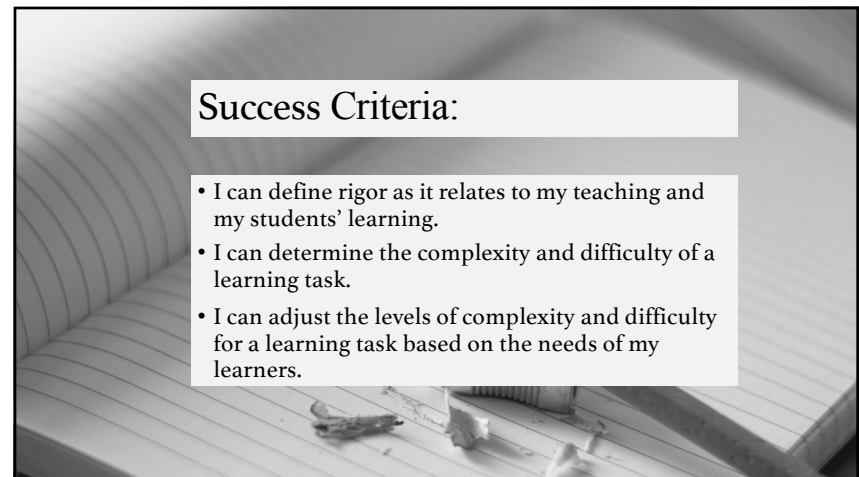
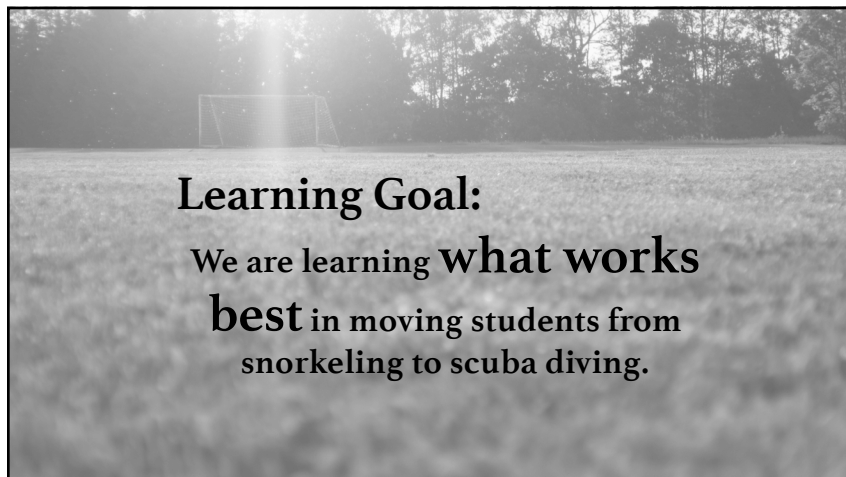
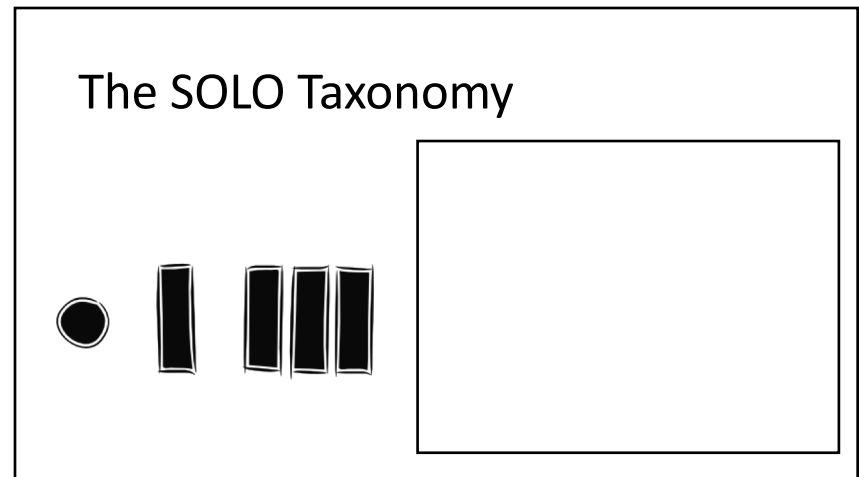
