Lesson Plan # 2

203 Science 7th Grade

Unit: Matter

Big Idea: The particles in solids, liquids and gases are always in motion.

Sub Concept: Matter is constantly undergoing change.

Literacy Strategies: Anticipatory Guide Free Write, Questions.

Lesson: States of Matter.

Objectives: Students will be able to:

Observe the differences of the 3 states of matter here on earth.

Compare the characteristics of a solid, a gas and a liquid.

Idaho State Standards:

7.S.1.6.3 Evaluate data in order to form conclusions. (634.01.d)

7.S.1.3.2 Recognize changes that occur within systems. (633.03.b)

7.S.1.6.2 Use appropriate tools and techniques to gather and display data. (634.01c)

Materials Needed:

Markers

Beakers (1,000-mL)

Ice cubes (frozen from 500 mL of water)

Small plastic containers (for the ice)

Plastic drinking glasses (cold or add an ice cube)

Refrigerator with a freezer

Data observation sheets

Review questions

Lesson strategy: Explain to students the differences among physical states of matter depend on the attractions between the atoms or molecules and the rate of movement of the atoms or molecules. Pressure and temperature control these two factors. With this lesson students will be able to observe the characteristics of a solid. Students will change a gas to a liquid. Students will compare the characteristics of a solid, a liquid, and a gas. Lab should take about 30 minutes. Classroom questions and discussion 20 minutes.

1. Break students up into groups of 3 to 4.
2. Next have a representative come up and get a Data Observation Sheet and a 1000-mL beaker and a marker for their group.

1. Make sure that all students have put their names on Data Sheets

and are ready to go before you continue.

1. Pass out plastic containers with 500 mL of frozen water (do this the night before) in them to each group and have them mark the level of the ice while still in the container.
2. Have groups remove the ice cubes from the plastic containers then placing them in the beakers and discuss the characteristics quietly of ice as a group and record them on their Data Sheets.
3. Have groups let the ice cubes melt in the beakers and discuss the characteristics quietly as a group and record them on their Data Sheets.
4. Next have groups pour the melted ice back into their original container. Mark the level of the top of the container. Under “Other Characteristics” record whether this level is higher or lower than that of the ice.
5. Next have a representative come up and get a plastic drinking glass out of the freezer and place it in a warm area of the room. After a few minutes discuss quietly as a group and record them on Data Sheets.
6. Have each group place an ice cube in the beaker of water. Observe whether or not it floats. Record your observations on Data Sheets.
7. Next pass out questions to each group and have them discuss quietly and record their answers.
8. As a class review results, go over questions checking for understanding.
9. After all students are done have each student answer the question in a 5 sentence paragraph, “what did I learn today that is important to me?”
10. Have students clean up their lab area.

**States of Matter Anticipatory Guide**

**What do you think? Statement w/evidence What you now think after?**

|  |  |  |
| --- | --- | --- |
| Agree/Disagree | Water can be in 3 states of matter.  Evidence: | Agree/Disagree |
| Agree/Disagree | When ice melts some water is released in the form of gas.  Evidence: | Agree/Disagree |
| Agree/Disagree | Temperature affects matter.  Evidence: | Agree/Disagree |
| Agree/Disagree | Water in the solid state the particles are free to move.  Evidence: | Agree/Disagree |
| Agree/Disagree | Ice cannot float.  Evidence: | Agree/Disagree |
| Agree/Disagree | You can see water turn into a gas.  Evidence: | Agree/Disagree |
| Agree/Disagree | Melted ice takes on the shape of its container.  Evidence: | Agree/Disagree |
| Agree/Disagree | You can change a gas to a liquid.  Evidence: | Agree/Disagree |
| Agree/Disagree | This experiment was fun.  Evidence: | Agree/Disagree |

**States of Matter Data & Observations**

Names of each person in group \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

Date\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **Material** | **State of Matter** | | **Takes shape of container**  **(yes or no)** | **Other Characteristics** |
| **Ice Cubes** |  | |  | Floats: yes or no |
| **Water** |  | |  | Higher or lower in tray than ice |
| **Material** | | **Observations** | | |
| **Glass** | |  | | |
| **Beaker with ice** | |  | | |

**Questions & Conclusions:**

1. **What is solid water called?**

**Liquid water?**

**Water as a gas?**

1. **Did the ice cube sink or float in the water? Explain.**
2. **Which occupies more volume, an equal amount of water or ice? Explain.**
3. **Where did the water on the glass come from?**
4. **What are the characteristics of water as a gas?**
5. **If you changed liquid water to water vapor in a pressure cooker, what volume would water vapor occupy?**
6. **Compare the characteristics of water as a solid, a liquid and a gas.**

**Self check: Answer the following with a yes or no.**

**\_\_\_\_\_\_\_\_\_\_\_\_ Can you observe the characteristics of a solid?**

**\_\_\_\_\_\_\_\_\_\_\_\_ Can you observe a gas change to a liquid?**

**\_\_\_\_\_\_\_\_\_\_\_\_ Can you compare the characteristics of water as a solid, a liquid, and a gas?**

**\_\_\_\_\_\_\_\_\_\_\_\_ Do you have a better understanding of the states of matter?**

**\_\_\_\_\_\_\_\_\_\_\_\_ Did you enjoy doing this lab?**