

Physically Change Shape of Object

Summary

Students work together as a class to generate a science fair project. The students use the steps of the scientific method to ask a question, form a hypothesis, design a test, collect data, and draw conclusions. Their findings are presented to the class and placed on a science fair project board for the school science fair. The topic of this project is to find out whether students can construct a shape out of clay that will float.

Time Frame

1 class periods of 60 minutes each

Group Size

Small Groups

Materials

tub filled with water at each table

2" - 3" ball of clay for each student, this can be reused if not left in the water long

several half sheets of paper per group

one science fair presentation board

headings made for the presentation board: why we did this, what we think will happen, how we did it, what we saw, what we learned

Background for Teachers

A ball of clay will sink because the density of the ball is higher than the density of the water. However, if that same ball of clay is changed into a shape that has it's mass more spread out over a larger area, its density will decrease.

If the new structure has a density lower than water, this shape will float. Usually forming the ball of clay into a boat or pancake shape will cause it to float as long as water doesn't creep into the structure and sink it.

Intended Learning Outcomes

Framing questions. Designing investigations. Conducting investigations. Collecting data.

Drawing conclusions.

Developing social interaction skills with peers. Sharing ideas with peers. Connecting ideas with reasons. Using multiple methods of communicating reasons/evidence.

Ideas are supported by reasons. Differences in conclusions are best settled through additional observations and investigations. Communication of ideas in science is important for helping to check the reasons for ideas.

Instructional Procedures

Pre-lab Discussion:

Show the students a ball of clay and ask them if they think it will sink or float. Place the ball into a tub of water and observe the results. Ask for ideas on what they could do to the ball of clay to get it to float. Explain to them that they will experiment on what shapes of clay sink and which shapes float. Discuss with the students what a science fair is and tell them that they will complete a science fair project today in the classroom.

Instructional Procedure:

I. Experiment: Complete the experiment first and then work on writing the assigned sections for the project board.

Have students make a clay ball about 2" -- 3" in circumference. They should predict what will happen when they drop the ball into the water. They should drop the clay ball and then observe their results. ** Be sure and remove the clay ball from the water immediately after dropping it in and lightly dry it off with paper towels. Repeat this each time you drop the clay into the water. Have each student predict a shape that they think will float. Students should then make their shape. After they place their shape in the water they can observe if it sinks or floats.

Students should make a drawing of their shapes and separate them into two groups: sink or float. Students can record their data in the [attached worksheet](#).

II. Science fair display board: Assign each group a different section of the class science fair display board. Each group can decide what to write and then help the students take turns writing the different words on a half sheet of paper. Students will write up their section and then place it in the appropriate area on the display board. If you take pictures of the students working on the project you can put them on the board as well.

Why we did the project -- In a couple of sentences, write the purpose of the experiment. For example, we want to find out if we can change the shape of a ball of clay and make it float.

What we think will happen -- Have each student make this prediction depending on what shape they decide to make their clay into. For example, I think that a boat shape of clay will float. Try and explore a different shape for each student in the group. If they predict a different outcome then use their hypothesis.

How we did our project -- Simplify the experiment. Put it in a number format of no more than 3 steps.

Title -- Make a title that is catchy and describes the experiment.

What we saw -- Have each group draw a picture that includes the shapes that floated and the shapes that sunk. Each group's picture can be placed on the display board.

What we learned -- In a few sentences, explain whether the student's predictions were correct.

Explain what this tells them about which shapes float and which shapes sink.

Left Panel	Center Panel	Right Panel
Why we did the project	Title	What we learned
What we think will happen	Tables, pictures	
How we did our project	drawings	Name of teacher

Bibliography

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