

Helping Students Develop Strategies for Effective Learning

By providing direct instruction in learning strategies, teachers can help improve the self-confidence and achievement of their students—especially the educationally disadvantaged.

For many years educators assumed that students developed effective learning and study skills as they grew older and had more experience with school (Brown et al. 1983). This is partially true, but many students do not develop effective learning strategies unless they receive explicit instruction in their use.

Furthermore, students learn these strategies and skills best when at least part of the instruction is incorporated into regular subject matter classes. To acquire and integrate most cognitive processing skills—including learning strategies, problem solving, reasoning, decision making, and critical thinking—students need guided practice and feedback (Anderson 1985). By providing these experiences, content-area teachers can play a larger role in helping students develop effective learning and study strategies.

What Are Learning Strategies?

Broadly defined, learning strategies are behaviors or thoughts that facili-

tate learning (Weinstein and Mayer 1986). These strategies range from simple study skills, such as underlining a main idea, to complex thought processes, such as using analogies to relate prior knowledge to new information. In this paper, we will concentrate on those strategies that most directly affect the initial acquisition of knowledge: elaboration strategies. (We are using elaboration only as an example, however; most of our comments and suggestions are appropriate for many other learning strategies as well.)

Clearly, students acquire knowledge through rote memorization and, more specifically, by using some form of mnemonic device (e.g., using the acronym HOMES to cue the names of the five Great Lakes or using the alphabet song as a cue for the order of letters). In general, however, a mnemonic device is an artificial memory support, helpful for remembering isolated bits of information but less useful for meaningful long-term knowledge acquisition.

When teachers promote rote memorization as a single strategy, they foster only limited short-term retention of information. High school and college students are well versed at retaining content knowledge long enough to take exams, but dreadfully inept at maintaining that knowledge in long-term memory. To achieve this, students must create meaningful connections between what they already know and what they are attempting to learn. In other words, the new information must take on personal relevance. This type of learning—making connections—requires students to use some form of elaboration.

Elaboration

To elaborate is to add a symbolic construction to what you are trying to learn in order to make it more personally meaningful. In other words, elaboration involves using what we already know to help make sense out of what we are trying to learn. "What we already know" includes our prior

knowledge, our experiences, our attitudes, our beliefs, and our values.

Consciously focusing on related prior knowledge, experiences, and beliefs that come to mind while we are trying to learn helps us to build bridges to the new information. These bridges provide points of connection to previously sterile, dull, or meaningless data symbols; they allow us to perceive these symbols as important because they add to or modify personal knowledge relevant to our successful functioning. In other words, the bridges built by elaboration strategies create personal meaning—a reason the new information is important for the student to remember.

Use of elaboration strategies improves future recall not only because the student's depth of processing is greater, but also because these strategies help the student store new information with related knowledge. This is analogous to using a filing cabinet for storing information. If one person adds files to her cabinet randomly as they are created, and another person stores his related files together in a personally organized fashion, who will be more successful when trying to find information in the future? Major differences between novices and experts reside in the amount of information they have accumulated and in the way this information is organized.

Using Elaboration Strategies

We can relate what we are trying to learn to what we already know in many ways. These ways include creating analogies; paraphrasing; summarizing in our own words; transforming the information into another form such as a chart, graph, or diagram; applying the new information; directly relating prior knowledge; using compare and contrast methods; drawing inferences or conclusions; and trying to teach what we are learning to someone else.

While elaboration can take many forms, the specific method a student uses does not appear to be critical for success. A group of successful learners often use a variety of methods for the same task, and an individual student

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often reports using different methods for what might appear to be highly similar tasks. Individual preferences, the perceived difficulty of the task, the learner's prior knowledge or experience with similar tasks, the perceived importance of the task, and the learner's expectancies about his or her ability to perform well on the task—all are variables that determine what elaboration strategy, if any, a student will use for a particular task.

A repertoire of elaboration strategies—of learning tools—helps students to perform a wide spectrum of tasks. A carpenter often has one or two favorite hammers that she uses for most tasks, but her tool box will contain more than a dozen different hammers for special jobs. Similarly, a good repertoire contains many different types of strategies for the student to

choose from, providing both fluency and flexibility. If a high school student is having difficulty making sense of what he is reading in his American history textbook, he could take a break; but this might not be sufficient to solve the problem. A student with a more flexible repertoire might also try taking a break, but if this did not work, she could then try different methods: re-reading, calling a friend in the same class, reading other related material in the library, speaking to the teacher, asking a parent, or looking over class notes. Students with a flexible repertoire of strategies can generate alternative approaches that increase their chances of successfully solving the problem.