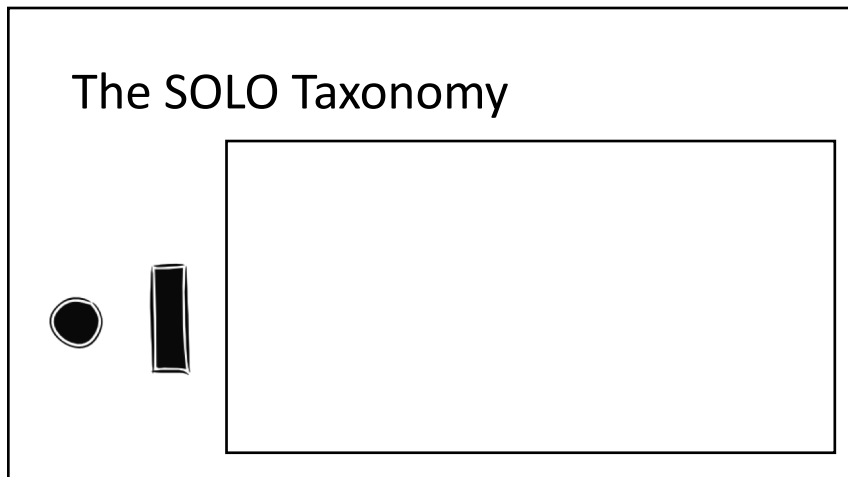
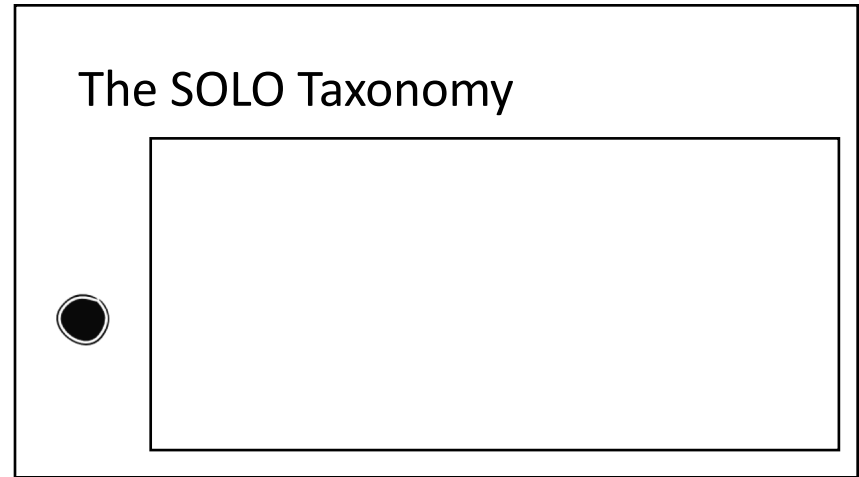
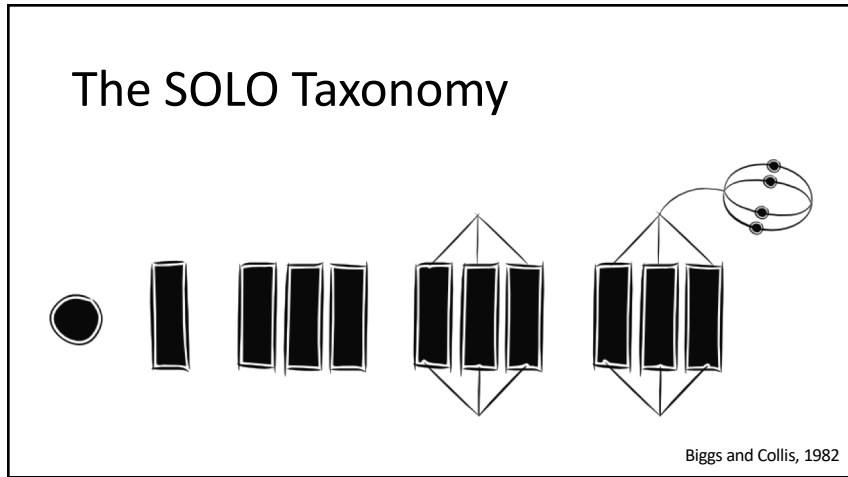


