



Subject Area(s) Science & technology

Associated Unit Engineering

Associated Lesson gk12 lesson 2 scientific method roj

Activity Title Scientific method with a penny

Grade Level 6 (5-7)

Activity Dependency gk12 lesson 2 scientific method roj

Time Required Three 1 hour periods

Group Size (“Divide the class into teams of four or five students each.”)

Expendable Cost per Group US\$ 3.00

Summary

Students are going use the scientific method to investigate how many drops of water can fit on the surface of a penny. Students can then evaluate the results based on a number of variables such as penny side, age, water temperature, and the height the water was dropped from.

Keywords Scientific method, Penny, Problem, Hypothesis

Educational Standards

• Science: • Science: A.1, A.2, E.8, F.3, F.4, F.5, G.1, G.3, E.2, E.1

Pre-Req Knowledge

Students should have limited knowledge of the scientific method.

Learning Objectives

After this activity, students should be able to:

- Describe the basic procedures engineers follow to solve problems
- Communicate their results via a presentation of some sort
- Graph results based on variables tested.

Materials List

Each group needs:

- 1 8 oz cup
- 1 penny
- 1 ruler
- 1 beaker

Introduction / Motivation

The scientific method is the logical way in which a scientist goes about trying to solve a problem. A student needs to understand the scientific method, and the words that are used to describe the process. In today's activity, students will use the scientific method to investigate how many drops of water can fit on the surface of a penny and the variables that affect it.

Vocabulary / Definitions

Problem - The problem or purpose explains exactly what you hope to accomplish in the investigation.

Hypothesis - How do you think it is going to turn out? Use the facts you already know to come up with a guess that might really make sense.

Materials – A list of what equipment you will need to complete the experiment.

Procedure - What you must do to complete the experiment.

Observations - Observations and work you did during the experiment

Conclusions - What you learned during the experiment.

Procedure

- Guess how many drops of water you think you can place on penny, before the water overflows off the penny and onto the lab table.
- Using the eyedropper begin to place water on the penny, one drop at a time until the water overflows.
- Compare your guess (hypothesis), with the actual number of drops that the experiment determined.
- Guess how many drops of water you believe will fit on the penny now, after having done the experiment once.
- Using the eyedropper begin to place water on the penny a second time, one drop at a time.
- Complete this experiment a total of three times.
- Change variables to see if you get a different result.

Before the Activity

- Gather materials.
- Decide what variables you will allow students to use.

With the Students

1. Divide the class into groups of three or four students each.
2. Have students choose the variables they will investigate and then perform the experiment.

Investigating Questions

Teachers can take this lesson as an opportunity to reinforce the concept of independent and dependent variables as well as scientific method.

Assessment

The teacher should have students plot their results on graph paper. They should also record their experiment steps and results in log books.

Activity Extensions

The teacher can take this lesson as an opportunity to teach independent and

Owner

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