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

**Module 2: Chemical Aquatic Science**

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Activity: Phases and Modes of Inquiry

1. Why did you choose to do this activity? I like the aspect of metacognition and we had just finished the properties of water/penny activity and it seemed like a perfect flow to do this one next.

2. What are your classroom learning goals? The goals were to introduce the mode terms and utilize the Phase Diagram for the first time.

3. How does this activity tie into your classroom learning goals? Perfectly….since the goal was to use this model.

4. What date do you plan to start this activity? 12/10

*5. If applicable:* HIDOE standards this lesson will address 6.2.1 Science and Technology

**Ocean**

6. Describe how you will connect this activity to the ocean: We used a similar model as in class….”salt water tank with fish”….ours was actually a plastic dolphin

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.

x 6. The ocean and humans are inextricably interconnected

□ 7. The ocean is largely unexplored

**Preparation**

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

We did a warm-up activity to review prior knowledge of scientific method. We then held a discussion that the Scientific Method is a good way to record and share information and today we will introduce some new concepts and terms. We will work in small groups.

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.) Student misconceptions of terms for the modes and just grasping the big idea concept of using the TSI model…it will all be new to them…but I believe they will find it interesting.

**Questioning and Assessment Strategies**

10. What *questioning strategies* will you use to help your students meet your learning goals? I follow the model set forth in out teachers guide….and when they are “stuck” or “don’t get it” I have them explain to me what they do get and then rephrase it back to them in a way that we both understand that we are “on the same page” and ask what they would do next and they usually “get it” and move forward.

11. What *assessment strategies* will you use to help your students meet your learning goals and monitor their progress? I am using the actual TSI Model form as the assessment. We did this exercise before the holiday break…I will use it again in following projects.

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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) | Concept of modes | Mode(s) | Each word/concept of Modes |
| Teacher | Placed the mode words on the window. | Teacher | Ask students to consider what steps we used to move our “tank” |
| Student | Work in table groups to determine definition of each word. | Student | Utilize the phase diagram for the first time |
| Assess (look for) | Discussion and written word lists  | Assess (look for) | Note numbers and movement on the phase diagram |
| **INSTRUCTION** |
| Mode(s) | all |
| Teacher | Demonstrated the move and asked questions re where to place our “tank”….asked students to repeat the steps that took place and which mode was used? |
| Student | Filled out chart of steps |
| Assess (look for) | Chart of steps |
| **INVESTIGATION** | **INVENTION** |
| Mode(s) | Reviewing the steps of the activity | Mode(s) |  |
| Teacher | Asked students to detail the diagram on a round table to share with each group; Each group wrote their results in a different color. | Teacher |  |
| Student | Wrote the steps of the phase diagram on a round table with dry erase markers. We used it instead of the laminated wall version. If was fun and a new concept for them | Student | I suppose our round table phase diagram would also be invention…? |
| Assess (look for) |  | Assess (look for) |  |

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

Introduce the activity and have them describe it as a whole class (As we did on the session) and then in the small table groups recap by answering the given worksheets, and fill in a diagram. Then share the diagram results on one diagram. Share and review as a class.

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

This is the introduction to using the TSI Phase diagram and concept of Mode terms. Although each f the modes are incorporated as a means of description and usage, the overarching mode is Interpretation. It is the students interpretation and understanding of how to utilize this model in term and relationship to our continued science experiments, activities, projects and learning.

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.