or inactive learning styles, advance organizers take on special roles. They can serve as the vehicle for presenting background knowledge that is required for understanding a lesson, for highlighting organizational patterns about which the students should be aware, for motivating students to learn, and for communicating to students expectations about what they should be doing during the lesson.

Lenz et al. (1987) designed an advance organizer consisting of 12 components and evaluated its effectiveness in terms of student learning in mainstream classrooms. The 12 components can be used to inform the learner about: (a) the purpose of the advance organizer, (b) the actions to be taken by the teacher and

the students, (c) the topic and subtopics to be covered in the lesson, (d) background knowledge, (e) concepts to be learned, (f) reasons for learning the information, (g) new vocabulary, (h) organizational frameworks, and (i) desired lesson outcomes.

Teachers were trained to design and deliver advance organizers containing the 12 components in their secondary content classes (e.g., history, English, physical science) at the beginning of each class period. Lenz et al. monitored the effects of the advance organizer on students' acquisition of the information presented in the class period by interviewing the students after each class. These researchers found that mainstream teachers who used few of the advance organizer components at the start of their lessons could be trained in less than an hour to use them at mastery levels in the classroom. When students with disabilities were specifically taught to attend to the advance organizer, the number of relevant statements they made about the content of the lesson increased substantially compared to the number of statements made when they had not been informed about how to attend to the advance organizer.

Lenz (1984) conducted another study to determine the effects of written advance organizers on students' acquisition of information. Basically, the same format was used for the advance organizer as described for the Lenz et al. (1987) study; a few adjustments were necessitated by the reading task as opposed to the lecture/discussion task. In addition, the usefulness of an advance organizer was explained specifically to the students, who were instructed to take advantage of the advance organizer before reading the assigned passage. Lenz found substantial differences between the recall performance of LD students when they received an advance organizer before reading a passage and their performance when they did not receive the advance organizer. LD students who had not received an advance organizer correctly answered more questions about unimportant information than questions about important information in the passage. In contrast, LD students who had received an advance organizer answered more questions correctly about important information than about unimportant information. In fact, they correctly answered about the same number of questions correctly about important information (an average of 19 out of 30 questions) as a group of normal achievers who had not received an advance organizer (an average of 21 out of 30 questions). The use of the advance organizer only slightly improved the typical achievers' recall of important information (from an average of 21 to 22 answers correct), but it substantially improved the performance of the LD students (from an average of 13 to 19 answers correct).

These data indicate that advance organizers help students with disabilities discriminate important information from unimportant information. In addition, advance organizers help them store that information so that it can be recalled later for a test over the information. The result of this more efficient storage is that their performance on a test covering the important information is not substantially different from the performance of nonhandicapped learners. These findings suggest that a teaching routine containing an advance organizer that precedes a classroom lesson or a reading assignment can be a beneficial tool for enhancing the performance of low-performing students. Although the research conducted to date has not identified the effects of advance organizers used on a daily basis on students' grades in mainstream courses, one logically might assume that the effects noted in the tests in Lenz's study (1984) would be reflected in higher scores on chapter tests. Since a large percentage of a student's grade is based on test scores in secondary classrooms (Putnam, 1988), one also might suppose that course grades would be improved.

The Concept Teaching Routine. Another routine that has had a positive effect on the performance of students with disabilities in mainstream courses at the secondary level is the Concept Teaching

Routine (Bulgren et al., 1988). The purpose of this routine is to deliver information about complex, abstract concepts (e.g., democracy) in such a way that students' understanding and memory of the information will be enhanced. The routine entails the use of a Concept Diagram, which serves to organize the information related to the concept into categories of information that: (a) name and define the concept; (b) are related to the characteristics that are always, sometimes, and never present in the concept; and (c) are related to examples and nonexamples of the concept. Symbols and shapes are used on the diagram to make the differences between information categories distinct and concrete for the students. The information on the Concept Diagram is prepared by the teacher before class and delivered in class through an interactive discussion process. Both teacher and students fill in blank diagrams during the discussion.

Bulgren et al. (1988) evaluated whether teachers could learn to use the Concept Teaching Routine and the subsequent effects of its use on students' performance in mainstream courses. These researchers found that content teachers readily learned to use the routine at mastery levels in less than 3 hours of instructional time.

