Guided Instruction by Doug Fisher and Nancy Frey

Chapter 1. Scaffolds for Learning: The Key to Guided Instruction

The underlying idea for learning scaffolds is relatively old. Most people trace the concept to Lev Vygotsky's (1978) idea of the "zone of proximal development." Vygotsky believed that a learner's developmental level consisted of two parts: the "actual developmental level" and the "potential developmental level." The zone of proximal development, then, is "the distance between the actual developmental level as determined by independent problem solving and the level of potential development as determined through problem solving under adult guidance, or in collaboration with more capable peers" (p. 86). In Vygotsky's words, the zone of proximal development "awakens a variety of internal developmental processes that are able to operate only when the child is interacting with people in his environment" (p. 90).

The zone of proximal development can also be described as the difference between what a learner can do independently and what can be accomplished with the help of a "more knowledgeable other." This concept is critical for understanding how to scaffold learning. The more knowledgeable other, who can be an adult or a peer, shares knowledge with the learner to bridge the gap between what is known and what is not known. When the learner has expanded her knowledge, the actual developmental level has been increased and the zone of proximal development has shifted upward. In other words, the zone of proximal development is ever changing as the learner validates and extends knowledge. This process is what led Vygotsky to write: "Through others, we become ourselves" (Rieber, 1998, p. 170).

But Vygotsky did not use the term *scaffold* or *scaffolding*. The term *scaffold*, as applied to learning situations, comes from Wood, Bruner, and Ross (1976), who define it as a process "that enables a child or novice to solve a task or achieve a goal that would be beyond his unassisted efforts" (p. 90). As they note, scaffolds require the adult's "controlling those elements of the task that are initially beyond the learner's capability, thus permitting him to concentrate upon and complete only those elements that are within his range of competence" (p. 90). For example, in teaching a child to ride a bike, the training wheels serve as one scaffold. The adult running alongside the bike serves as another. In other words, the adult handles the harder parts temporarily, while allowing the child to try out the easier parts.

Like scaffolds that hold a building in place as it's constructed, "scaffolding is actually a bridge used to build upon what students already know to arrive at something they do not know. If scaffolding is properly administered, it will act as an enabler, not as a disabler" (Benson, 1997, p. 126). According to Greenfield (1999),

The scaffold, as it is known in building construction, has five characteristics: it provides a support; it functions as a tool; it extends the range of the worker; it allows a worker to accomplish a task not otherwise possible; and it is used to selectively aid the worker where needed. (p. 118)

Dixon, Carnine, and Kameenui (1993) remind us that effective scaffolds must be "gradually dismantled" in order to remain effective (p. 100). However, if scaffolds are dismantled too quickly, learning does not occur and the learner becomes frustrated in the process.

You probably have noticed that we use the term *scaffold* as a noun rather than a verb, because a present-tense verb may imply a process that is ongoing, which places teachers and students at risk of dependency rather than independence.

Guidelines for Instructional Scaffolds

Over the decades that the field has been working to clarify instructional scaffolds, a number of general guidelines have been developed. In 1983, Applebee and Langer identified five features necessary to scaffold students' understanding. As you consider each of these, notice how much they have in common with differentiated instruction and Understanding by Design (Tomlinson & McTighe, 2006):

- **Intentionality:** The task has a clear overall purpose driving any separate activity that may contribute to the whole.
- **Appropriateness:** Instructional tasks pose problems that can be solved with help but which students could not successfully complete on their own.
- **Structure:** Modeling and questioning activities are structured around a model of appropriate approaches to the task and lead to a natural sequence of thought and language.
- **Collaboration:** The teacher's response to student work recasts and expands upon the students' efforts without rejecting what they have accomplished on their own. The teacher's primary role is collaborative rather than evaluative.

. **Internalization:** External scaffolding for the activity is gradually withdrawn as the patterns are internalized by the students. (Applebee & Langer, 1983 as cited in Zaho & Orey, 1999, p. 6)

These five guidelines, although useful, could be a description of good teaching in general. Of course, having these guidelines in mind can help us as we plan instruction for students and pay attention to how they respond to that instruction.

In 1997, Hogan and Pressley reviewed and summarized the professional literature and identified eight essential elements of scaffolded instruction. Although the elements are not presented in any particular order, teachers can use them as general guidelines in instructional planning and implementation (Larkin, 2002):

Pre-engage the student and the curriculum. The teacher considers curriculum goals and the students' needs to select appropriate tasks.

