

Communicating Ocean Sciences to Informal Audiences

Session 3: How Learning Happens



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HALL OF SCIENCE
UNIVERSITY OF CALIFORNIA, BERKELEY



CENTERS FOR OCEAN SCIENCES
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Quick Write

The public often has misconceptions around these ideas. What are some of the things you might say to someone in a discussion about these ideas. (Your answer should provide enough details that we can tell you know what you are talking about.)

- **CORRECT:** Accepted scientific ideas are reliable because they have been subjected to rigorous testing, but as new evidence is acquired and new perspectives emerge these ideas can be revised.
- **MISCONCEPTION:** Science can only disprove ideas.

Think-Pair-Share

- How do you think learning happens?
- What are your ideas about what facilitates and supports learning?

Foundational Ideas on Learning

- Learning is ***an active process*** to construct understanding.
- Learning ***builds on prior knowledge***.
- Learning occurs ***in a complex social environment*** and is a social activity.
- Learning should be ***situated in an authentic context***.
- Learning is affected by ***motivation and cognitive engagement***.

Phases of the Moon



Think-Pair-Share

- Think about the times you looked at the Moon.
 - What did it look like?
 - Did you see it last night?
 - What shape was it?
- The different shapes and look of the moon is referred to as the phases of the moon.
 - What do you think causes the phases of the Moon?

Activity Debrief

- How was prior knowledge accessed and connected in the activity?
- What did you do to make sense of what causes the phases of the moon?

Strategies for Learning & Teaching

- Hands on, manipulation of the model
- Listening to & talking with peers
- Thinking on your own
- Listening & talking with the instructor in the whole group
- Overhearing other peers
- Discussing and testing out ideas that agree or disagree with your own understanding
- Asking new questions
- Explaining your ideas to peers or instructor
- Accessing and making connections to prior knowledge & experiences

Group Discussion

- What makes experiences important for learning?
- What makes social interactions important for learning?
- What affect did your prior knowledge have on your learning experiences?

Synthesis of Discussion

- People construct understanding of complex ideas over a long period of time.
- Learners don't acquire concepts simply by having someone tell them the content, or even by doing hands-on activities.
- Learners must encounter multiple learning experiences that encourage them to
 - question their assumptions;
 - engage in discussion about their ideas;
 - Recall, make connections to and build on their prior knowledge;
 - apply their new understandings in different contexts;
 - want to learn.

BREAK



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Research Discussion

- Small Groups of 4.
- Each person in group assigned a section, & is responsible for leading small group discussion on the ideas in that section.
- Discuss the following questions:
 - What are your experiences, impressions, and/or opinion of the ideas?
 - How are these ideas useful for thinking about learning in informal environments?
 - How can you use these ideas to inform your teaching?



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1. Find a Partner

2. Activity



Reflection

- What was the most interesting or surprising thing you learned today?
- How did something you learned today influence how you might teach your COSIA activity on the museum floor?
- What is your muddiest point?

Homework

- Reading: Michaels (Ready, Set, Science): Ch. 3, Foundational knowledge & conceptual change
- COSIA activity at Lawrence Hall of Science: Do your selected COSIA activity on the museum floor once with your partner between 2/7 and 2/12.
- Activity Development: Confirm your science concept. Science concept paper due February 27.