When the teachers settled into a routine of presenting one major concept during each unit of study, students' performances were enhanced in a variety of ways. For example, both LD and typical students wrote three times more items of concept-related information in their notes than before the Concept Teaching Routine was used. When the students took a test over the concept information covered in a given unit, mean test scores also increased above baseline levels for all students. Test scores improved even further when the concept information was reviewed the day prior to the test along with other material in the regularly scheduled review session. Test scores on regularly scheduled unit tests also showed a significant improvement when the concept information was reviewed as a part of the regular review. During baseline, only 57% of the students with learning disabilities were passing the regularly scheduled unit tests. During the concept training and review condition, however, 75% of the students with learning disabilities were passing the tests. Thus, the learning and retention of conceptual knowledge enhanced students' performance on unit tests, all of which were publisher-made tests designed to measure factual knowledge.

The Survey Routine. A third routine that has been used by mainstream teachers and appears to hold promise for enhancing the achievement of low-achieving students is the Survey Routine (Schumaker, Deshler, & McKnight, 1989). This routine was designed to enable mainstream teachers to provide an overview of a new textbook chapter to their students before initiating instruction in the unit. Low-achieving students frequently have difficulty reading textbooks written at grade level (Schumaker & Deshler, 1984), often demonstrate limited background knowledge for any lessons or assignments they might encounter (Graff, 1987), and have difficulty discriminating important from unimportant written information (Lenz, 1984). In addition, textbooks often are written in a way that is "inconsiderate" (Armbruster, 1984) for the reader. The Survey Routine was designed to help students compensate for these problems.

Like the Concept Teaching Routine, the Survey Routine was designed as an interactive routine in which the teacher leads students through a step-by-step process of analyzing the content of the new chapter. During this process, students are required to take notes on a specially constructed worksheet. There are places on the worksheet for the students to record information derived from each step of the survey process (e.g., a paraphrase of the title of the chapter). In the first step of the process, students read and paraphrase the chapter's title. Next, the relationship of the new chapter to previous and subsequent chapters is discussed by reference to the table of contents in the textbook. Third, the

introduction of the chapter (or the first paragraph) is read aloud and paraphrased by the students. Fourth, the major sections of the chapter are delineated. Here, the teacher draws a diagram of the chapter on the board, using boxes to represent each part of the chapter. The title of a major section is paraphrased and written at the top of each box. The most important items to which the students should attend within each section (e.g., new vocabulary, a diagram, a map, an important explanation) then are listed within each box by the teacher. Finally, the summary of the chapter is read and paraphrased.

The results achieved through the use of this routine have been promising but inconsistent. For some teachers who used the routine, students' test scores on regularly scheduled chapter tests increased an average of 10 percentage points above baseline levels. All students including normally achieving students, realized some improvement, with the LD students achieving the largest gains; when the teachers stopped using the routine, all students' test scores returned to baseline levels. Other teachers did not achieve the same positive results. The reasons for these differences remain unclear. Perhaps the way in which the overall organization of the chapter is described and the ways in which important details are highlighted are factors. Perhaps the kinds of details that are highlighted or the enthusiasm with which the teacher delivers the information influence the results. Clearly, additional research is needed and will be forthcoming.

Factual enhancement routines. In studies sponsored under KU-IRLD auspices, additional routines currently are being developed for presenting factual information to LD students in mainstream classes to enhance the students' understanding and memory of the information. In one study, the use of a Verbal Enhancement Routine is being explored; in another, a Visual Enhancement Routine is being tested. Both routines have been compiled with the same purposes in mind. Teachers need methods that enable them to make abstract information more concrete, to connect new knowledge with familiar knowledge, to enable students who cannot spell well to take useful notes, to highlight relationships and organizational structures in the information to be presented, and to draw unmotivated learners' attention to the information.

The Verbal Enhancement Routine (Schumaker et al., 1989) includes the oral presentation of instructional devices. One example of a verbal enhancement device is an analogy. Here, the teacher gives a familiar example from everyday life that makes an abstract concept more understandable. For instance, a science teacher might present an analogy of the camera and its working parts to help students understand how the eye works; a government teacher might present the analogy of a game, the players in the game, and the rules of the game to help students understand the "game" of politics. In another example of an verbal enhancement device, the teacher might use a story (e.g., a true story, a fictitious story, a personal story) to help the students understand information. For instance, a government teacher who is explaining the different governing styles of the various presidents of the United States might tell the story of Harry Truman and the sign on his desk that stated, "The Buck Stops Here."

