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

**Module 1: Physical Aquatic Science**

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Activity: Soda Can Scientific Reasoning

Why did you choose to do this activity?

Since life science for 7th graders doesn’t include density in their curriculum, the soda can experiment was used to further the use of scientific reasoning of density using water as a medium.

What are your classroom learning goals?

Ultimately, the goal is to cover the 7th grade life science standards, then to develop the students’ interest into becoming lifelong learners with a curiosity to learn about the world around them using an investigative, problem solving strategy. I would also like to see the student evolve through maturation in working independently so they are self-reliant while able to get along with others who are different from themselves. To accomplish this, the class is taught using differentiation so all students get varied modes of instruction so all can succeed. I use standardized grading so students learn to turn in quality work the first time and learn to revise work that is does not meet their/parents’ standard.

How does this activity tie into your classroom learning goals?

Students were able to reflect on their prior knowledge of running a similar experiment in previous years and interact with others about their prediction. As they discussed the possibilities, then tested them, they soon realized that the outcome wasn’t what they expected. This led them to inquire why some cans floated and didn’t sink. Discussion involved an exchange of ideas, then further experimentation. The teacher because a facilitator who asked questions to further their interaction with each other. Students were able to work with each other, share ideas and solve problems on their own through experimentation and exploration.

What date do you plan to start this activity?

Friday, October 13 to a review on Monday, October 14, 2012.

*If applicable:* HIDOE standards this lesson will address.

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| **Benchmark** [**SC.7.1.1**](http://165.248.30.40/hcpsv3/imr/report_by_code.jsp?code=SC.7.1.1) | Design and safely conduct a scientific investigation to answer a question or test a hypothesis |
| **Benchmark** [**SC.7.1.3**](http://165.248.30.40/hcpsv3/imr/report_by_code.jsp?code=SC.7.1.3) | Explain the need to revise conclusions and explanations based on new scientific evidence |

**Ocean**

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

Students can relate how soda cans sink or float in fresh water. To tie in this activity to the ocean, an overview of how fresh water meets and mixes with salty water in different locations around the State. Further questioning for students would be how the soda can density is affected by salty water, then if it’s heated or cooled depending on its location. Reference and further background would be needed for students to understand how the ocean currents, tides and waves behave as well as the organisms that live at the different zones.

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

□ 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

X 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.) Show students two videos (Water Motion and Water Currents

Review the video questions and answers, have student take notes and review the vocabulary relating to the ocean.

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.) Instructional struggles include limited soda cans available in the variety of flavors and options due to money and time constraints. One demonstration table was set up so only student volunteers could demonstrate the sinking or floating of cans. Students could not look closely at the can’s ingredients for themselves and relied on the student assistants to include measuring the mass of each can. After the class left, a smaller group of students stayed during lunch to get up close and test their hypothesis. The next day, more information on the density calculations, were included on the banner paper as well as follow up conclusions and questions were asked to the class for clarification and further experiments.
2. 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

□ Technology

X Replication

X Induction

X Deduction

□ Transitive Knowledge

**Questioning and Assessment Strategies**

1. What *questioning strategies* will you use to help your students meet your learning goals? Answering a question with a question so students come up with their own explanations especially for the results they didn’t expect. It allowed students to discuss further and challenge each other why some sugar content cans still floated. Students also wanted to see if they could make the sinking cans float.
2. What *assessment strategies* will you use to help your students meet your learning goals and monitor their progress? Students could participate in smaller group sharing or just pair and share with their neighbor.

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.