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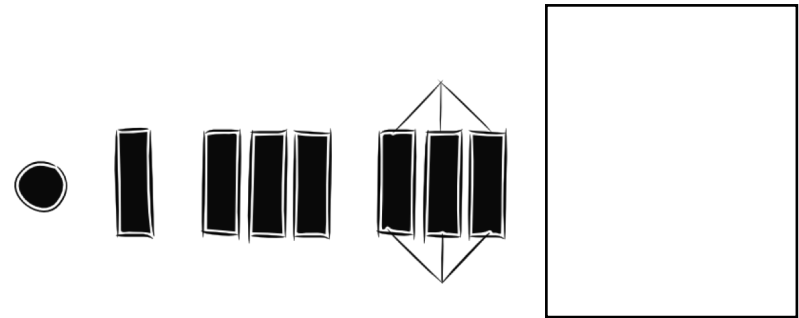




## Surface Learning

1. Surface Learning is the initial learning of concepts and skills.
2. That doesn't mean we're not working on complex problems; it's just that the depth of thought isn't there, yet.
3. This learning is the initial level that begins with developing conceptual understanding.
4. Surface learning is not shallow learning. It should not be mistaken for engaging in procedures that have no grounding in conceptual understanding.
5. Through the consolidation of surface learning, students begin to retrieve information efficiently and make room for more complex problem solving.