To foster the use of elaboration strategies, teachers must ensure that students view these techniques as practical and beneficial. Therefore, creating a positive impression when first presenting the strategies is crucial. We recommend demonstrating how students can ask themselves questions that help them make sense of new information based on what they already know.

Teachers can develop fluency and flexibility in their students' elaborations by encouraging a broad list of questions representing a variety of different techniques (analogies, transformations, comparing-contrasting, and the like). To access one's repertoire of strategies, one must often generate and answer questions about the material, such as the following:

- What is the main idea of this story?
- If I lived during this period, how would I feel about my life?
- If this principle were not true, what would that imply?
- What does this remind me of?
- How could I use this information in the project I am working on?
- How could I represent this in a diagram?
- How do I feel about the author's opinion?
- How could I put this in my own words?
- What might be an example of this?

● How could I teach this to my Dad?

● Where else have I heard something like this?

● If I were going to interview the author, what would I ask her?

● How does this apply to my life?

● Have I ever been in a situation where I felt like the main character?

Students should practice generating and using these types of questions in different contexts. Learning about elaboration strategies and how to use them, like any procedural skill, requires practice, with feedback. With time and practice, students realize that using elaboration is easy and useful in a variety of learning situations.

Training for Teachers

As part of the Cognitive Learning Strategies Project at the University of Texas we have developed several teacher training workshops. Lasting from three days to one week (not including follow-up activities), these workshops emphasize information about common student learning and study problems, the types of effective strategies and skills successful students use, and techniques for teaching these strategies and skills. The workshops address eight different areas: (1) identification of teacher concerns and perceived student problems; (2) what we mean by "successful students"; (3) high school learning and transitions to college and job-related learning; (4) categories of effective learning strategies; (5) methods of teaching learning strategies; (6) implementing the metacurriculum (teaching learning-to-learn skills and strategies while teaching a content area); (7) developing individual action plans for each teacher for the coming year; and (8) follow-up activities needed during the school year.

More than 2,000 teachers at the high school and college level have participated in these workshops and similar training activities. Following are just a few examples of ways these teachers have improved their instruction by teaching these strategies.

In one high school the arts teachers worked together to develop a set of adjunct curriculum materials to help

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students use the arts as a form of elaboration, to help them understand ideas they were studying in literature and history. A 9th grade biology instructor set aside some class time each week to help students learn about note-taking, selecting main ideas for further study, and using application and analogies to understand scientific principles. Several faculty members in a community college nursing program created a series of in-class and homework exercises about how to use knowledge acquisition strategies, how to take practical tests, and how to reduce anxiety when studying or taking tests. Other teachers have taken time at the beginning of a semester to explain effective ways to read a textbook, used class discussions as a springboard for discussions about specific learning strategies, and developed and integrated special materials, which specifically address learning-to-learn rather than just the course content, into the regular curriculum.

The implementation of many of these techniques has been evaluated in an undergraduate learning-to-learn course at the University of Texas (Weinstein 1988). The results have been very encouraging. Not only do students appear to acquire study and learning strategies that significantly improve their academic performance, but they also appear to gain self-confidence and to feel better about themselves as learners. Given the need for lifelong learning, this is an important outcome.

Today, we know what learning strategies are, how to help teachers learn to teach them, and what outcomes we can expect if they are taught. Clearly, students benefit from learning these strategies; this is especially true for the educationally disadvantaged. We must, therefore, continue to help teachers learn about these strategies and then translate that learning into effective instruction. Our students deserve no less. □

References

- Anderson, J.R. (1985). *Cognitive Psychology and Its Implications*. San Francisco: Freeman.
- Brown, A.L., W.F. Bransford, R. Ferrara, and J. Campione. (1983). "Learning, Remembering, and Understanding." In *Handbook of Child Psychology*, vol. 3, edited by J. Flavell and E. Markman. New York: Wiley.
- Weinstein, C.E. (1988). "Assessment and Training of Student Learning Strategies." In *Learning Styles and Learning Strategies*, edited by R.R. Schmeck. New York: Putnam.
- Weinstein, C.E., and R.E. Mayer. (1986). "The Teaching of Learning Strategies." In *Handbook of Research on Teaching*, 3rd ed., edited by M.C. Wittrock. New York: Macmillan.

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