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

**Module 4: Ecological Aquatic Science**

**Name: Terri Ewton**

**Activity: Error in Survey**

1. **Why did you choose to do this activity?**

Time, and a means for students to feel successful.

1. **What are your classroom learning goals?**

Students will practice sampling in a logical and consistent style. They will investigate survey/sampling strategies. Students will also build on the understanding of the importance of standardization and replication gained from the M&M Sampling Design activity.

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

Ties in as a continuation of M&M’s Sampling and Surveys.

**4. What date do you plan to start this activity?** May 13th

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

**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**

**Science as a Human Endeavor –** Sharing findings with others is essential.

**Ocean**

**7. Describe how you will connect this activity to the ocean: Not sure.**

**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.

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.

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.)**

This activity is actually prep for health/nutrition.

**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 don’t see any. I expect an engaged class.

**Questioning and Assessment Strategies**

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

* CLARIFYING – I will use clarifying questions to help students decide how best to create a better experiment/survey.
* EXTENDING –to help students apply what they are beginning to understand about data collection & interpretation of data.
* FOCUSING – continuously.

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)

Science as a Discipline:

* Model and require students to exhibit the demeanors of scientists.
* Recognize and teach science as a human endeavor.

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

Students will be assessed through informal discussions in small groups and as a full class. They will also create a better means of the experiment.

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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, Deduction, Transitive Knowledge | Mode(s) | Curiosity, Description |
| Teacher | * Ask clarifying questions | Teacher | Ask students to determine what a better experiment would be. |
| Student | Create data graphs & charts to compare results | Student | * In small groups, design a better means of creating the experiment |
| Assess (look for) | Are graphs representative? | Assess (look for) | Review the ideas for a better experiment |
| **INSTRUCTION** | | | |
| Modes | Authoritative knowledge, transitive knowledge | | |
| Teacher | Ask students to assist each other in considering how to create a better experiment | | |
| Student | Work in small groups to design a better experiment | | |
| Assess (look for) | Try their experiment tecniques | | |
| **INVESTIGATION** | | **INVENTION** | |
| Mode | Experimentation, Description, Technology | Mode(s) | Curiosity, Product Evaluation, Transitive Knowledge, Experimentation |
| Teacher | Ask questions of individuals and groups as they collect data  Monitor class and answer questions.  Monitor accuracy of class data table entries & calculations | Teacher | Ask students to suggest strategies for laying the transects and quadrats. Ask students to decide which method to use: transect point, quadrat point or quadrat percent.  Ask student to generate a hypothesis. |
| Student | Create a new experiment test | Student | Create a new experiment |
| Assess (look for) |  | Assess (look for) |  |

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

**Initiation *–*** *Peak curiosity.*

**Invention –**  *Ask students to generate a hypothesis.*

**Instruction -** *Create a better experiment design*

**Investigation – Create a better experiment design.**

**Interpretation *– Decide the pros and cons of different methods and strategies. Share ideas.***

**13. What will be the *overarching* mode(s) of this activity? Why?**

The overarching mode(s) will be curiosity, description, product evaluation and replication.

**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.**