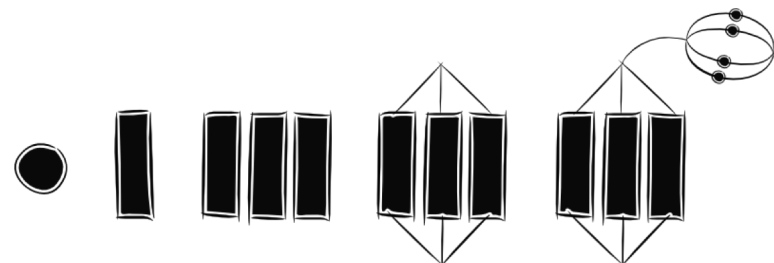
## The SOLO Taxonomy

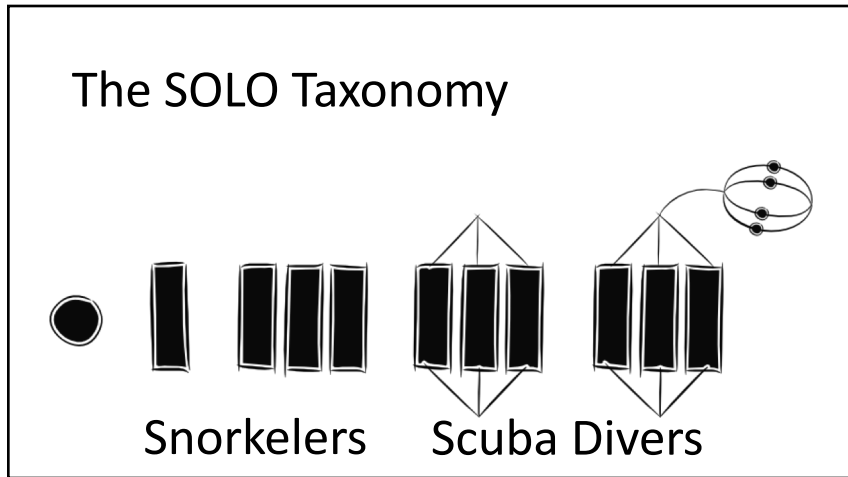
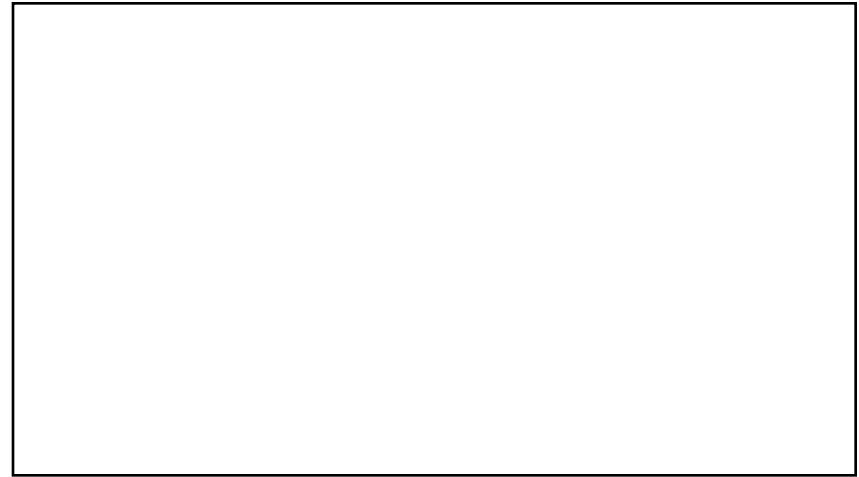
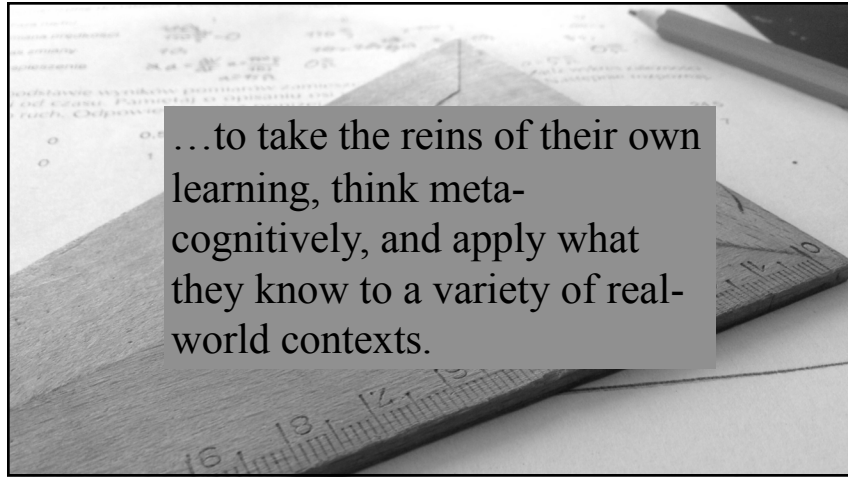


