



# Introduction to Scientific Experimentation Lesson Plan

## *Content*

Density / displacement

Experiment, Scientific Method, Hypothesis, Research, Data, Conclusion, Clay boats activity

## *Goals / Aims of The Lesson Plan*

1. Get students to think more scientifically
2. Expose students to science
3. Make science fun and interesting
- 4 Students will understand density
5. Students will understand displacement

## *Objectives*

1. Students successfully create their own project using the scientific method
2. Students are better able to recite and perform steps to the scientific method
3. Students are able to research and gain background information to make educated guesses and think critically about results and outcomes.
4. Students will make a boat out of clay that will float.
5. Students will look up information about Archimedes and determine how density helped him solve a problem
6. Students will complete the worksheet and activity

## *Materials and Aids*

PowerPoint, screen with Internet access, books, Popular Science magazines

comparing density worksheet

a ball of clay

pennies

10 different objects for sink or float predictions

computers for Archimedes research

## Procedure

A. Introduction-



1. Engage students by asking them what they think science is
2. Explain what an experiment is and what the steps of the scientific method are
3. Perform a simple experiment as a demonstration for the class
4. Review chapter 1 vocabulary mass and volume.
5. Review how to measure mass and volume
6. how to calculate density using the formula  $d=m/v$

### **B. Development-**

1. Read several children's books related to topic to gain interest- Fun with Chemistry by Me and Ira Freeman and The Day-Glo Brothers by Christ Barton
2. Give examples of experiments
3. Demonstrate an experiment, explaining each step of the scientific method with the model
4. Watch Video Clips of Bill Nye the Science Guy and the Magic School Bus on episodes that relate to experiments
5. solid rock vs. foam rock
6. float or sink activity

### **C. Practice-**

1. Working together on various worksheets (Bill Nye and Spongebob themed, etc)
2. "Around the World" game with scientific method related questions
3. Quiz on scientific method

### **D. Independent Practice-**

1. Creating their own science project
2. Homework assignments
3. Research activity- Students find an article in a Popular Science magazine and analyze what scientists had to do in order to get results
4. complete clay boats conclusion questions
5. complete comparing density worksheet
6. correctly answer Archimedes question

### **E. Accommodations (Differentiated Instruction)-**

1. Provide further assistance to those who need it, giving individualized and personalized attention
  - 1a. Hands on activity



2. work with partners
3. use the computer for research

#### **F. Checking for understanding-**

1. Quiz grades
2. Performance on science project and meeting criteria
3. Ability to discuss topic and answer through oral interaction
4. Make a boat out of clay that floats
5. Accurately complete worksheets
6. Be able to distinguish between less dense and more dense solids

#### **G. Closure-**

1. Ask children for feedback
2. Show more difficult experiments and encourage children to investigate their world
3. Go over conclusion questions together in class
4. Discuss why some boat shapes were able to hold more pennies than others.

#### **H. Evaluation-**

1. Quizzes graded
2. Rubric for Science Projects
3. Activity completion score
2. Worksheet score.

#### **I. Teacher Reflection-**

This activity was wonderful. Density was good choice as an example. I might try measurement with scientific equipment instead next time, since kids have some experience in that direction.