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

**Module 1: Physical Aquatic Science**

Name: Brittney Driggs

Activity: Density Bags

Why did you choose to do this activity?

I choose to do this activity because it relates to what I am currently covering in class. Also we have to choose a density activity to do for our first lesson and I choose this one over the soda cans because we are currently discussing the differences between fresh water and salt water and I thought that this activity better related.

What are your classroom learning goals?

I want students to gain a better understanding of the effect of temperature and salinity on density. Also they will be able to compare the density between fresh and salt water. This activity also allows collaborating, sharing of ideas, and exploring and problem solving in groups.

How does this activity tie into your classroom learning goals?

Since I work mainly with the special education population they benefit greatly from hands on activities. This will give them a visual of the some of the differences between fresh and salt water we have been discussing in class. After doing this activity I think it will give them a more concert idea of how salinity and temperatures affect density. Also it will re-enforce the differences between fresh and salt water. Some of my classroom goals are to allow students to work together and share ideas as often as possible and this activity allowed this to occur.

What date do you plan to start this activity?

Tuesday, September 25. I would like to only take 1 class period, but might need two.

*If applicable:* HIDOE standards this lesson will address

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

**Standard 3: Oceanography —Understand the physical features of the ocean and its influences on weather and climate.**

**Ocean**

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

This activity greatly connects to the ocean because they will be looking at how salt water differs from fresh water. Also how temperature and salinity affect density. I started off the unit discussing the basic chemistry of water and their unique properties. Once they gained an understanding of those concepts we moved on to discussing salinity and how that affects the composition of water. They have done thinking maps displaying the differences between fresh and salt water and this activity will help reinforce those concepts. Also it will help tie into tides and currents once we start discussing those concepts.

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.)

For about 2-3 weeks now, we have gone over the basic chemistry of water and its’ unique properties. Prior to this activity, they have done a water lab where they look more closely at cohesion, adhesion, surface tension, and more. They have also created thinking maps on the properties of fresh and salt water. They have been given notes on both the basic properties of water and how salinity, temperature, and density all relate. This activity will allow them to apply their knowledge they have previously learned.

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 have already discussed some misconceptions that they had about water, and we discussed how salt and fresh water differ and why ice floats. The students will have a hard time creating their own data tables and possibly making the bags with out air. I decided to make the data tables for them to help save time. I plan on allowing them to make their own bags, but modeling it first for them and assisting when needed.

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

X Curiosity

□ Description

X Authoritative knowledge

X Experimentation

□ Product evaluation

□ Technology

X 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 plan to do a bell ringer that reviews that the differences in density with fresh vs. salt water. I also plan on asking them the question, “have you ever been in the ocean and experienced a “cold spot?”; this will help spark their prior knowledge and get them interested in the activity. Also through out the activity I will have students share their predictions and results and explain why they made those predictions or gotten those results.

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

I will use the activity questions as a form of assessment. I will also observe and monitor them through out the activity. Lastly they will be given the post assessment and my own chapter test that I will be able to use 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.