These devices may be similar to those typically used by teachers, but their content is a critical feature of their construction. In order to qualify as a true factual enhancement device, a device must: (a) tie new information (information to be learned) to old information within the students' realm of experience, or (b) make an abstract concept more concrete. In addition, the routine that is used in employing the device is also critical. The Verbal Content Enhancement Routine involves three steps: Cue, Do, and Review. In the "Cue," the teacher must name the device for the students and link the device to the learning point (e.g., "I'm going to use a comparison to show you how the eye is like a camera"). Also, the teacher must provide a rationale for

attending to the device (e.g., "If you learn how the eye is like a camera, you'll be better able to remember the parts of the eye and their functions. When an eye doctor talks to you about your cornea or your retina, you'll be able to understand what she's saying.") In the "Do" step, the teacher presents the device (e.g., "The pupil is like the shutter on a camera; it lets the light into the eye and it opens and closes according to how much light is present"). In the "Review" step, the teacher reminds the students about the device and its purpose at the end of the lesson or in a subsequent lesson (e.g., "Today, we used a comparison to help you remember the parts of the eye and its functions. Who remembers some similarities between the camera and the eye?").

Preliminary data on the effects of the use of the Verbal Enhancement Routine are promising. Specifically, the routine and associated devices appear to be integrated easily into teachers' presentations. For some teachers, the use of the devices enhances students' performance on regularly scheduled tests; however, the way in which the devices are put into use seems to be critical in producing these effects. The use of the preliminary cue that announces to the students that a device will be used and the review of the information linked with the device seem to be important ingredients in producing the enhanced learning effects. Additional research is required to determine the effects of regular use of these devices on students' learning.

A Visual Enhancement Routine also is being studied currently. This routine involves the presentation of visual depictions of information that relate to various categories of knowledge concerning regions and countries. A science teacher might draw a diagram of the heart on the board using red chalk for aerated blood and blue chalk for blood that carries wastes. A government teacher might draw a flow chart on the board to make the process of lawmaking more clearly understood. An English teacher might use a standard chart depicting headings for the setting, the characters, the plot, and symbols in the story lines to analyze a series of short stories.

The way in which these devices are constructed and utilized has been standardized through the use of the Visual Enhancement Routine, which has 10 steps. Initially, the teacher names the depiction and cues the students to attend to it and to take notes about it. Next, the teacher provides a rationale for why the students should learn the information. A conceptual bridge is built between the new information and previously presented information. As the information in the depiction is delivered, complete statements are made about particular parts of it and the depicted relationships. The teacher points to the parts as they are described and involves the students in the presentation by asking them questions and soliciting their comments. Finally, the teacher reviews and summarizes the use of the depiction at the end of the lecture or in subsequent lectures.

Preliminary results on the use of Visual Enhancement Routine indicate that teachers can learn the routine quickly and that students benefit from its use (Crank, Deshler, & Schumaker, in preparation). After a 2-hour training session, teachers improved from presenting about two major depictions per lesson to three depictions per lesson, and they improved the quality of their presentations from performing about 31% of the steps to performing about 72% of the steps of the routine. The quality of their depictions also improved from fulfilling 37% to fulfilling 91% of the specified characteristics of a good quality depiction.

In a separate study, the effects of this Visual Enhancement Routine were studied with regard to student performance on tests. Two groups of students with learning disabilities who had received lectures in which the routine was used scored an average of 11 percentage points and 15 percentage points higher than their respective control groups of LD students whose lectures did not include use of the routine. Nonhandicapped students also showed improved performance of similar magnitude.

Integration of routines. Certainly, additional research is required to study further the usefulness of the notion that mainstream teachers can enhance the understanding and recall of the information they present for students with disabilities and other low-achieving students. Some of the routines (e.g., the Survey Routine, the Factual Enhancement Routines) need further study in isolation to determine under what conditions they are most effective. Once several routines have been refined and found to be successful, the effects of their integration should be studied as well. For example, the Survey Routine might be used to introduce a new unit, the Concept Teaching Routine might be used to present information related to the major concept in the unit, the Advance Organizer Routine might be used to introduce each subsequent lesson, and the Factual Enhancement Routines might be used to highlight information as it is presented in each lesson. Conceivably, such an integrated sequence might have an even greater effect on students' performance than can be created when the routines or devices are used in isolation. Until further research has been conducted, one can only speculate about such possible effects. Another equally important issue is the acceptability by teachers of such an integrated sequence. If teachers find the routines and devices cumbersome or limiting, their usefulness will be diminished because teachers will be less likely to use them. Thus, ensuring that the routines and devices are acceptable to teachers is an additional goal for developers.

TRANSLATING RESEARCH INTO PRACTICE

The instructional devices and routines described in this chapter for use by regular class teachers in mainstream settings as well as those developed by other researchers (e.g., Brophy & Good, 1985; Weinstein, Goetz, & Alexander, 1988) provide reasons to be optimistic about being able to address effectively the learning and academic achievement problems of low-achieving adolescents in secondary schools. Regardless of the nature or magnitude of the results achieved through current research efforts, little change in school practices will occur unless appropriate steps are taken to ensure effective translation of these instructional procedures into usable teaching products and ongoing staff-development and teacher-training efforts.

