

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*
 - Ch 5, Interest and Motivation: Steps toward Building a Science Identity, pp. 81-102.
- Activity Development
 - *Activity Design Starter & Science Content Paper* due next session
- Midterm exam next session