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The Strategies Instructional Approach

OVER THE PAST ten years, various efforts to develop and validate instructional programs to train students in strategies and thinking skills have been initiated. These efforts have usually focused on either the benefits of specific strategy training or on the very general parameters of how strategy instruction should be implemented. As a result, the translation from research to practice has often resulted in educational applications that have either been removed from common academic and social tasks required for school success, or the applications have not been sufficiently intensive or specific to have a significant impact on the learning and performance of individuals with handicapping conditions. To be successful, strategies instruction must focus on both the general and specific elements of instruction within the context of a rich strategy environment. Well designed strategy environments should promote, model, guide, and prompt efficient and effective learning and performance across settings for all students, not just those with learning disabilities or handicaps. This has been the primary goal of researchers involved in the creation of the Strategies Intervention Model developed at the University of Kansas Institute for Research in Learning Disabilities. The authors of this article describe how they define and view the use of strategies for instruction and explain how the basic concepts of strategies instruction have been operationalized for use in educational settings.

There is a spectrum of cognitive abilities and levels of information processing that might be considered in a cognitive instructional approach for teaching students who are mildly handicapped or at-risk for school failure. Indeed, a number of information-processing models have been proposed as a means of understanding and thinking about the intervention process (e.g. Brown & Campione, 1986; Carroll, 1976; Gagne, 1985; Horton & Berfeld-Mills, 1984; Nation & Aram, 1977; Posner & McLeod, 1982; Pressley, Goodchild, Fleet, Zajchowski, & Evans, 1987; Samuels, 1987; Swanson, 1987a, 1987b). These models have attempted to explain those aspects of information processing that are fixed or not modifiable in the individual as well as those processes that are

group of researchers has translated cognitive strategy research into classroom practice, (b) to provide a point for comparison with other strategy-related programs, and (c) to provide a means for examining how we see strategy-related instruction affecting the learning environment for students in the regular education environment with and without mild handicaps.

The Strategies Instructional Approach: A Broad Construct

A key assumption underlying the *strategies instructional approach* is that the educational experience should emphasize teaching students the process of learning as much as teaching them specific domains of content information. In other words, many aspects of the instructional process should focus on teaching students how to learn and how to perform. A direct way of accomplishing this is to teach students strategies related to how to apply skills and successfully use knowledge to meet the demands of various school and out-of-school situations. In short, the strategies instructional approach is seen as a way by which teachers select, deliver, and organize curriculum such that learning is facilitated. By carefully modeling the processes of selecting, delivering, and organizing teachers can show students how to manipulate and control content information. Over time, this instructional process can serve to make students more independent in the learning process.

As defined by the KU-IRLD, a strategy is an individual's approach to a task. It includes how a student thinks and acts when planning, executing, and evaluating one's performance on a task and its outcomes (Lenz, Clark, Deshler, & Schumaker, 1988). In other words, a strategy is seen as a "tool" that can be used by learners to facilitate their analysis of the demands of a given problem, to help them make decisions regarding the best way(s) to address the problem, and to guide their completion of the task, including a careful monitoring of the effectiveness of the process along the way.

Not all strategies are of equal merit or value. For example, research conducted on populations with learning disabilities has shown that these students do, in fact, use strategies to approach tasks, but the strategies they choose in a given situation often fail to lead to successful task completion (Warner, Schumaker, Alley, & Deshler, 1989). The success of a given strategy can be measured in terms of effectiveness and efficiency. In other words, the strategy must not only help the student get the job done (effective) but it must facilitate completion of the job done in a timely manner (efficient). The overall effectiveness and efficiency of a given strategy varies greatly across tasks. For example, if a group of students were asked to memorize a list of 15 words (the items in the list consisted of different fruits, cars and animals) they would likely use a variety of memory strategies (e.g., clustering, rehearsal, imagery, etc). Probably all of these approaches could be considered effective memorization strategies. However, some might not be as efficient as others. Perhaps the least efficient strategy for this task would be simple rehearsal; a strategy frequently employed by low-achieving youngsters (Warner et al., 1989). If, however, the task was changed to the list consisting of only four items, the simple rehearsal strategy may be the strategy of choice for most people. Thus, the task or the demands of a situation largely determine which strategy is most effective and most efficient.

development. A potentially more productive approach to understanding the types of interventions appropriate for this population would be to consider not only learner attributes, but the environmental factors as well, as a means of describing and understanding the low-achieving student. Lewin's (1935) formulation to explain human behaviour (i.e., B = f(P x E) has been adapted (see Figure 1) to illustrate how strategies instruction might be conceptualized. In the formula depicted in Figure 1, an individual's behaviour is seen as resulting from an interaction between the demands of the environment (E) and the characteristics of the individual (I). The behaviour is judged as acceptable if the demands placed on the individual are met effectively and efficiently. The goal of the intervention process is to make individuals approach tasks more effectively and efficiently in the context of the situations and demands encountered across settings. The goal of strategies instruction is to promote effective and efficient behaviour by prompting strategic learning and performance supported by the creation of strategic environments.