Establish a shared goal. The students may become more motivated and invested in the learning process when the teacher works with each student to plan instructional goals.

Actively diagnose students' needs and understandings. The teacher must be knowledgeable of content and sensitive to the students (e.g., aware of the students' background knowledge and misconceptions) to determine if they are making progress.

Provide tailored assistance. This may include cueing or prompting, questioning, modeling, telling, or discussing. The teacher uses these techniques as warranted and adjusts them to meet the students' needs.

Maintain pursuit of the goal. The teacher can ask questions and request clarification as well as offer praise and encouragement to help students remain focused on their goals.

Give feedback. To help students learn to monitor their own progress, the teacher can summarize current progress and explicitly note behaviors that contribute to each student's success.

Control for frustration and risk. The teacher can create an environment in which the students feel free to take risks with learning by encouraging them to try alternatives.

Assist internalization, independence, and generalization to other contexts. This means that the teacher helps the students to be less dependent on the teacher's extrinsic signals to begin or complete a task and also provides the opportunity to practice the task in a variety of contexts.

Taking Action with Scaffolds
Although scaffolds can result in higher levels of student achievement, providing them is a very demanding form of instruction (Pressley, Hogan, Wharton-McDonald, Mistretta, & Ettenberger, 1996). Lipscomb, Swanson, and West (2004) identify a number of specific challenges that must be addressed if teachers are to successfully scaffold students' learning. In addition to dealing with the time-consuming nature of scaffolds, they note that teachers using them have to address the following:

- Potential for misjudging the zone of proximal development, because success hinges on identifying the area that is just beyond but not too far beyond students' abilities
- Need for appropriate modeling of the desired behaviors, strategies, or activities, because if the teacher has not fully considered the individual student's needs, predilections, interests, and abilities, the scaffolds will not help
- Need to give up control as fading occurs, because scaffolds are not intended to be permanent
- Lack of specific examples and tips in teacher's editions of textbooks

These challenges can be overcome. Just listen in as Ms. Conroy interacts with her class. They have been examining cell structure, starting with building background knowledge from the website "How Stuff Works" (http://science.howstuffworks.com/cellular-microscopic-biology/cell.htm). She shows them the video about blood cells from the website and shares her thinking aloud with them. As part of her modeling, she makes connections between the information about red blood cells and the plant and animal cells they have already studied. She also asks herself questions and records these questions for later investigation. Following her modeling, Ms. Conroy uses whole-class guided instruction to determine students' level of understanding and readiness for the lab. She starts by asking them to draw a bacterial cell of their choice and to label the internal structures accordingly. They take out their dry-erase boards and get to work. Bradley chooses to draw the *E. coli* bacterium and has labeled the cell membrane, cytoplasm, flagella, DNA, and mitochondria. Noticing his error (bacteria do not have mitochondria), Ms. Conroy reviews the work of a few other students to see if they have added structures that do not belong. Like several other students, Chelsea has incorrectly included Golgi bodies in her *Streptococcus pneumoniae* cell.

Ms. Conroy interrupts the class to say, "Remember, these are bacteria. They're more basic than human cells. Check your work." Several students look at their dry-erase boards and remove incorrect structures. Bradley does not, so Ms. Conroy says to him, "Think about each structure you've labeled and if it is appropriate for a bacterial cell." Bradley doesn't change anything on his board, so Ms. Conroy says, "I know that *E. coli*, as a bacteria, has a membrane. That's a common feature, as cells need a structure to contain their contents. And cells carry DNA. Well done. Ah, yes, and you have the flagella, a telltale sign of bacteria. Not all bacteria have them, but they're pretty common. What about the other structures you've labeled?"

At this point, Bradley recognizes his error and erases *mitochondria*. While doing so, he says to Ms. Conroy, "You never just tell us the answer; you make us think for ourselves."

And there it is—the interaction that changed Bradley's understanding of cellular structure. Of course, it won't always happen this fast. But when we're careful and we pay attention to students and their developing understanding, saying or doing the just-right thing will ensure that *they* do the cognitive work, not the teacher. After all, we've completed our K–12 schooling; it's time for our students to do so.