Communicating Ocean Sciences to Informal Audiences

Session 3: How Learning Happens
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.
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?
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.