



Subject Area(s) Science and Technology

Associated Unit

Lesson Title Scientific Method with a Penny

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Grade Level 6 (5-6)

Lesson # 1 of 1

Lesson Dependency This lesson goes along with activity, Activity_2_penny

Time required Two 60 minute sessions

Summary Students will learn the scientific method by following along with a power point presentation. They will then use the scientific method to do an activity.

Engineering Connection In everyday engineering activities, there is a requirement for problem solving. Using the scientific method gives engineers an efficient way to solve problems.

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-Requisite Knowledge

A prerequisite for this lesson is a limited knowledge of the scientific method.

Learning Objectives

Students will be expected to:

- Learn the scientific method
- Use the scientific method to develop and analyze a problem

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 figure out how many drops of water can fit on the surface of a penny. Students will also try different variables such as water temperature, penny side, as well as the height the penny was dropped from.

Lesson Background & Concepts for Teachers

The teacher should be familiar with the scientific method, and the procedure for the experiment listed below.

Purpose: To determine the number of drops of water that can be placed on a penny.

Materials: penny, eyedropper, water, beaker

Procedures:

- 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.

Vocabulary / Definitions

Word	Definition
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	List 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.

Associated Activities

Activity_2_penny

Lesson Closure

If you conduct your experiment carefully, you will probably find differences between the variables used and the amount of water that can fit on the surface of a penny. In real life, you will encounter many problems even if you are not an engineer. The scientific method can still be used to solve problem. When doing science projects, a good way to have a complete project is to use the scientific method. One important thing to remember about the scientific method is that you should be as detailed as possible when writing things down, also remember to only change one variable at a time in your experiments.

Assessment

To assess this lesson, the teacher should ask the students to keep a log of their experiment. It should be checked to make sure that the students understood the scientific method.

Pre-Lesson Assessment

Students should be asked to write down any information that they know about the scientific method.

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