**Teaching Science as Inquiry (TSI) Lesson Plan**

**Module 1: Physical Aquatic Science**

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Activity: Soda and Scientific Reasoning

Why did you choose to do this activity?

I choose to do this activity to reinforce the concept of density. We will be moving on to looking at different ocean zones and how layers can be formed within the ocean. Also since we’re not up to the concept of tides and currents yet, the moon phases activity wouldn’t be appropriate just yet.

What are your classroom learning goals?

-Reinforce the concept of density and how it relates to the ocean.

-Stress the importance of scientific reasoning and having students make predictions

-Also tie in the demeanors of scientists activity and have them reflect on how they behaved like a scientist

-Recognize that they are engaged in science and use practices of science in an investigation of density and buoyancy

How does this activity tie into your classroom learning goals?

This activity discusses the concept of density and will give students a concrete visual of how density can vary. Throughout the activity I will question students on how this relates to the ocean and hopefully spark a discussion. Also this activity really has them use their reasoning skills and become actively involved in the inquiry process. I like that there is an analysis question that relates to the demeanors of scientist activity because it will help them reflect on whether or not they possessed those demeanors.

What date do you plan to start this activity?

October 23, 2012

*If applicable:* HIDOE standards this lesson will address

Standard 1: Scientific Investigation: Discover, invent, and investigate using skills necessary to engage in the scientific process

**Ocean**

1. Describe how you will connect this activity to the ocean:

I plan on tying this into the ocean because I want to have the students connect this activity to how layers are formed within the ocean. After the activity I plan on having them use their knowledge of density to explain the layer formation in the ocean and describe the different zones. Also I plan on doing the thermohaline activity shortly after this activity to give a visual representation of the different layers.

1. Select the Ocean Literacy Principle(s) that you anticipate this activity will address. (check all that apply)

**X** 1. The Earth has one big ocean with many features.

□ 2. The ocean and life in the ocean shape the features of the Earth.

**X** 3. The ocean is a major influence on weather and climate.

□ 4. The ocean makes earth habitable

□ 5. The ocean supports a great diversity of life and ecosystems.

□ 6. The ocean and humans are inextricably interconnected

**X** 7. The ocean is largely unexplored

**Preparation**

1. How will you prepare your students for this activity? (For example, review of prior knowledge.)

We will review what the students already know about density and how it can be displayed in the ocean. Also we are currently going over the physics of the ocean and the different zones within the ocean, so they will use their prior knowledge from what we are currently covering in class and apply it to this activity. I will also have to review with them how to calculate density.

1. Explain any instructional struggles that you foresee and how you will address these issues. (For example, student misconceptions, classroom discussion, aspects most difficult for students to grasp, etc.)

Misconception: small things float, big things sink: to address this, I will do a demonstration of fruit and vegetables to show how this is proven wrong.

Anomalous Sodas: Test the cans before using, have extras

1. Select the TSI Mode(s) of Inquiry that you will focus on for this activity. (check all that apply)

X Curiosity

X Description

X Authoritative knowledge

X Experimentation

□ Product evaluation

X Technology

□ Replication

X Induction

X Deduction

X Transitive Knowledge

**Questioning and Assessment Strategies**

1. What *questioning strategies* will you use to help your students meet your learning goals?

I will ask my students to explain/share their reasoning behind their predictions, this will spark discussion and allow students to share ideas and hear other peoples’ thought process. I will also ask them to explain why they choose the variables to look at. Afterwards I will also question them on how to change the results such as making a sinking soda float. Hopefully these questions will spark some discussion and have students use their critical thinking skills.

1. What *assessment strategies* will you use to help your students meet your learning goals and monitor their progress?

I will observe them through out the activity and see if they are grasping the concept. Also I will use how they answer the activity analysis questions as a form of assessment.

Please provide any additional comments that will help you prepare to teach this activity or help the TSI facilitators understand how you plan to teach this activity.