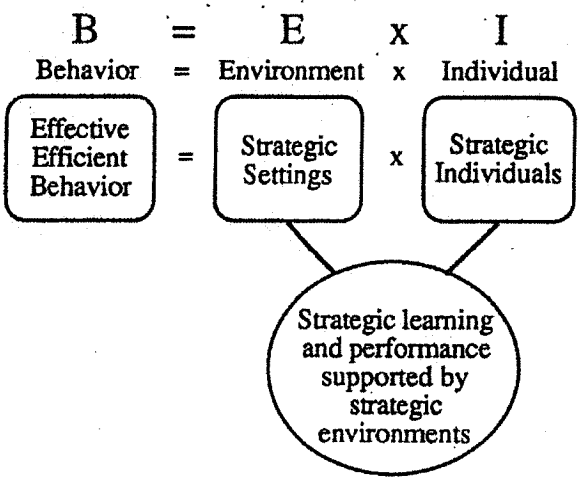

Figure 1. This formula illustrates how the goal of effective and efficient behaviour is achieved in strategies instruction. Strategic learning and performance must be taught and then supported by the creation of strategic environments.

The research conducted by the KU-IRLD has included studies on both the characteristics of the settings in which students must perform as well as the characteristics of learning disabled and other low-achieving students (Alley, Deshler, Clark, Schumaker, & Warner, 1983; Deshler, Schumaker, Alley, Warner, & Clark, 1982; Putnam, Deshler, & Schumaker, in press). Related to demands and expectations across both school and out-of-school settings, the general demands placed on students can be summarized as follows: (a) academically, students must gain information from books, manuals,

Traditional Instructional Efforts

The traditional types of interventions that educators have developed over the past twenty years appear to fall into two major categories: skills-oriented approaches and content-oriented approaches. Proponents of skills-oriented approaches have attempted to alter the characteristics or skills of the individual. Basic-skills remediation and study skills instruction would be included under this category. While these approaches directly address many of the student's problems, the intensity of instruction required to improve performance in the real world is usually not available in the school setting and rarely are students able to generalize what they have learned. Proponents of content-oriented approaches have attempted to alter the demands placed on students or change the way we traditionally organize the environment for learning. Tutoring and offering parallel courses that cover content equivalent to that offered in the regular class have been associated with this approach. While these types of approaches have often been successful in keeping the student "afloat" in the content curriculum, remedial and special education teachers are rarely qualified to teach the content involved and the student begins failing as soon as the content support system is no longer available. Therefore, the student is not prepared to meet independently demands outside of the support system provided by the school in the world of work and in the community.

The Strategies Instructional Approach: A Dual Orientation

While the majority of traditional intervention efforts have been well intended, the results of these efforts have largely floundered or have not led to qualitative differences in the lives of students. Frequently, intervention is only one area or dimension is insufficient to bring about permanent and lasting behaviour changes. The strategies instructional approach has emerged as an alternative to traditional intervention approaches. The strategies approach represents what might be termed a dual orientation to the acquisition and use of skills and the delivery of content to meet the needs of students. This is achieved by developing interventions that focus on teaching students strategies in the academic, social, motivational, and executive functioning areas that will enable the student to meet content learning demands and at the same time modifying instructional environments to promote strategy use and facilitate the delivery of content in a manner that will result in greater content mastery.

Therefore, the work of the KU-IRLD has adopted the position that a strategies approach to instruction must focus on at least three important areas. First, it is important to identify a range of appropriate strategies that can be both generally applied to all content areas as well as strategies that can be applied specifically to meet targeted content and task demands (e.g., strategies for learning content and strategies for learning content in social studies). Second, it is important to present information in a manner that will induce students to learn when students do not have effective and efficient strategies for acquiring information. Third, it is important to arrange the environment to facilitate and enhance strategic learning and performance across all educational settings and interactions. These three areas have been the basis for the development of the Strategies Intervention Model (Deshler & Schumaker, 1988).

