Dissolving Sugar Class Science Fair Project

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 sugar dissolves faster in warm or cold water.

Time Frame

1 class periods of 60 minutes each

Group Size

Small Groups

Materials

- graduated cylinder
- sugar
- measuring spoons
- cups
- thermometer
- 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
- timer

Background for Teachers

Sugar crystals are solid. When sugar is added to water the weak bonds between the individual sugar molecules are broken and the sugar molecules are released into the water. When this occurs a sugar water solution forms.
Increasing the temperature of water, decreases the time it takes to dissolve the sugar in water. At a higher temperature, there are more spaces between the water molecules for the sugar to dissolve into so the solution forms more quickly. The molecules of water are also moving faster at a higher temperature and this causes the dissolution rate to increase as well.

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 helpiing to check the reasons for ideas.

Instructional Procedures

Pre-lab Discussion:
Ask the students which they think occurs faster: adding a hot chocolate packet to cold milk or adding

the packet to hot milk. Discuss with them what happens when they add the hot chocolate powder. Define the word dissolve and describe what that looks like. Tell the students that today they are going to test whether sugar dissolves faster in hot or cold water. 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 put 200 mls of warm water into a cup. Take the temperature of the water and record this on a table similar to the one on this worksheet.
- Have Students put 2 tablespoons of sugar into the warm water cup. Time how long it takes for the sugar to dissolve with mild stirring. Make sure that the students stir the samples at a very slow and constant rate.
- Repeat with the cold water cup.
- Have students make a drawing and a data table to show the results of their experiment.
- Students can graph their results with the temperature of the water on the x-axis and the time it took to dissolve on the y-axis.

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 sugar dissolves faster in warm or cold water.
- What we think will happen -- Make this prediction at each table depending on what objects are being used to sink the boat. An example, we think that sugar will dissolve faster in warm water than cold water. If they predict a different outcome then use their hypothesis.
- How we did our project -- Simplify the experiment. Put it in number format of no more than 3 steps.
- Title -- Make a title that is catchy and describes the experiment.
- What we saw -- Place each group's data table and graph on the project board. Students can also draw some pictures to add to the board.
- What we learned -- In a few sentences, explain whether the student's prediction was correct. Explain what this tells them about whether sugar dissolves faster in warm or cold water.

Display Board Sections

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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