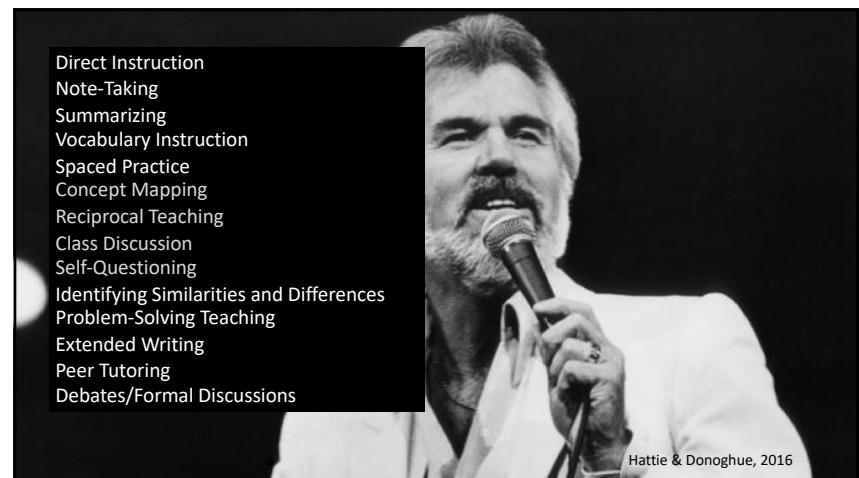
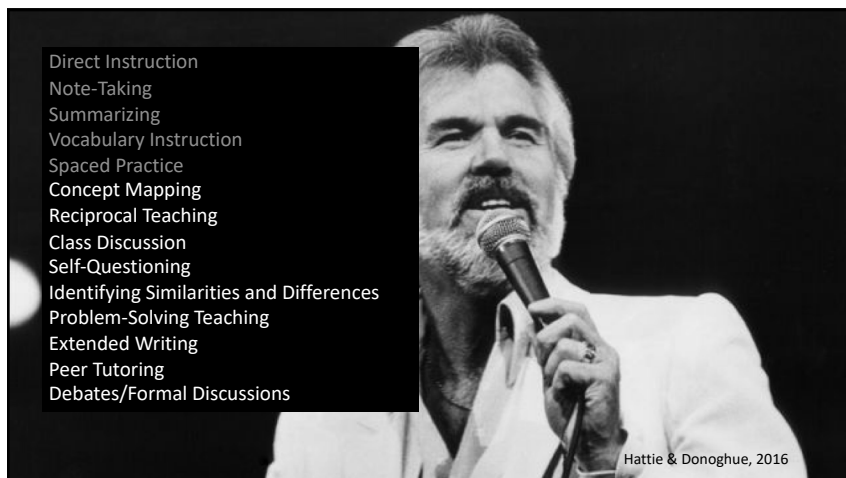
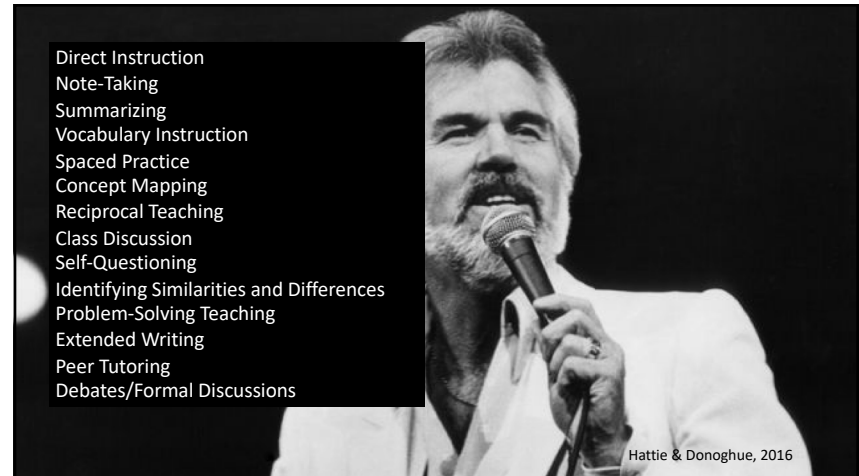
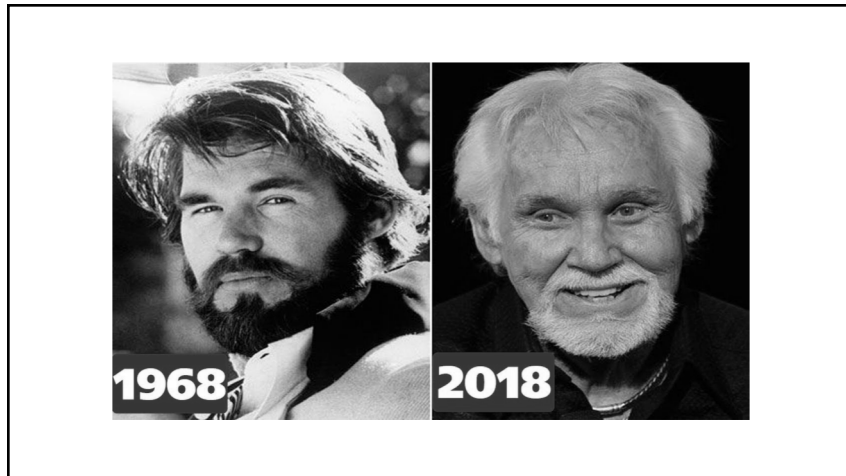
## Deep Learning