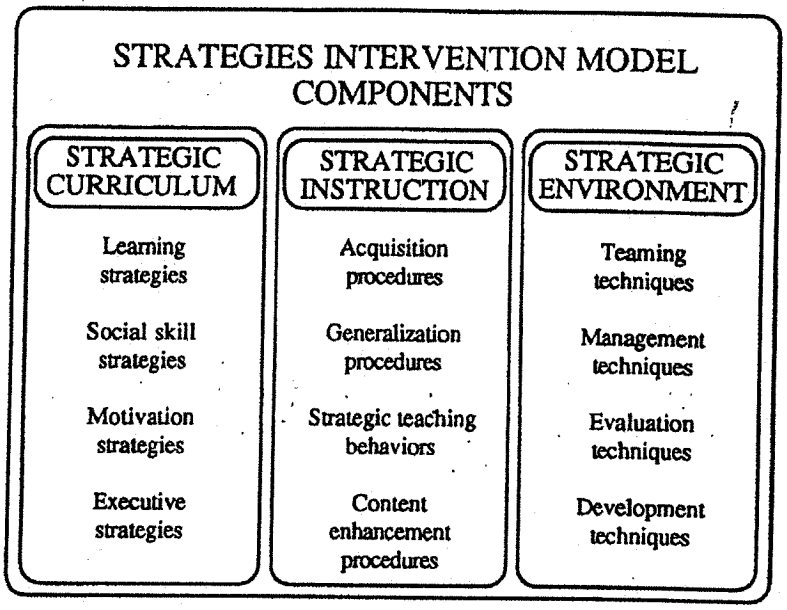

Figure 3. The Strategies Intervention Model consists of three major components that provide the basic framework for conceptualizing how strategies instruction should be operationalized in an educational setting.

Strategy Content

The "content features" of the strategy relate to how well the process of meeting the setting demand has been specified in terms of both mental and physical actions.

First, the strategy should contain a set of steps that lead to a specific and successful outcome. A strategy consists of a set of steps that organizes the approach to a task and results in the successful completion of that task. While individual units of performance may be evaluated, there is always one outcome that is used to judge the success of a strategy (e.g., Did the strategy help the student pass the test?). The individual can then examine the result of his or her effort and begin to evaluate the effectiveness of the strategy.

Second, the steps of the strategy should be sequenced in a manner that results in an efficient approach to the task. A strategy taught to students must be a collection of the "best" ideas organized into the "best" sequence that lead to the "best" mental and physical actions for the task. A strategy that simply leads to completion of the task is not enough. However, what an adult thinks is the "best" approach to a task may not be "best" for the student. Hence, it is important to submit each version of a strategy to rigourous analysis through

information that must be remembered should be omitted. Cues to pick up the pencil, turn the page, etc. are examples of steps that may be unnecessary.

Tenth, information related to why to use the strategy, when to use the strategy, and where to use the strategy should be included. The knowledge of the conditions under which the strategy should be used is as much a part of the strategy as the specific steps. Rationales that include information related to specific, personal, believable and short-term consequences for use and non use of the strategy should be taught. In addition, identifying the characteristics of situations where the strategy should be used and the cues that will help the student identify these situations will help to promote appropriate use and subsequent generalization of the strategy.

In general, these guidelines ensure that the strategy, to the greatest degree possible, include features related to how to think and act when planning, executing, and evaluating performance on a task and its outcomes? While the features described above should accomplish this, the whole strategy should promote overall task completion and awareness of effort. It should guide the individual's approach to the task while promoting strategy flexibility that will enable the student to meet unexpected circumstances and situations that may surround a task. The teacher should review the entire strategy and evaluate whether attention to the content features described above has accomplished this. If not, then the strategy should be modified to meet these conditions.

Strategy Design

The content of a strategy should be designed or packaged in a manner that successfully organizes and arranges the content of the strategy for optimal learning and use by the student.

First, entry level skills should be clearly specified or taken into consideration as part of the steps of the strategy. A strategy often informs an individual how to apply skills. Therefore, the skills or skill levels that are assumed or required in order for the strategy to be effective must be clearly specified. Any skills that are not specified as a prerequisite should be addressed somewhere in the intervention process. The teacher must decide either to teach any entry level skills that are required so a particular strategy can be taught or to implement another intervention.

