Hands-On Activity

Two Liquids

Objective:
Students will observe four clear, colorless liquids using their senses of sight and taste. They will use their observations to conclude that a solution is composed of a solute dissolved in a solvent.

Estimated time to complete: 10 minutes

Materials:

For each class of 25 students:

- 50 disposable paper cups (2 or 3 oz)
- two identical clear plastic pitchers (1 L)
- water
- salt water (2 teaspoons per liter)

Procedure:
Place each liquid in a different pitcher. Both liquids should be clear and colorless. Arrange the pitchers at a central location. Instruct students to pour themselves a small sample of each liquid and return to their seats. Ask students to write observations of each liquid in their notebooks.

Emphasize to students that they are never to taste anything in the chemistry classroom or lab without specific directions from the teacher to do so. Explain that they are being allowed to taste this solution only because you mixed it yourself and know it is safe. Then ask students to taste each liquid and record pertinent observations in their notebooks.

Note: If time allows, you might want to provide salt solutions at two additional concentrations and have students compare their observations of these to the first two solutions. This can be tied into the discussion of concentration that comes later in the lesson.

Ask students to think about the following questions:

- *How are the liquids similar?*
- *How are the liquids different?*
- *Based on your past experiences, can you identify each liquid?*
- *If you can identify either or both liquids, name each and describe each.*
- *How does this activity help you think about the composition of a solution?*

Inquiry and Nature of Science Skills in this Activity:

- Gather Data
  - Use senses to observe:
    - Seeing (color, shape, size, texture, motion)
    - Smelling (flavor, odor)
  - Use the appropriate format to record data:
    - Writing (journal, worksheet, electronic text)
- Interpret Data
  - Sort and classify using scientific reasoning by:
    - Sorting objects, substances and organisms by characteristic
- Evaluate Evidence
  - Draw and support a conclusion by:
    - Formulating scientific explanations/arguments
- Scientific Investigation
  - Scientific Investigation:
    - Scientific investigation results in things we know and things we don't know.
    - Scientific investigation leads to more questions.
    - Different explanations can be given for the same evidence, and it is not always possible to tell which one is correct without further inquiry.
    - Scientific investigations lead to the development of scientific explanations.