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

**Module 1: Physical Aquatic Science**

Name: *Dan VanRavenswaay*

Activity: *Density Bags*

Why did you choose to do this activity?

 *Density-related activities are a regular part of the curriculum I’ve been using (much of it HMSS). This was a “required activity” and fit in nicely next to the one I’ve done using the same variables, but with colored water and test tubes instead of baggies. I did add a bit of the test-tube activity at the end of the lesson because I know how much the students enjoy it.*

What are your classroom learning goals?

 *We’d already explored and discussed water density to some extent, but density is such an important concept, it’s worth approaching several ways and repeating. I want my students to be able to apply the relationship between density, temperature,*

 *salinity, water stratification, and thermohaline currents.*

How does this activity tie into your classroom learning goals?

 *It’s right on target. A good lesson for midway in the density-related topics.*

What date do you plan to start this activity? September 27 (I think.)

*If applicable:* HIDOE standards this lesson will address *Not applicable at AHS.*

**Ocean**

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

 Many of my students have experienced cold, unmixed freshwater at the surface

 in Hanauma Bay. They can now explain why that’s happening. They can also

 explain why some of the deep ocean layers not far from Hawaii are water that

 was once at the surface near Antarctica.

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

□ 7. The ocean is largely unexplored

**Preparation**

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

 *We’ve been discussing density ever since the Soda Can activity.*

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.)
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

□ Induction

□ Deduction

□ Transitive Knowledge

**Questioning and Assessment Strategies**

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

 *Asking them to restate their hypotheses as they prepare to place their bags in*

 *the water. Asking them to explain what they’ve observed, and later how and*

 *where these phenomena might occur in the ocean.*

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

 *Ongoing conversation with them during the activity (I have very small classes),*

 *review & application of concepts in upcoming lessons, and a traditional quiz.*

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.