Second, a remembering system should be incorporated into the intervention to facilitate memorization of the strategy steps and explanations. There are always two aspects of each step in a strategy. The first aspect consists of a full explanation of all of the guidelines, cues, rationales, procedures, rules, processes, exceptions and so on. that are important to the successful performance of a strategy. This is the content of the strategy. The second aspect of each step consists of the set of key action words that an individual learns and memorizes that trigger the appropriate associations or explanations related to successful performance of a strategy. This is the remembering system of the strategy. Since the content of a strategy can be quite extensive, and many individuals who require direct strategy training need assistance in learning and remembering information, the design of the strategy must facilitate the memorization process.

Third, each step of the remembering system should be short. As each step of the remembering system is formulated, unnecessary words should be

application of the strategy, and habitualize its use. Therefore, when selecting which strategies should be developed or taught to students, a key consideration is the degree to which the student will have an opportunity to apply the strategy and integrate it into his or her overall approach to solving problems.

Third, the strategy must be generalizable across a variety of settings, situations, and contexts. A strategy can be developed for a very specific situation. However, those strategies that have the greatest generalization potential will be those that can be used across situations and settings.

Fourth, the strategy should relate to future demands that the student will encounter that are similar to those for which the strategy was originally taught. While it is important that the strategy meet current demands, the strategy should be powerful enough to have long-term uses and benefits across many aspects of the individual's life in the near future and into adulthood. Therefore, a careful balance between current and future needs must be sought when deciding the efficacy of a particular strategy intervention. Therefore, instruction in goal setting to facilitate assignment completion becomes more important when viewed in the context of the goal setting skills needed for career and life planning.

Ensuring strategic instruction

Once the content, design, and usefulness of the strategy have been determined, the strategy must be taught to the student. Strategic instruction promotes the active participation of the student in the learning process. In general, the goal is to immerse the student in an instructional situation in which learning is seen as a vehicle to realize personal goals. The student is involved in making decisions about what is to be learned and how fast learning will occur. The instructional stages that have become a part of the Strategies Intervention Model have been designed to achieve a balance between the control of the teacher and the control of the student over the learning process. Other strategy training efforts may emphasize one type of control over another. However, strategy learning may be achieved through instruction that is more teacher directed or through instruction that is more student directed. A set of instructional features that appear to be central to successful strategy instructions have emerged through our research (Ellis, Deshler, Lenz, Schumaker, & Clark, in press).

First, the student should be committed to learn the strategy and fully understand the purpose and benefits of the strategy. The student's understanding of the potential impact of the strategy and the consequences of continued use of ineffective and inefficient strategies should be the first step in the instructional process. The student should be committed to learn the strategy and understand how the strategy can have an immediate impact on success. Therefore, the teacher must be responsible for informing the student of the goals of the strategy and obtaining a commitment from the student to learn the strategy. Likewise, the teacher must demonstrate to the student that he or she is committed to assisting the student to acquire and generalize the strategy.

Second, the physical and mental actions covered in the strategy should be fully described and explained. The student must be informed of what to do and how to think about each step of the strategy. The full content of the strategy should be made apparent to the student. Examples and circumstances

Seventh, the strategy should be fully understood and memorized before practice in the strategy is initiated. Sufficient rehearsal of the strategy steps should be provided before the student is asked to perform the strategy from memory. Before applied practice of the strategy begins, students should know the remembering system, be able to demonstrate how they can use the remembering system to guide the self-instruction process in applying the strategy, paraphrase or explain what is involved in each step, provide personal rationales for learning and using the strategy, and accurately answer questions about uses and misuses of the strategy across various conditions. During the forthcoming practice phase the student must be confident in his or her knowledge of the strategy and be able to concentrate on the application of the strategy and not have to focus unnecessary mental effort on remembering the strategy steps.

Eighth, practice should begin with controlled guided practice and ultimately conclude with advanced independent practice. The goal of the initial practice stage should be on mastering the strategy without having to struggle with content or situational demands. Therefore, practice should be provided under conditions in which the student feels comfortable or knowledgeable. As the strategy is learned, conditions that approximate actual setting and task demands should be gradually introduced. While general principles of effective teaching should be applied, the most important teaching behaviours during strategy practice appear to include communicating expectations, insuring intensity of instruction, requiring mastery, and providing feedback.

Ninth, a measurement system should provide ongoing information that will demonstrate to the student and the teacher that strategy is being learned and used and that the demands of the setting are being met. Knowledge of progress and performance is a critical part of the learning process. The measurement system should provide information to the student on whether the strategy is doing what was promised in terms of promoting success in meeting a demand. However, the measurement system should also provide information related to the student's mastery of the strategy. Progress in learning the strategy should eventually relate to an increase in the student's ability to meet a setting demand or some aspect of a setting demand. The student should be able to see this relationship and attribute success to mastery and application of the strategy.

