

Title - **Layer the Liquids**

By - Jennifer Dalke

Subject - Science

Grade Level - 4-6

**Note - This lesson plan uses some handout(s) that are not available, however, much of the lesson plan can be completed without the handout(s).

Skills Used

Observing, Inferring, Predicting, Experimenting, Investigating

Key Vocabulary

Volume, Density

Lesson Time

30 minutes

Illinois State Goals

11.A.2b, 11.A.2d, 11.A.2e, 12.C.2b, 13.A.2c

Conceptual Objective

Students will be able to recognize that liquids of the same volume can have different densities and, thus, can weigh more than others.

Process Objective

Students will perform an experiment using water, vegetable oil, and maple syrup to determine which liquids have the higher densities. They will follow directions on a worksheet while the teacher directs the experiment, and they will write their own observations and answers on the worksheets.

Materials

- * water
- * food coloring
- * vegetable oil
- * maple syrup
- * Styrofoam cups
- * clear plastic cups
- * toothpicks
- * handouts

Procedure

1. Show the class an orange and an orange balloon, each of the same size. Discuss the properties of each object: What are these objects? Are they the same color? Are they about the same size? Are there any other similarities between them? Can you think of any differences between them? Do you think that they weigh the same? Which one do you think is heavier?
2. Give the objects to a student and ask him/her if one is heavier.
3. Discuss with students just why this is (one is heavier because it has more mass).

4. Ask the students if they think liquids of the same volume can be heavier than each other. Discuss why or why not.
5. Ask students if they have ever heard the word 'density'. Explain that liquids can have different densities just like objects can have different weights, which can make one heavier than another. Ask them if they can think of any liquids that might have a higher density than others.
6. Explain to students that they will be performing an experiment in which they will see if liquids have different densities. Pass out handouts.
7. Point out the materials in front of the children and explain that they will need to work in groups. Read through the directions on the worksheet as the children perform the activities in each question. Give children time between questions to record their observations and results.
8. After completing the worksheets, ask the children what happened. Ask them what they predicted the liquids to be.
9. Have the children pour the contents of the cup into a sink. Ask them to stack up all of the materials and throw them in the garbage. Collect handouts from the students.

Evaluation

1. How complete is the student's worksheet? Did the student perform the experiments and make good observations throughout?
2. Did the student behave appropriately during the experiment? Did he/she follow directions?

Troubleshooting

1. Students may spill the cups. Have paper towels ready and have enough supplies to replace any spilled materials.

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