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

**Module 3: Biological Aquatic Science**

Name: Paul Crowe

Activity: Scientific Language

1. Why did you choose to do this activity?

I wanted students to be able to distinguish between Theory, Opinion, Hypothesis, Fact and Law.

2. What are your classroom learning goals?

To develop scientific Literacy

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

This activity develops scientific literacy by developing an understanding of specific terms and practicing the use of them in context.

4. What date do you plan to start this activity?

2/27/13

*5. 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**

**Ocean**

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

I will use the water quality lab we did at the beginning of the year where we tested ocean and river sites for pollutants as a way to introduce some of the terms in this activity.

7. 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.

□ 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.

X 6. The ocean and humans are inextricably interconnected

X 7. The ocean is largely unexplored

**Preparation**

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

Bellwork : I will tell them to write definitions from their own memory for : Theory, Opinion, Fact, Hypothesis, Fact and Law.

9. 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 anticipate that students will have many misconceptions about the meaning of the scientific language addressed in this activity. Many students will have difficulty distinguishing between opinion and theory. Many students will also believe that laws can never be proven wrong.

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

I will use the TSI questions which include Clarifying, Extending, Focusing, Lifting, Summarizing

|  |
| --- |
| 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
 |

|  |  |
| --- | --- |
| **INTERPRETATION** | **INITIATION** |
| Teacher | Guides student through activity questions. | Teacher | Ask students to share their definitions for the scientific terms discussed in the activity. |
| Student | Answers activity questions | Student | Think about, Discuss and share their definitions. |
| Assess  | Evaluate answers to activity questions. | Assess  | Look for misconceptions about the meaning of scientific tems |
| **INSTRUCTION** |
| Teacher | Share information packet and powerpoint with definitions of scientific terms including examples |
| Student | Ask questions and follow along. |
| Assess  | Check for understanding by asking students to give different examples of various scientific terms. |
| **INVESTIGATION** | **INVENTION** |
| Teacher | Makes sure students are on task | Teacher | Guides students in answering activity questions. |
| Student | States whether each statement is a Theory, Opinion, Fact or Law and give possible explanation. | Student | Describes how they would test various hypothesis. |
| Assess | Go over the answers as a class using the powerpoint. | Assess | Make sure experimental design makes sense and they understand the meaning of dependant, independent variable and control |

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).

Students will begin in the initiation phase during the Bellwork Activity. This is followed by Instruction. Then students will enter the investigation and interpretation phase. We will then come back to instruction and the cycle will repeat. Finally students will test their understanding in the investigation phase.

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

Authoritative Knowledge, Description. I want to focus on these modes so that students have a good understanding and are able to easily explain the differences between theories, opinions, laws, facts and hypotheses.

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.