Tenth, while generalization should be prompted throughout the strategy acquisition process, specific efforts to promote generalization should follow strategy acquisition. After the strategy has been mastered, the student should once again make a commitment. However, this time commitment should be focused on generalizing the strategy. In the generalization stage, the teacher and student must work together to identify where the strategy can be used across settings and conditions, identify modifications in the strategy to make it more generalizable, and program use of the strategy across settings. In addition, the generalization process can be greatly enhanced through the cooperation with as many teachers and other facilitators as possible.

Creating a strategic environment

Lenz and Deshler (in press) have argued that the context for instruction is probably as important or more important than the instruction itself. They

process; (b) strategies instruction revolves around the demands of mainstream classes; (c) students are expected to monitor their own progress including maintaining the necessary progress charts; (d) support teachers spend a major portion of their time modeling strategic learning and providing informative feedback; (e) the learning process is seen as being interactive and reciprocal and, thus, teachers and students learn together; and (f) all teachers (support and regular) prompt strategic learning by consciously incorporating strategies within many aspects of their instruction. In short, a strategic classroom is one that deliberately involves students in the planning and instructional process in an attempt to increase their independence and ultimate success as learners.

To achieve this level of implementation, however, is easier said than done. Many of the characteristics and features associated with strategies instruction that have been discussed earlier in this paper do not lend themselves to traditional inservice or staff development efforts (Schumaker & Clark, in press). Traditional inservice efforts are typically single sessions of one hour to as much as one day. Administrators often arrange for the sessions but seldom attend them, thus they have little familiarity with those things their staff is being trained to use. Coordination across schools within a district is not considered and, therefore, the probability of training having an impact on practice is minimized. Furthermore, follow-up activities and experiences are not arranged thus reducing the long-term impact from the training (Deshler & Schumaker, 1988). Given the significant changes (e.g., philosophically, instructionally, as well as in the role of the teacher) that are involved when a strategies approach is adopted, it is important that the staff development practices used are sufficiently powerful to assist school personnel effect meaningful changes in their instruction.

As the KU-IRLD grappled with how to best disseminate the strategy interventions it had developed, some important principles of inservice instruction emerged that were found to enhance greatly the degree to which these interventions were integrated in a peremanent fashion into a schooling program. These principles have been summarized by Schumaker and Clark (in press).

First, it has been found important to *obtain a broad-based support and commitment* before any training takes place. That is, key administrators and teachers should complete a needs assessment instrument to determine if strategies instruction is the most suitable program for the needs that they perceive to exist in their building or district. Assuming that it is, these same individuals need to review the characteristics of the strategies model carefully (including requirements for successful implementation) and make a decision in regard to their willingness to make the necessary trade-offs and sacrifices to insure the successful implementation of the approach. For example, in order to teach strategies effectively it may be necessary to make the trade-offs of foregoing the tutoring of students in specific content subjects in remedial classes. When such trade-offs are made it often affects other staff in a building besides the strategy teacher alone. Related to this phase of the staff development process is the scheduling of ongoing training over a 3 to 5 year period of time. By scheduling training over a sustained period of time several advantages are noted: it provides an atmosphere of direction and continuity to change within the school (or district), it encourages teachers to make individual

responded to strategies instruction (e.g., Clark, Deshler, Schumaker, & Alley, 1984; Schumaker, Deshler, Alley, & Warner, 1983). In most instances, before training, students demonstrated limited evidence of constructive strategy use. For example, they evidenced poor or no use of such strategies as paraphrasing, self-questioning, or identifying critical features of information set. Following training, students evidenced significant gains on both strategic measures (e.g., paraphrasing) as well as measures of performance in related academic areas (e.g., a reading comprehension score) (Deshler & Schumaker, 1988). Validity of these interventions has also been addressed through a process of disseminating them to a large number of educational agencies (e.g., individual schools, school districts, intermediate units or entire states) throughout the nation. While formal evaluation studies have not been conducted, a large set of reports on student effects have emerged over the past five years that largely corroborate the magnitude of gains achieved through the formal evaluation studies. In as much as the training to use the learning strategy packets has been provided by individuals who are not a part of the original research team, these data are seen as an indication of the potential robustness of the intervention packages.

