Scaffolding

Scaffolding is a process where a more capable person, such as a teacher, supports learners in a task that they cannot do alone. As students become more capable, the teacher withdraws this assistance gradually, and students complete more and more of the task by themselves. Scaffolding gives students more control over their learning, because they are the ones completing the steps. Students have this control even at the beginning when the teacher provides the most support.

To apply scaffolding, I will break each task into subtasks, or steps. I will then lay a foundation of information that my students can use to complete the first step of the task. Each time the students complete a step, I will lay another foundation until they complete the task.

If I were teaching students to find lengths using right triangles, I would incorporate an interesting, real-life scenario into a project that required students to calculate lengths using right triangles. One example involves my students in a summer landscaping job. If they complete the project properly, they will earn the money they need to go on a class trip the next year. My scenario begins with a neighbor who offers to pay a student to plant a tree in his back yard. The main stipulation is that the tree must not block his view of the mountains when it is full grown. The neighbor must be able to see over the top of the tree when he sits on his back patio. The angle from his eyes to the mountains, with respect to the horizontal, is 30 degrees. The distance from the ground to his eyes when he is seated is 4 feet. The tree he wants planted will grow to be 30 feet tall. The distance from his patio to the end of his yard is 100 feet. How far away does the student need to plant the tree to make sure the neighbor can see over the top when he sits on his back patio? Is the neighbor's yard long enough for a 30 foot tree?

Before students tackle this problem, I will show them how to break it into subtasks. This is the first and most important foundation I will lay for them. Appropriate and logical subtasks serve as a guide for completing a problem. Without this guide, students could easily get off track. The first task is to understand the problem: what do we know and what do we need to find out. The second task is to plan how we are going to solve the problem while taking into consideration that there may be more than one solution. A diagram will help students visualize various scenarios. The third task is to solve the problem. If the first solution does not work, students can try one of the other solutions they listed in part two. The fourth task is to look back at the problem and make sure all of the questions were answered and in the proper format. If so, students can proceed to measure and to dig a hole for the tree or suggest that the neighbor select a smaller tree to meet his stipulations.

I will promote direction maintenance by offering a final reward to students who maintain interest and stay on track until they complete the project. The final reward in the story problem is to get paid and

to go on the class trip. My final reward will be a simulated class trip such as a beach day where they can wear sunglasses and bright clothing and sip fruit smoothies. I will also promote direction maintenance by motivating students to want to see the final project. I will create a scaled model where each student can plant a small, model tree. Only students who complete the project can see how their tree would look in the neighbor's yard.

Once I have students motivated to complete the project, I will lay more groundwork for them by marking critical features. As students proceed through each of the four subtasks, I will support them by helping them to recall necessary background knowledge and by providing hints or tips that are important for solving the problem. For example, I will help students to draw a diagram by pointing out that, for our purposes, a tree meets the ground at a right angle. I will also remind students of the Pythagorean Theorem and how they can apply it to find the length of an unknown side of a right triangle. I will demonstrate how to construct a diagram of a possible solution. There may be many solutions so I will encourage students to explore their own possibilities.

When this project is finished, I will assign a similar story problem for them to work through on their own. I will be available for questions. I will encourage them to model this new problem after the previous one. Eventually, students will be able to do these problems completely on their own.