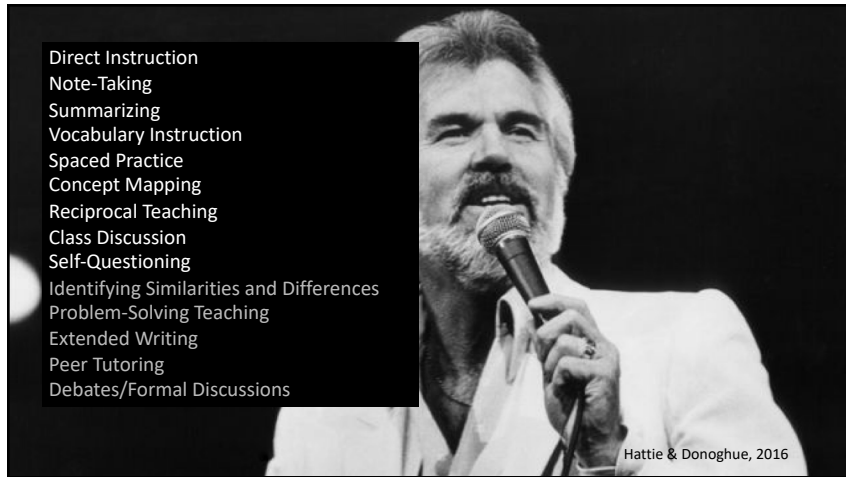
1. Students move to deep learning when they plan, investigate, and elaborate on their conceptual understandings, and then begin to make generalizations.
2. This is not about rote learning of rules or procedures.
3. Deep learning is about students taking the surface knowledge (which includes conceptual understanding) and, through the intentional instruction designed by the teacher, seeing how their conceptual understanding links to more efficient and flexible ways of thinking about the concept.
4. Often, this is accomplished when students work collaboratively with their peers, use academic language, and interact in richer ways with ideas.

## The SOLO Taxonomy



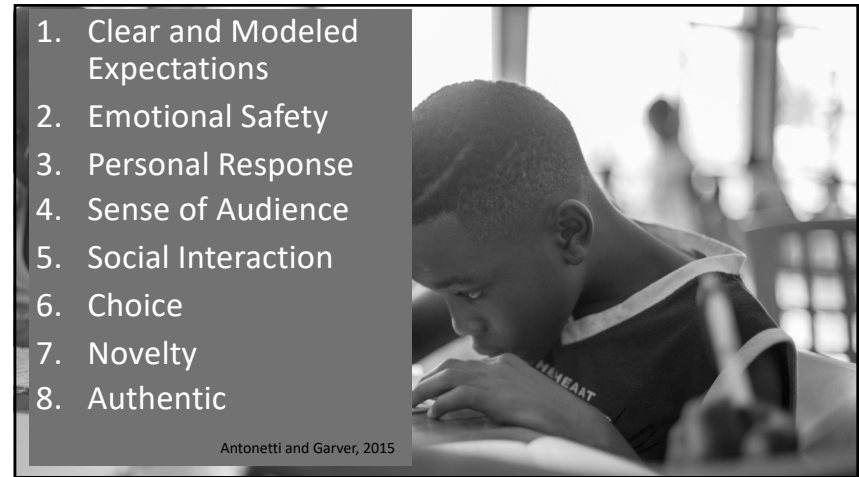






- Direct Instruction
- Note-Taking
- Summarizing
- Vocabulary Instruction
- Spaced Practice
- Concept Mapping
- Reciprocal Teaching
- Class Discussion
- Self-Questioning
- Identifying Similarities and Differences
- Problem-Solving Teaching
- Extended Writing
- Peer Tutoring
- Debates/Formal Discussions

