

Chemistry All Around Us - Week 5

Day 2: Exploring Liquids

Teacher/Parent Background:

In science, the “stuff” that everything is made of is called matter. You can use your senses to detect matter. You can feel the shape and roughness of a rock. You can taste the juice of an orange. You can smell popcorn. You can see a crowd at a ball game. The characteristics of matter that we can observe with our senses are called properties. No two substances have exactly the same set of properties. The properties of matter can help us categorize (sort/group) matter.

Overview:

In this activity, young learners will use their senses of touch and sight to explore the various observable properties (characteristics) of different types of matter. They will then use their observations to make decisions about how to define a specific category of matter - liquids.

Related Standards:

- **Plan and carry out an investigation** to determine that matter has mass, takes up space, and is recognized by its observable properties; use the collected evidence to **develop and support an explanation**.

Key Terms:

- matter - the “stuff” that everything is made of
- properties - characteristics of a substance
- senses - touch, taste, hear, smell, see
- solid - a state of matter in which the substance has a definite shape and a definite volume
- liquid - a state of matter in which the substance has a definite volume but not a definite shape. It takes the shape of its container.

Materials List:

- A variety of different types of matter from Day 1:
 - Solids - crayons, books, pencils, pebbles, toys, balls, etc.
 - Liquids - water, shampoo, hand soap, milk, etc.
 - Gases - filled balloon or sandwich bag, football, basketball, etc.

Activity Description:

1. Revisit the types of matter that the student sorted during Day 1.
 - Yesterday, you sorted these different types of matter (objects) into groups or categories. How did you decide which objects to group together?
 - We discussed that matter which has a definite shape (round, square, etc.) is called a solid. Which objects in your sort are solids?
 - We also discovered that some types of matter are not solid. Which objects are not solid?
2. Remind the student that one of the other categories that scientists use to describe matter is liquids. Prompt the student to begin exploring his/her remaining objects and categories to determine which ones might include liquids.
 - Note: Do not define the term “liquid” at this time. Allow the student to formulate his/her own ideas. Also, the student should not re-sort any items at this time.
3. Once the student has identified which matter (objects) he/she thinks are liquids, discuss his/her reasoning:
 - Why do you think these objects are liquids?
 - How are they different from solids?
 - How are they the same as solids?

Closure:

Explain that matter that is sorted in the liquid category does not have its own shape (meaning it changes its shape to match the container it is placed in) and takes up a set amount of space (volume). Discuss with the student:

- If a liquid does not have its own shape but takes the shape of the container it is in, which category in your sort contains liquids? Why do you think so?
- Are their objects in other categories that might also be liquids? Why or why not?
- Would you like to change how you sorted any objects? Why or why not?
 - Prompt student to make any changes in his/her sort at this time.

Extension:

Provide the student with types of matter that are considered liquids but have different densities such as water, oil, milk, syrup, hand soap and honey. Prompt the student to explore pouring each type of liquid into various containers and observing how, despite the different flow rates, each type of matter eventually takes the shape of the container in which it is poured. This is a good reminder that matter which is in the same category, such as liquid, does not have to have

completely identical, observable properties. Liquids can have different densities, colors, etc.

The student can also explore how, despite pouring the same amount of liquid into each container, sometimes it appears that there is more or less liquid depending on the shape of the container. This is a great opportunity to practice liquid measurement.