While the data from these efforts have been encouraging, it is clear that many questions regarding the efficacy of strategy training remain to be answered. Among the more pressing issues are the following. First, while current research efforts have been able to show that students' performance on a given research measure(s) may improve following strategy training, it is yet to be shown that these students become strategic learners in other areas of their academic life let alone their life in general. Wong (1988) has emphasized that most programs focus on teaching students specific strategies, but few, if any, focus on the long-term process of training a student who "reflectively chooses among strategic options to match the task at hand."

Second, most data that are currently available, are on studies designed to measure the effects on student behaviour as a result of teaching a single strategy. The effects of putting an entire strategies program (consisting of several strategies over a sustained period of time) together into a coordinated whole for the purpose of measuring the synergistic nature of the program have not been determined. Related to the issue of determining the effects of an entire strategies package is a third question of determining the relative impact on student performance of various strategy components. That is, is one strategy in a sequence of strategy instruction more powerful than another, is one stage of the instructional procedures used to teach strategies (e.g., modeling or controlled practice) more effective than other stages? Until questions of this magnitude are addressed the overall efficacy of a strategies instructional approach can neither be determined nor can the necessary adjustments be made to fine tune specific components as well as the overall program.

Conclusion

The issues and dimensions of direct strategy training that have been described in this article represent but one strategy training system. Thus, the features outlined could be viewed as representing a rather limited perspective on strategy training. It should be viewed as limited because the strategies instruction has largely been considered at the single intervention level.

Ellis, E.S., Deshler, D.D., Lenz, B.K., Schumaker, J.B., & Clark, F.C. (in press). An instructional model for teaching learning strategies. *Focus on Exceptional Children.*

Ellis, E.S., & Lenz, B.K. (1987). A component analysis of effective learning strategies for LD students. *Learning Disabilities Focus, 2,* 94-107.

Ellis, E.S., Lenz, B.K., & Clark, F.L. (in press). *TACTIC: Procedures for developing strategy interventions.* Lawrence, KS: Edge Enterprises Inc.

Gagne, E. (1985). *The cognitive psychology of school learning.* Boston: Little, Brown.

Horton, D.L., & Berfeld-Mills, C.B. (1984). Human learning and memory. *Annual Review of Psychology, 34,* 361-394.

Joyce, B.R., & Showers, B. (1980). Transfer of training: The contribution of "coaching." *Journal of Education, 163,* 163-172.

Joyce, B.R., & Showers, B. (1981). The coaching of teaching. *Educational Leadership, 40,* 4-8, 10.

Lenz, B.K. (in press). In the spirit of strategies instruction: Cognitive and metacognitive aspects of the Strategies Intervention Model. In S. Vogel (Ed.), *Proceedings of the Second Annual Conference of the National Institute of Dyslexia.* White Plains, NY: Longman.

Lenz, B.K., Clark, F.C., Deshler, D.D., & Schumaker, J.B. (1988). *The strategies instructional approach* (Preservice Training Package). Lawrence, KS: University of Kansas Institute for Research in Learning Disabilities.

Lenz, B.K., & Deshler, D.D. (in press). Using the principles of strategies instruction as the underpinnings of an effective preservice teacher education model. *Teacher Education and Special Education.*

Lewin, K. (1935). *A dynamic theory of personality: Selected papers.* Translated by Donald K. Adams & Karl E. Zener. New York: McGraw Hill, 1935.

Nation, J.E., & Aram, D.M. (1977). *Diagnosis of speech and language disorders.* St. Louis: C.V. Mosby.

Posner, M.I., & McLeod, D. (1982). Information processing models – In search of elementary operations. *Annual Review of Psychology, 33,* 477-514.

Pressley, M. Goodchild, F., Fleet, J., Zajchowski, R., & Evans, E.D. (1987). *What is good strategy use and why is it hard to teach? An optimistic appraisal of the challenges associated with strategy instruction.* Manuscript submitted for publication.

Pressley, M., Symons, S., Snyder, B.L., & Cariglia-Bull, T. (1989). Strategy instruction research comes of age. *Learning Disability Quarterly, 12,* 16-31.

Putnam, M.L., Deshler, D.D., & Schumaker, J.B. (in press). The investigation of setting demands: A missing link in learning strategy instruction. In L. Meltzer (Ed.), *Cognitive, linguistic, and developmental perspectives on learning disorders.* Boston: Little, Brown.

Samuels, S.J. (1987). Information processing abilities and reading. *Journal of Learning Disabilities, 20,* 18-22.

Schumaker, J.B., & Clark, F.L. (in press). Achieving implementation of strategy instruction through effective inservice education. *Teacher Education and Special Education.*