STUDENT “PREDICTING” IN SCIENCE TEACHING
(H. Weller, EDW 472/SMS 491, Spring 2007)

STUDENTS PREDICTING
- Describing what they think will happen in an upcoming demonstration, activity, or exploration.
- Explaining the reasons for their predictions.
- Helps keep the students mentally involved.
- Writing preserves the predictions: Their predictions should also be written down, if the teacher wishes to discuss them after the demonstration, activity, or exploration. Otherwise, the students may forget exactly what they predicted.

INVOLVING STUDENTS USING PREDICTION, & OTHER TECHNIQUES
“...It is important when doing a teacher demonstration that students must still be involved. You can have them assist you in the demonstration, but they must also be verbally involved. It is very important that students still have the opportunity to add their predictions, comments, questions, and observations during the demonstration” (Ebenezer & Haggerty, 1999, p. 132).

PREDICT – OBSERVE – EXPLAIN [“POE” model]
- Is a “popular type of teacher demonstration that involves students in making predictions, proposing explanations for their predictions, observing the activity, and advancing their personal ideas or theories for their observations” (Ebenezer & Haggerty, 1999, p. 132).
- This model was originally developed by Champagne, Klopfer, and Anderson (1980) to probe student understandings of real situations.
- Uncovering misconceptions: “Understandings of the concepts related to the situation are revealed by the students’ predictions. This means that deeply held beliefs about scientific concepts, principles, and natural phenomena can be uncovered more effectively than by using tests that evoke knowledge at the surface level.”

PREDICT – EXPLAIN -- OBSERVE – EXPLAIN [“PEOE” model]
(Ebenezer & Haggerty, 1999, pp. 133-134)
1. Introduce the phenomenon, briefly stating the specific context and conditions. Ask a general question: “What do you think will happen?” [“If I (or you) put this metal block and plastic block into the tub of tap water at room temperature, what do you think will happen?”]

2. Have students predict (P) what will happen. [“Both will sink.” “The metal will sink; the plastic will float.” “Both will float.”]
3. **Ask students to explain (E) the reasons for their predictions.** [“The plastic cylinder has air in it.” “There is a buoyant effect on both.”]

4. **Conduct the activity. Have the students record their observations (O) as the event occurs.** [The metal block floats; the plastic block sinks.]

5. **Have students explain (E) their reasons for what happened.** [“There is air in the metal block.” “There is metal inside the plastic cylinder.”]

6. **Ask students to give other examples of similar occurrences.** “This will bridge their prior knowledge to the new material being learned. They will relate what they have experienced outside the classroom to the understanding they have developed in the classroom” (p. 134). [“Ships float and they are made of metal.”]

7. **Ask students to make comparisons.** Have the students make comparisons between objects that float and sink, according to their physical characteristics, such as mass, weight, shape, and volume. It is often helpful to put these comparisons into a chart at the end of the session.

**REFERENCES**
