Communicating Ocean Sciences to Informal Audiences

Session 6: Conversations & Questions
Quick Write

• What is it that makes conversations important for learning?
• Think about a time when you felt you were engaged in a learning conversation in a class or informal environment.
  – What were the characteristics of the conversation that made you feel it was a real learning opportunity? (e.g., who was talking, what kinds of questions were used, and what kind of responses were elicited?)
Research Discussion

• Each person in your group is responsible for carefully reading one card.

• Take turns explaining the information from your card to your small group. Share your thoughts about your card. Lead a brief discussion about your card, including:
  – Anything people find confusing about the topic on the card
  – Questions or issues about the topic on the card
  – How classroom teaching might be structured to take that piece of information into account
Role Plays

• Who is asking questions?
• What is the question prompting from the other person(s)?
• What is the “pattern” in the conversation?
Learning is making connections

• Learning is **an active process** of engaging and manipulating objects, experiences, and conversations in order to construct understanding of the world (Dewey, 1938; Piaget, 1964; Vygotsky, 1986).

• Learning **builds on prior knowledge**, and involves enriching, building on, and changing existing understanding (Alexander, 1996, p. 89).
Summary of Ideas

• The opportunity for learners to:
  1. express what they think,
  2. explain the reasoning underlying that thinking, and
  3. make connections between their ideas verbally with peers and experts is important for learning.
What research says about questions

• The opportunity to generate questions places the learner in an active, initiating role in the learning process (Palinscar & Brown, 1984), & situates them as producers of knowledge not just consumers.

• Asking questions in discussions (whole or small group) develops a good habit of mind that is practiced in the social space and can become part of individual thought (Chi et al., 2007; Scott, 1998).

• True dialogue occurs when teachers ask questions to which they do not presume to already know the correct answer (Lemke 1990, p. 55).

• 75% of the questions teachers ask are of a factual or literal nature. Teachers ask an average of 70 literal or factual questions in a 30-minute lesson (Bromley, 1992).
Revisiting the skits: Types of Questions

• How would you categorize the questions asked in the skits?
• What did you notice was the effect of the types of questions?
Types of Questions

Broad
• A statement or question that anticipates a variety of acceptable and generally unpredictable responses

Focused
• A statement or question that anticipates a particular, predictable response planned by the educator.
Types of Questions

**Broad**
- What’s your theory so far?
- What do you think?
- Why did they make it like that?
- What does it look like to you?
- Tell me more about your idea.

**Focused**
- Do you want to touch it?
- Do you think it’s an animal?
- What’s that part called?
- How many arms do you see?
- What is that?
Small Group Discussion

• What do each type of question prompt from the other person(s) in the conversation?
• What are advantages & disadvantages of broad & focused questions?
• Provide examples for when it would be effective to use each type of question.
Be purposeful about asking questions

• Stimulate learners’ thinking
• Generate feedback for them about learners’ understanding
• Evaluate what learners know
• Elicit what learners think and encourage learners to extend their ideas
• Scaffold learner thinking as they help learners build knowledge
Discussion Map

• Ask a broad question
• Listen to responses and thinking
• Challenge learners to provide evidence or explanations
• Encourage alternative opinions or ideas
• Connect back to the main topic
• Help to organize and summarize the ideas
Discussion Map

• **Ask a broad question:**
  – How would you describe the interaction between the educator and the visitors in the first skit?

• **Listen to response and thinking.**

• **Challenge learners to provide for evidence or explanation:**
  – What about what the educator said or did makes you think that?
  – Please explain what you mean.
  – What is your evidence for that comment?

• **Encourage alternative opinions or ideas:**
  – Does anybody have a different idea or viewpoint?
  – Does everyone agree?

• **Connect back to the main topic**
  – How do you think the educator used questions to facilitate the conversation?
  – If this educator was asked why she/he used questions in her/his interactions with visitors, what do you think they would say?
**Homework**

- **Reading**
  - *Marine Biology*
    - Ch 14, Coral Reefs, pp. 307-331.
  - *Surrounded by science*

- **Activity Development**
  - *Activity Design Starter & Science Content* Paper due next session

- **Midterm exam next session**