**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?

This activity fit in the best with what we were covering in class and what our benchmarks were. We were covering plate tectonics and subduction due to the denser oceanic plates. We did a short lab to show us about convection so I used this lab to tie in density and subduction.

What are your classroom learning goals?

That students will go through the scientific method- observe, create hypothesis, do the experiment, collect data, and analyze it.

How does this activity tie into your classroom learning goals?

Helped to explain density in a fun way so students could see why the plates go under. It especially helped because the cans looked the same but one would sink and the other would float.

What date do you plan to start this activity? 9/20-9/21

*If applicable:* HIDOE standards this lesson will address

Benchmark 8.6.2

**Ocean**

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

We will discuss convergent plate boundaries and how subduction occurs.

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.

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

□ 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

□ 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 the plate boundaries and then discuss what they think subduction means and how they can show it. I will then show the demo and have students think of why one may have floated or why both may have floated. (Both floated in our demo- Pepsi and Diet Pepsi).

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.)

We saw in our demo that all the soda cans floated. We talked about why this may be. I told the students that normally what they should see is that Coke or Pepsi will sink. So they came up with reasons- most thought that the temperature had something to do with it because the cans were previously in the fridge. Some students also thought that there were more bubbles so it made the cans float.

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

X Curiosity

□ Description

□ Authoritative knowledge

X Experimentation

□ Product evaluation

X Technology

X Replication

X Induction

□ Deduction

□ Transitive Knowledge

**Questioning and Assessment Strategies**

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

Used a lot of probing questions like why do you think that happened. What did you see? What difference is there between the 2 cans? Etc.

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

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.

Some of the buckets/bins were not see-through. Students also had a hard time taking the mass because 2 of our scales would only read in ml. The students were grouped into 4, one group of 5 and were given Diet Pepsi, Pepsi, Diet Coke, Coke, Passion-Orange, there were also 2 experimental- Dr. Pepper and Dr. Pepper 10. Students were able to do the experimental sodas if they were done with the main 4 cans.

Students then worked in their groups on the questions. Students were told they had to write 2-3 sentences per extension question and they could write on a separate sheet of paper.

On 9/21 we briefly went over the results and the questions. Students were allowed to use their notes or resources when answering the questions- about controls, etc. We did not have enough time to go over each question in detail.