The task of translating research prototypes into usable teaching products is a critical one if educational change is to occur. The literature is replete with research studies reporting that positive learning effects have been achieved as a result of using specific teaching procedures. Unfortunately, in the vast majority of cases, practitioners must extrapolate the procedures for implementing the instructional practice from the methodology section of a journal article. If they request additional information from the researcher, they often get a lengthy field-test protocol of the instructional procedures used during data collection, or receive an abbreviated synopsis of the procedure. In either case, the teacher still lacks the information needed to translate the instructional routine accurately, and with relative ease, into classroom practice. Researchers must rethink their responsibility to the educational community with regard to translating validated teaching routines into usable, teacher-friendly instructional packets or materials. The gap between research and practice that has existed historically in education may, in large part, be accounted for by the failure of researchers to view the research process as including the extra steps of translating field-test versions of innovative procedures into instructional materials conducive to use in the classroom.

When KU-IRLD staff members completed the first phases of intervention research on SIM, they thought that the magnitude of the reported improvement would be sufficiently powerful to encourage teachers to use the procedures. Only after discovering that classroom implementation rates were abysmally low did they realize that, as researchers, they needed to make a significant commitment

to the translation process. Since then, KU-IRLD staff members have committed themselves to going the extra step of translating validated instructional routines or devices into teachers' manuals (and, where appropriate, student materials) that are published by a commercial vendor. To do so has required a significant investment of time and resources. In addition, staff members have had to make trade-offs between doing new research and translating completed research into usable products. In the process of making this translation, staff have found that working very closely with the ultimate consumers of the instructional packages is imperative to ensure that the packages are designed in a way that meets their instructional and classroom organization and management needs.

A second area to consider when attempting to optimize the transfer of research on instructional routines into practice has to do with staff development. Each year, school districts pour millions of dollars into efforts to upgrade the instructional effectiveness of their teachers though in-service training programs. The majority of these efforts tend to be one-shot programs (e.g., a 1- to 2-hour training session on a new teaching routine) with no follow-up included as a part of the overall training design. Research findings on the efficacy of such training efforts are clear: Very little, if any, permanent change in instructional practices results (Fullan, 1982; Hord, Rutherford, Huling-Austin, & Hall, 1987). As a profession, educators must stop ignoring documented principles of staff development and system change. Our current course of action will have little or no effect on bringing about significant changes in schools and will lead to inappropriate conclusions about the efficacy of new teaching procedures. In other words, teachers may conclude that the procedures lack power when the real reason for their failure may be that teachers were not given enough exposure to and practice with the procedure under controlled conditions to enable them to reach a sufficient level of comfort and fluency.

The following principles of effective staff development should be applied to facilitate translation of teaching routines into mainstream instructional practices. First, key stakeholders in a school district (e.g., administrators, teachers, and school psychologists) must be involved in deciding whether to adopt and receive training in a given procedure. In short, this step in a system's adoption of an educational innovation is evaluative. Questions as to whether the innovation is consistent with the district's philosophy and other on-line teaching practices must be addressed. Second, the issue of trade-offs must be resolved. That is, the incorporation of any innovation usually adds significantly to teachers' planning and/or instructional load initially; hence, decisions must be made regarding elimination or reduction of current programs or practices. Since such decisions are often difficult to make in education, educators often follow the course of least resistance and simply view the new procedure as an add-on. In turn, they often elect to keep using practices with which they feel most comfortable (the old practices); thus, the probability of adopting a new practice is greatly minimized. Strong administrative support and endorsement (including permission to make the necessary trade-offs) are very important.

Third, to ensure the adoption of complex educational innovations, training must be offered over a sustained period of time rather than as a one-shot event. Sustained training efforts allow time for modeling, practice, feedback, and questions. In addition, teachers need the opportunity to try out the new procedure (or portions of the new procedure if it consists of many steps or is complex) in their classroom and to debrief with the trainer(s) on problems encountered. Finally, following the formal training session(s), teachers must have the opportunity to receive ongoing support in their efforts to implement the new procedure. Initial support can be provided through the use of support teams (i.e., small groups of teachers who meet to discuss implementation problems and other issues) (Huberman & Miles, 1984) and peer coaching (Joyce & Showers, 1982).