Hattie & Donoghue, 2016

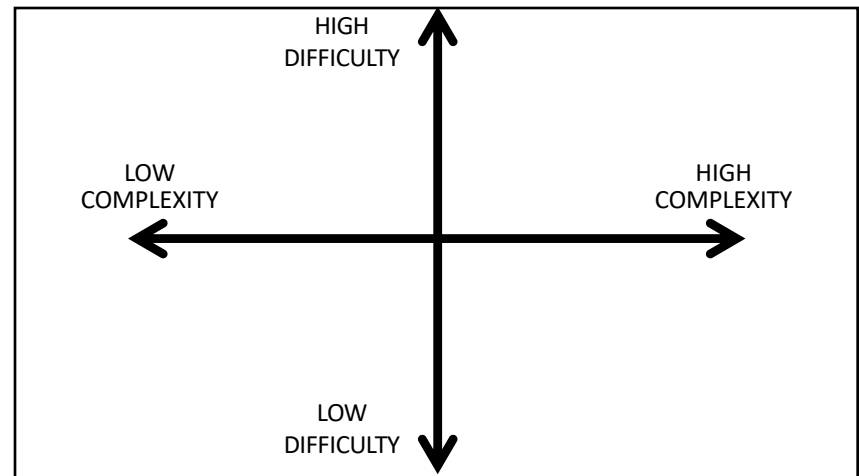


1. Clear and Modeled Expectations
2. Emotional Safety
3. Personal Response
4. Sense of Audience
5. Social Interaction
6. Choice
7. Novelty
8. Authentic

Antonetti and Garver, 2015

Option #1	Option #2
<p>Order the following fractions by first finding a common denominator.</p> <p style="text-align: center;"> <math>\frac{19}{15}</math>    <math>\frac{11}{15}</math>  <math>\frac{7}{12}</math>    <math>\frac{41}{30}</math>  <math>\frac{5}{6}</math>    <math>\frac{1}{2}</math> </p>	<ol style="list-style-type: none"> <li>1. Predict where you think <math>\frac{11}{8}</math> should be on the below number line.</li> <li>2. Explain why you placed <math>\frac{11}{8}</math> where you did.</li> <li>3. Draw and label a few other points to help you explain your reasoning.</li> </ol> <p style="text-align: center;">←————→</p>

Hattie, Fisher, and Frey, 2017

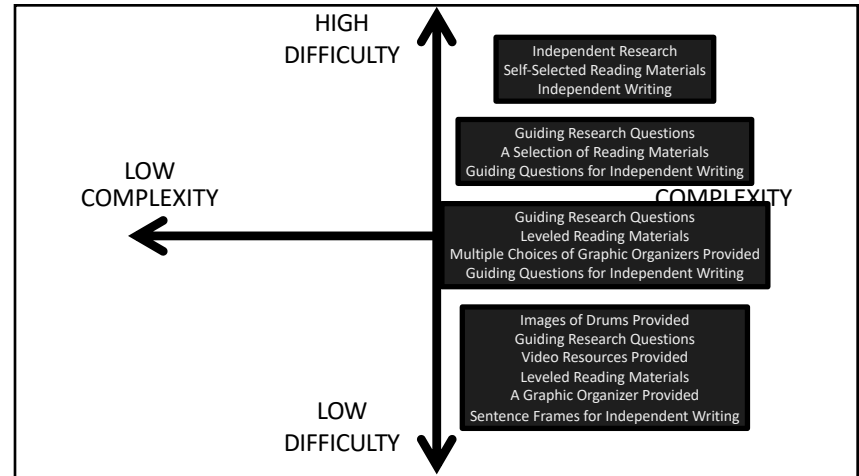


## Glasgow's Museum of Music

### Challenging Task

Cooperative Learning Task: You and your team will create two different drums using different materials for each drum. Please be sure that the drums make different sounds. When finished, all groups will play their drums for the class and explain what materials were used.

