Lesson Essential Question(s): How can matter be changed? How does temperature affect matter?

Standards:. 5.2.2.A.2 Identify common objects as solids, liquids, or gases.

5.2.2.B.1 Generate accurate data and organize arguments to show that not all substances respond the same way when heated or cooled, using common materials, such as shortening or candle wax.

Learning Objectives and Assessments:

SWBAT identify and describe the different states of matter: solids, liquids, and gases by identify the objects presented by the teachers as either a solid, liquid, or gases and explaining why they have classified it as a solid, liquid, or gas.

Assessment: Students will answer teacher directed questions and complete a venn diagram as a class.

SWBAT verify that things can be done to materials to change some of their physical properties (e.g. cutting, heating, freezing), by working at different stations in which they conduct different experiments to change the physical properties of matter.

Assessment: Students will complete a lab and observe a teacher-directed demonstration.

Materials:

-Glass containers or beakers
-Candle
-Construction paper
-Scissors
-Balloons and pump
-Playdough
-Water
-Ice cubes
-Portable burner
-Lighter
-Lamp
-Worksheets for after the lesson, lab reports,

Pre-lesson assignments and/or prior knowledge:
Students will have prior knowledge of what matter is and what the three different states of matter are. Students have previously worked on classifying objects as either being a liquid, solid, or gas.

Lesson Beginning: The teachers will begin by asking students what is matter? Teachers will look for answers that include that matter is anything that has weight and takes up space. Then the teachers will ask the students how do we classify matter. The teachers will look for answers that include that the three states of matter are solids, liquid, and gas. Teachers will then show the students three objects (a piece of paper, a glass of water, and air in the classroom) and ask them to classify the objects as one of the states of matter. Teachers will have a concept web to organize ideas about properties of matter and the words to add to the word wall.

Instructional Plan:
1. Teachers will have the students come to the carpet and will read to the students their objectives for this lesson and their expectations for the lesson.
2. Teachers will go over safety rules for each of the stations. The adults will handle all things related to fire. When cutting, students should take care not to aim the scissors at each other's faces. Students should be careful not to knock over objects, especially candles.
3. Lesson beginning (above)
4. After the teachers review the states of matter they will tell the students. Did you know matter can be changed? Different matter changes in different ways. For example, you can change the size of matter, you can change the shape of matter, and sometimes you can even change the state of matter. However, we want you to first experiment changing the states of matter and see what you learn.
5. The teachers will demonstrate and review what the students are to do in each station. Students will be given a "lab report" to fill out (see appendix.) Students will be told that they will have 10 minutes at each station. If they need help, they should raise their hand.
6. The teachers will then direct three students to station 1, three students to station 2, and four students to station 3. The teachers will monitor the students and read aloud station instructions when necessary - a few children have trouble reading and will benefit from this. Students may help each other or work independently.

Station 1 - Gases:
The students will have balloons at the station. A piece of paper will instruct the students to blow up the balloon. If they cannot, the teacher will do it for them. They will be instructed to hold the end of the balloon and slowly let the air out. The students will then answer questions based on what happened and write a few observations.

The students will be directed to breathe in deeply, and then exhale while holding their hand in front of their mouth. The students will then answer questions on their lab report based on what happened and write a few observations.

Station 2 - Liquids:
There will be 3 empty beakers or containers of different shapes and sizes set up on a desk. The students will be given colored water and be instructed to pour the water into the different containers. They will be asked to record their observations. Did the water change shape when they poured it in a different container?

Students will also have an ice cube on the table. A lamp will be provided and students will be instructed to hold the ice cube under the lamp. What happens when they hold the ice cube under the lamp?

The students will then answer questions on their lab report based on what happened and write a few observations.

Station 3 - Solids:
There will be playdough for students to play with, and scissors and construction paper. Students will be instructed to break the playdough into pieces and to fold/cut the paper. How does matter change?

The teacher will light a candle. Students will watch and answer questions on their lab report. They will jot down their observations.

The students will then answer questions on their lab report based on what happened and write a few observations.

Closure: Report back: When there is 10 minutes remaining in the lesson, the students will return to the carpet and the teachers will ask the students to share some of their findings in their experiments.

The teachers will ask the students, “In some of the labs, matter changed form. Do you know how?” After a few responses (we cut the paper, we put the ice cube under the lamp,” the teacher will say, “Temperature changes form, too. We will show you how water can change its state of matter.”

Then, the teachers will show how an ice cube can melt when placed under heat or simply put in a warm classroom. The teachers will boil water on a stove to show how water changes to gas. Finally, the teachers will show a baggie of water and explain that when you put it in a freezer, it changes to ice.

The teachers will wrap up by explaining that temperature can change a state of matter from a solid to liquid, liquid to gas, as well as other ways. The teachers will make a connection to the lab that was done. Finally, the teachers will ask students if they have ever seen this happening in their environment. Do they notice that it snows when it is cold out, or ice forms on the ground? What happens when they don't eat their ice cream fast enough on a hot day?
Exit ticket- Students will complete the workbook page 96 (How can matter be changed?

Appendix:

Venn Diagram (on chart paper)

Worksheet: Photocopies

Station Instructions (to be put at each station):

Station 1: Gases

Step one: Blow up the balloon. If you can't, use the pump.

After blowing up the balloon, slowly release your grip. What happens? Write it down.

Step two: Breathe in a lot of air. Hold your hand in front of your mouth. Let the air out. What happens? How did the air feel? Write it down.

Step three: Answer the "Gases" questions on your lab report.

Station 2:Liquids

Step one: Pour the colored liquid into the different glasses. Watch what happens. Write down what you saw.

Step two: Put the ice cube under the lamp. Watch what happens. Write down what you saw.

Step three: Answer the "Liquids" questions on your lab report.

Station 3: Solids

Step one: Use the scissors to cut up the paper. Fold the paper with your hands. Play with the playdough. Break it up. Write what you saw.

Step two: Watch as the teacher lights the candle. Look at the candle. Does it change? Write down what you saw.

Step three: Answer the "Solids" questions on your lab report.

Lab report (formatted correctly in MS word):

Scientist's Name:

_____ Date:

_____

Lab Report

Directions: Go to each station. Follow the instructions at each station. Write what you saw and then answer the questions.

Station 1: Gases

I noticed/saw:

_____
_____
_____
_____
_____
_____
_____

Step 1: Balloon

What happened to the balloon when you filled it with air?

_____
_____

_____
_____

What happened to the balloon when you let it go? Did it make a noise?

_____
_____

_____
_____

_____
_____

Step 2: Breathing

When you breathed out, was your air warm or cold? Circle one.

Warm Cold

Station 2: Liquids

I noticed/saw:

_____
_____

_____
_____

_____
_____

_____
_____

_____
_____

Step 1: Glasses

When you poured the liquid into different glasses, did it change shape? Circle one.

Yes No

Step 2: Ice Cube

What happened to the ice cube when it was put under the lamp?

_____
_____

_____
_____

Why do you think this happened?

_____
_____

_____
_____

Station 3: Solids

I noticed/saw:

_____
_____

_____
_____

_____
_____

_____
_____

_____
_____

Step 1: Paper and Play-Doh

Did the state of matter change when you cut the paper and tore apart the play-doh? Why or why not?

_____
_____

_____
_____

When you tear apart play-doh, is it still a solid? Circle one.

Yes No

Step 2: Candle

What happened to the candle when it was lit?

_____
_____

_____
_____