Another area that must be considered in an effort to increase the likelihood of innovative adoptions is the role of preservice teacher-training programs. The current teaching corps in the United States will be undergoing significant changes in the next decade (Darling-Hammond, 1988). There will be a large turnover in the nation's teaching staff owing to retirements and decisions to leave the teaching profession for another career (National Center for Education Statistics, 1985). Filling this void represents not only a tremendous challenge, but also a significant opportunity to affect the types of skills new teachers should possess in respect to the instruction of low-achieving students. The first step toward meeting this challenge requires careful review of the content of current teacher preparation programs. Especially in the preparation of secondary teachers, additional time is needed to train teacher trainees in specific procedures for effectively delivering their content. Prospective teachers not only need to be made aware of specific teaching routines and devices for enhancing the delivery of curriculum content but also need ample opportunities to practice such procedures to mastery in practicum and field experiences. Many who have written about the educational crisis confronting our nation's schools have argued that meaningful solutions will, in many cases, mean having to make dramatic departures from traditional practices (McKibbin, 1988). As dropout and low-achievement problems escalate in magnitude (700,000 students dropped out in 1988; another 700,000 were barely functionally literate), steps must be taken to equip teachers with skills that will enable them to organize and present content information more effectively to at-risk students. This process should begin most logically in the formative years of teacher preparation. The climate for such reform is right in light of current efforts to raise the quality of teacher preparation (e.g., the HOLMES Group, 1986).

Finally, the important role that school psychologists can play in effective translation and utilization of the teaching procedures discussed in this chapter must be underscored. To fulfill this role, school psychologists must expand the focus of their assessment efforts to include a profile of the different setting demands (e.g., the types of tests, the readability of the textbooks, the format of assignments) that students encounter in their regular classrooms. If teachers are informed about the setting demands that particular students will have difficulty in meeting, they will be better able to work with school psychologists and other personnel to adapt instruction to correspond with particular students' needs. Teachers will understand more fully how teaching practices and curriculum materials can precipitate failure as much as specific student deficits, and they will be more able to accommodate special learners in their classes.

Additionally, as contributors to IEP and other educational planning meetings, school psychologists must recognize the importance of having all members of the committee (teachers, parents, and students) actively participate in the decision-making process (Van Reusen, 1985; Van Reusen et al., 1987). Providing opportunities for participation in such meetings is central to obtaining the necessary commitment and support of key participants (mainstream and support service teachers, parents, and the student). The school psychologist should view his or her role in such meetings as a conveyor of information, problem solver, and advocate of change in teaching practices on the part of mainstream teachers as well as on the part of the student.

Also, the school psychologist can do much to promote cooperative planning and other interactions among teaching staff. Cooperative planning between special class teachers and mainstream teachers is particularly challenging because of the schedule conflicts that arise during a typical school day (e.g., planning periods or lunch periods that do not match). Because of school psychologists' relatively more flexible schedules, they can facilitate the efforts of different staff members in cooperative planning by being mediators or by encouraging a reluctant staff member to interact with other

teachers on behalf of targeted students. Finally, school psychologists can play a valuable role by making staff aware of newly validated teaching routines and by modeling their use. They also can team with mainstream teachers in efforts to increase the effectiveness of their presentations of subject matter. This teaming relationship can be established, for example, in the form of a peer-coaching arrangement (Joyce & Showers, 1982). In brief, school psychologists can do a great deal to support and facilitate the processes that are critical to bringing about instructional improvements in school settings.

In summary, research has shown that to bring about a strong impact on the academic success and life adjustment of at-risk students requires the use of a broad array of instructional strategies and techniques in a coordinated fashion by several teaching and support personnel (Deshler & Schumaker, 1988). The major components of an innovative model for providing such services have been summarized in this chapter. A key element of that model is the effective use, by mainstream teachers, of a host of validated teaching routines and devices that can facilitate students' understandings and retention of content information presented in the mainstream setting.

It is our contention that in secondary schools, where so much emphasis is on the delivery and mastery of large amounts of content, mainstream teachers possess the means of significantly halting the decline in school achievement of many at-risk students as well as reducing the escalation of referral rates of these students to special education. Our data suggest that the most effective teachers are those who have the ability to manipulate, organize, and present their content information in such a way that it becomes easy to understand and to remember because it has been made learner-friendly by teachers who deliberately set out to do so.

FOOTNOTE

[1]Some of these materials (i.e., those associated with the Learning Strategies Curriculum) are available only through training sessions led by trainers associated with the KU-IRLD. For more information contact the Director of Training, KU-IRLD, 223 Carruth-O'Leary Hall, Lawrence, KS 66045.

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