Individual Writing Prompt: Tell me what you learned about what causes a vibration.

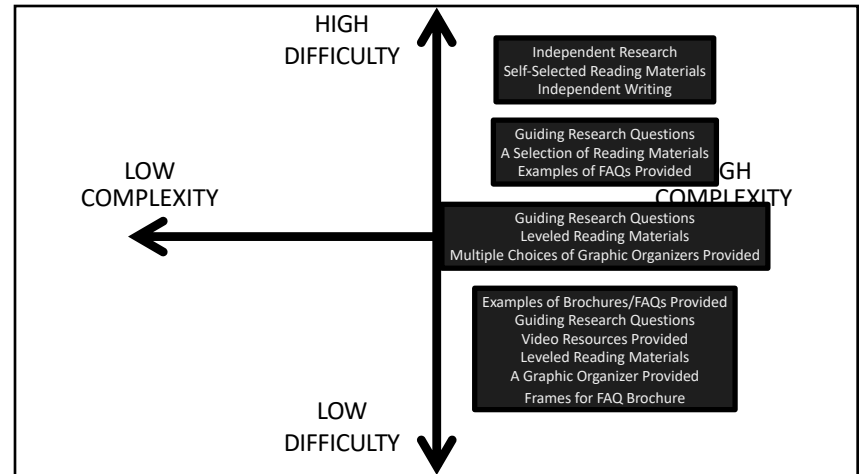


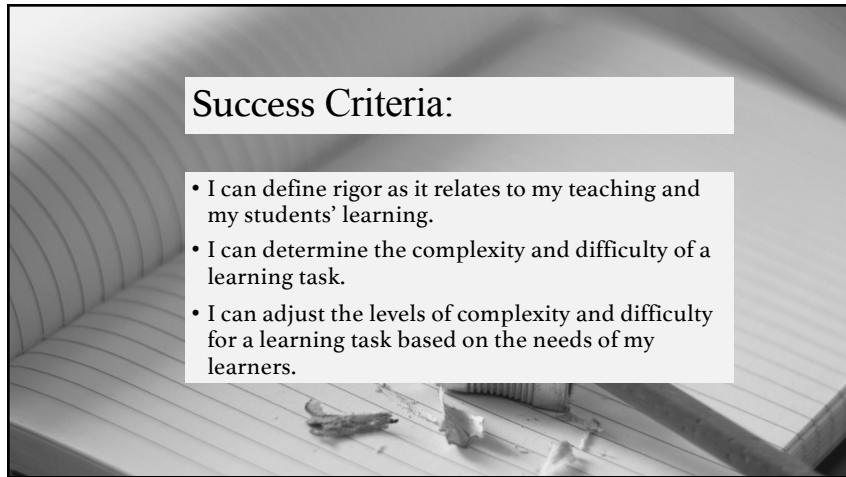
## Park City's Nature Center

### Challenging Task

Cooperative Learning Task: Make a brochure for your nature center. This brochure will be sent to schools to let them know about field trips to your nature center. This brochure should tell the schools what the students will learn, see and do at the nature center. Give an example of what they will learn about adaptations.

Individual Writing Prompt: Create a list of 5 - 7 questions that people might have about animal adaptations. These questions are sometimes called "Frequently Asked Questions or FAQ's!" After you create the questions, you will need to research the answers. Then, you will create a flyer that has the questions and answers on it.





Success Criteria:

- I can define rigor as it relates to my teaching and my students' learning.
- I can determine the complexity and difficulty of a learning task.
- I can adjust the levels of complexity and difficulty for a learning task based on the needs of my learners.

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