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

**Module 4: Ecological Aquatic Science**

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Activity: Slowly Sinking Plankton

1. Why did you choose to do this activity?

After doing this in our TSI follow-up class, it was so much fun; I decided it would be a great way to teach my students about the importance of plankton in the ocean.

2. What are your classroom learning goals?

To educate my students about plankton adaptations and the important role they play in the ocean food chain and to the health of the planet.

3. How does this activity tie into your classroom learning goals?

Food chains, observations, ocean ecosystems are all part of my 5th grade standards.

4. What date do you plan to start this activity? 5/24/13

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

SC 5.2.1 Use models and/or simulations to represent and investigate features of objects, events, and processes in the real world

6. Describe how this activity relates to at least one of the TSIA PD Themes.

Themes: Community, Metacognition, Science as a Human Endeavor, Observations and Inference, Modeling Science, Scientific Language, Connections

Observations and Inference: students will observe their own plankton creations as they float and sink and make inferences about adaptations real plankton may have in order to survive in the ocean.

**Ocean**

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

I will use the TSI slides to connect this lesson to the ocean and most of the class discussion will refer to plankton living in the ocean.

8. 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.

x 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**

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

We will review student prior knowledge and build on that with the TSI slides provided.

10. 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.)

I think some of the students will be so concerned about having their plankton creations float that they will not sink in a timely manner according to the lesson requirements.

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

What types of questioning or approaches to discussion will you take to support student

engagement and learning? See questioning handout for suggestions (Mod 3 Binder under “TSI Pedagogy and online in Mod 3 PD section)

Why would plankton want/need to float for a time?

How do you think you could improve on your plankton model?

Why did the winning plankton do so well?

If the plankton eventually will sink, are they more or less dense than saltwater?

What might happen to the ocean and our atmosphere if we no longer had enough plankton in the waters?

12. What ***TSI practices of inquiry teaching strategies*** will you focus on implementing to help your students meet your learning goals?

See TSI Practices of Inquiry teaching strategies handout for suggestions (Mod 4 Binder under “TSI Pedagogy” and online in Mod 4 PD section)

This lesson lends itself to a strong emphasis on learning-by-doing. The class will use a great deal of communication during this lesson and students will facilitate collaboration in a large group as well as in pairs. They will also be responsible for record-keeping and will teach each other with their own plankton creations.

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| Use the following table to plan your lesson using TSI. For each phase:* **Teacher:** Describe what you will be doing
* **Student:** Describe what your students will be doing
* **Assess:** Describe how you will assess your students in this phase so you can monitor their progress through the activity
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| **INTERPRETATION** | **INITIATION** |
| Teacher | Will guide students to interpretations on “successful plankton” in lesson | Teacher | Will check for prior knowledge and show TSI slides |
| Student | Wll provide conclusions about what adaptations plankton may have in order to stay afloat | Student | Will discuss any prior knowledge about planktonWill observe slides and ask questions |
| Assess  | Teacher will ask questions and listen for student answers and understanding | Assess  | Teacher will listen to student answers and check for understanding |
| **INSTRUCTION** |
| Teacher | Will talk, listen, provide guidance and answers when appropriate |
| Student | Students will share information on what make a successful plankton model and how this may work with plankton in the ocean |
| Assess  | Teacher and students will facilitate discussions and communications |
| **INVESTIGATION** | **INVENTION** |
| Teacher | Will facilitate lesson and contest | Teacher | Will ask students for possible ideas on how to keep plankton afloat but not permanently |
| Student | Make plankton models and test them in a floating/sinking race making observations on models that work well | Student | Will come up with ideas to create plankton for the lesson contest |
| Assess | Data will be recorded on the board to show outcomes of plankton trials | Assess | Contest will take place and comparisons of student models will be conducted |

11. Briefly describe how you will guide your students through the TSI Phases of Inquiry. (You are the research director of your classroom, and thus guide or facilitate the learning in your classroom, even if an activity is very student-directed).

By now, my students are able to facilitate this type of lesson, but I will ask them to observe and provide feedback on the phases of inquiry the class appears to be in at various moments during the lesson.

12. What *overarching* TSI mode(s) will you focus on for this activity? Why?

Modes: Curiosity, Description, Authoritative knowledge, Experimentation, Product evaluation, Technology, Replication, Induction, Deduction, Transitive knowledge

Curiosity, Experimentation, Technology, Product Evaluation- all of these modes are a part of this lesson and at this point in our school year, students will naturally discuss these modes during the lesson.

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.