Scaffolds in Three-Dimensional Science

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BACKGROUND

What is scaffolding and how does it help students?

Scaffolding is the intentional practice of implementing a student support structure designed to maximize access and depth to grade-level concepts and tasks. The purpose of a scaffold is to provide students with engaging learning experiences that build competence and confidence as they grapple productively with complex grade-level content (TNTP, 2021). Scaffolds are a means to give access to and can accelerate learning towards a skill or goal. Initially scaffolds are often highly structured, but over time they evolve based on what students need to be successful. For specific examples please see the resources below.

Why is scaffolding important to three-dimensional science instruction?

The Utah SEEd Standards are rigorous and require higher-level thinking and problem-solving as students make sense of phenomena. Scaffolding is necessary to support student sensemaking as they use all three dimensions (i.e., Science and Engineering Practices, Crosscutting Concepts, Disciplinary Core Ideas). As students are able to use the three dimensions independently, scaffolding can be removed. Furthermore, scaffolds can be changed to support students continuing their progression towards understanding, doing, and applying science at higher levels.

CLASSROOM APPLICATION

When observing a classroom in which the instruction is scaffolded, the following **student actions** should be visible:

- Students are able to easily access and use the scaffold.
- Scaffold helps students to be successful in the given task.
- Students have a choice of whether or not to use the scaffold, based on what is needed to be successful.

To support instruction that is well-scaffolded, teachers plan by considering:

1. The cognitive demands of the standard.
2. The needs and backgrounds of students (e.g., language, socio-economic, cultural, special education, content knowledge, background knowledge, assessment data).
3. The practices students will engage in and choose appropriate scaffolds.
4. How to move students towards independence by removing scaffolds.
5. Changing or adding new scaffolds to achieve higher levels of rigor.

IMPLEMENTATION RUBRIC

Basic	Emerging	Effective	Exceptional
Scaffolds are not present or have not been used to help students.	Scaffolds are present and easy to use. Students use scaffolds with varying degrees of success.	Scaffolds are selected based on student needs and support the success of all students.	Scaffolds are removed as students move towards independence. They are also adapted or changed to move students towards higher levels of rigor.

RESOURCES

Wonder of Science graphic organizers for SEPs and CCCs
Scaffolding student discourse - #48
Ambitious Science Teaching Scaffolds for Talk and Writing
Science specific scaffolds