

MAKE EFFECTIVE USE OF SCAFFOLDING

Learning new information involves locating and activating information stored in knowledge networks and connecting the new thing to be learned with the information already in the knowledge network. When the learner does not have relevant prior knowledge to which the new information can be connected, the new information will seem meaningless and therefore will not be remembered.

When a student lacks sufficient prior knowledge to make a connection with new information being taught, the teacher must provide temporary supports, often called *scaffolding*, to augment the student's existing knowledge. Once the student has enough relevant information stored in long-term memory, the scaffolding can be removed. Scaffolding is a way of systematically transferring control of the skill or knowledge from the teacher to the student. Here are some things teachers can do to scaffold student learning:

- 1. Organize the information you want your students to learn before you teach it.** Use advance organizers and graphic displays to show the structure of the information to be learned. When information can be organized into categories, show the superordinate and subordinate relationships among various elements of what you want your students to learn. When factual information can be chunked into meaningful clusters, make the chunking scheme explicit for students during instruction, rather than relying on them to make the links on their own. Instruction should begin with easy tasks and progress to more complex tasks as the learner develops more relevant and elaborate background knowledge.
- 2. Reduce the number of steps required to solve a problem.** When you simplify the tasks, students can manage the various components of the problem-solving process. Once they have control of the smaller steps, they can begin to fit the steps together. After students have successfully solved simplified problems, they'll be ready to take on more complex versions of the task and apply similar problem-solving strategies. Introduce only a manageable amount of information. It is far better to break up large, complex problems into smaller segments and teach them over multiple lessons rather than try to teach everything at once. One of the most important skills in teaching is knowing how much to teach and at what pace to teach it.
- 3. Multiple skills or pieces of information that are likely to be confused should be separated.** Introduce one, and delay introducing the second until the learner is firm on the first. If you doubt the importance of this guideline, think about how often young children confuse "left" and "right" when they have been taught the two concepts at the same time in a "This is my left hand: this is my right hand" format.
- 4. Provide direct assistance to help students activate prior knowledge already stored in long-term memory.** Many teachers use a variety of techniques designed to stimulate recall, such as strategic questioning and recall diagrams. Never assume that students have fully learned what you may think they have learned or that they will be able to recall that information when they need it. You can facilitate recall directly by explicitly telling students what you want them to

think about prior to presenting the new information. For example, use statements such as this to prompt recall:

Ms. D'Angelo: Yesterday, we learned that zero is the identity function in addition. Think about what happens when you *add* zero to a number. It stays the same. Today, we will learn about the identity function in multiplication. What do you think will happen when we *multiply* a number by the identity function?

- 5. Provide effective models of the performance you want the students to learn.** When students lack prior knowledge, they may not know what correct use of the information looks like. For example, we would not expect someone to learn how to play a musical instrument if they had never heard someone else play it. Yet, teachers frequently ask their students to perform new, complex tasks with few, if any, models of correct performance. When students can see the steps they need to follow, they can match their own performance to the ideal version and monitor their own thinking during the learning process. Your instruction should provide multiple examples of the target skill or information. These examples should be sequenced and juxtaposed, so that the student can focus on the most salient features of what it is to be learned.
- 6. Mark the critical features of discrepancies between the student's performance and the "correct" performance.** When your feedback to students is specific and focuses directly on errors or misconception, the students can zero in on that aspect of the task. Global "atta-boy" feedback provides little support for the learning process.
- 7. Incorporate elaboration tactics into your instruction.** These tactics prompt students to think about new and previously learned information at the same time. Prompt students to paraphrase or summarize what they have learned in their own words. Provide students with structured study guides or note-taking supports that prompt simultaneous attention to old and new information. For example, students learning how to compute the area of a square might be prompted on a study guide to tell how the computation of area is similar to the computation of perimeter (assuming computation of perimeter is prior knowledge).
- 8. Provide adequate opportunities for guided practice before a student is required to use a skill or information independently.** During guided practice, the learner uses the skill or information under close supervision, and the teacher provides immediate feedback to correct errors and support correct performance. Generally, students should be about 80% accurate under guided practice before they are required to perform independently.