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

**Module 4: Ecological Aquatic Science**

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Activity: Sampling Design

1. Why did you choose to do this activity? We did this activity in the workshop. It is mandatory and looks like a good way to teach sampling methods.

2. What are your classroom learning goals? Students will be able to sample the environment in a scientific manner.

3. How does this activity tie into your classroom learning goals? This activity teaches students the importance of sampling for data collection. Students will work cooperatively in sharing their sample data.

4. What date do you plan to start this activity? April 9, 2013

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

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| **Topic** | Scientific Inquiry |
| **Benchmark** [**SC.PS.1.1**](http://165.248.30.40/hcpsv3/imr/report_by_code.jsp?code=SC.PS.1.1) | Describe how a testable hypothesis may need to be revised to guide a scientific investigation |

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| **Topic** | Scientific Inquiry |
| **Benchmark** [**SC.PS.1.2**](http://165.248.30.40/hcpsv3/imr/report_by_code.jsp?code=SC.PS.1.2) | Design and safely implement an experiment, including the appropriate use of tools and techniques to organize, analyze, and validate data |

**Ocean**

6.Describe how you will connect this activity to the ocean: I will talk about the different organisms in the ocean and how we can predict the numbers of different species in a habitat by sampling

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

x□ 5. The ocean supports a great diversity of life and ecosystems.

□ 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.) I will have whole class discussion about experiences they may have had sampling, such as Costco shopping. I will give a short lecture with students taking notes on the new vocabulary “precision” and “accuracy” “census” “sample”

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.) Students might want to manipulate the choosing of their sample. I will reinforce the sample gathering method for this activity

**Questioning and Assessment Strategies**

10. What *questioning strategies* will you use to help your students meet your learning goals?I will use extending questions to push for elaboration and explanations.

11. What *assessment strategies* will you use to help your students meet your learning goals and monitor their progress? I will verbally question them. I will observe that they are on task. I will listen to small group discussions and I will have them write down their responses to the activity questions.

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| Use the following table to plan your lesson using TSI. For each phase:* **Mode(s):** List the Mode(s) of Inquiry you will incorporate
* **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

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

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| **INTERPRETATION** | **INITIATION** |
| Mode(s) | Induction | Mode(s) | Curiosity |
| Teacher | Whole class discussion about the results of the data | Teacher | Whole class discussion about sampling experiences |
| Student | Writes their responses to the activity questions | Student | Discuss personal experiences with sampling |
| Assess (look for) | Thoughtful complete responses that reflect the data collected | Assess (look for) | Student engagement, responses. |
| **INSTRUCTION** |
| Mode(s) | Authoritative Knowledge |
| Teacher | Lead class in note taking on new vocabulary. Describe how to carry out the investigation. Collect student predictions |
| Student | Takes notes on new vocabulary |
| Assess (look for) | Student focused on the task. |
| **INVESTIGATION** | **INVENTION** |
| Mode(s) | Description | Mode(s) | Curiosity |
| Teacher | Helps students gather sample size and record data and renew their predictions. | Teacher | Ask class for their predictions. Discuss sampling method and size |
| Student | Carries out the investigation. Re news their predictions with the new data. | Student | Working in small group or pair will discuss and share with the class their predictions of the outcomes |
| Assess (look for) | Student engagement. Completion of data tables | Assess (look for) | .Student responding to activity questions |

12. Briefly describe how you will direct your students through the Phases of Inquiry.

I will direct my students through the Phases of Inquiry by using questioning strategies as new data is revealed

13. What will be the *overarching* mode(s) of this activity? Why? The overarching mode will be Induction as students change their predictions based on the data.

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. The Activity on Matter Concept map will be done before this activity to teach the some chemistry basics.