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

**Module 3: Biological Aquatic Science**

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Activity: Phases and Modes

1. Why did you choose to do this activity?

I wanted to re-teach the phases and modes to my students. I have a few new kids in my class and I wanted to make sure they understood the language we were using in my class.

2. What are your classroom learning goals?

In this case, I want my students to have a deeper understanding of the process of science and to be more resilient and metacognitive about their own learning and thinking.

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

This activity will help my students to understand that it's OK if they have to go back to the drawing board a few times before they have a working product. It's OK to make mistakes and need to revise and retool their procedures as they go along in an activity.

I also want my students to examine the roles they take in group work, and how their brains looks at what they're doing.

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

1/24/2013

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

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| Benchmark [SC.8.1.2](http://165.248.30.40/hcpsv3/imr/report_by_code.jsp?code=SC.8.1.2) | Communicate the significant components of the experimental design and results of a scientific investigation |

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| Benchmark [SC.8.1.1](http://165.248.30.40/hcpsv3/imr/report_by_code.jsp?code=SC.8.1.1) | Determine the link(s) between evidence and the conclusion(s) of an investigation |

**Ocean**

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

The activity that we're using as the framework to discuss phases and modes is the “Properties of water” activity. So, that will be the connection to the ocean right there—we're learning about water.

7. Select the Ocean Literacy Principle(s) that you anticipate this activity will address. (check all that apply)

None were really addressed

**Preparation**

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

I'm going to review the phases and modes with my students from last time, and hand back their papers form the first lesson.

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'm expecting kids to respond differently at each station of the water properties stations. Some might like the reading stations more, others might like the open-ended stations, and others will perform better at the more structured stations. I want to do this so that the kids can think about their behaviors and experiences at each station, while also building on the modes they were using. Different stations will use different modes. When they go through the phases and modes of the activity, the next day, it should giuve them a lot to think about.

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

I plan to ask clarifying, lifting, and summarizing questions to help guide students through their experiences in the different stations, as well as get them to think about how they were thinking during each station

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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 | 1) What can this inform you about what ways you prefer to FIRST approach a task, or information? What can this tell you about how you were thinking? WHY was it so important for us to discuss our answers? Do you notice how certain activities tend to get us thinking in different ways? Was there EVER a point when the 'straight instruction' station' (the readings) was helpful to you? Is that sort of authoritative knowledge ever useful? | Teacher | 1) Water Properties activity.2) “How were you being scientists as you were doing those activities? Which station/activity did you like the most or least? Why? Let's review our phases and modes (if needed)” |
| Student | 1) Student answers in packet and in discussion | Student | 2) response to questions.  |
| Assess  | 1) participation in discussion from students in pairs and as a whole class. 2) short reflection at end of lesson  | Assess  | Students use phases and modes as they discuss the questions.  |
| **INSTRUCTION** |
| Teacher | 1) “What are the Phases and Modes?” Review phases and modes with class2) How do they compare with your partners? Were you guys ever the same? Were you different?  |
| Student | 1) reviews notes, or takes notes as needed.2) brief discussion with each other similarities and differences (see investigation) then share-out similarities and differences |
| Assess  | 1) completed notes, Students answer in-class questions.  |
| **INVESTIGATION** | **INVENTION** |
| Teacher | 1) “How do your results compare with your partners' results?” | Teacher | 1) “When were you in each phase and mode? Try, as best as you can, to list them down.” Wander room as students do this. |
| Student | 1) discuss with each other (from instruction) and complete table.  | Student | 1) In pairs, students list their phases and modes. Those who did well on this assignment the first time (or seem to really get it well) will be paired with new students or struggling students.  |
| Assess | 1) complete the rest of the table. | Assess | 1) students response in table.  |

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).

I plan on using questioning strategies to guide my students through each phase of this activity.

Initiation: How were you being scientists as you were doing those activities? Which station/activity did you like the most or least? Why? Let's review our phases and modes (if needed)”

Instruction: “What are the Phases and Modes?” “How do your answers compare with your partners? Were you guys ever the same? Were you different?

Invention: When were you in each phase and mode? Try, as best as you can, to list them down

Investigation How do your results compare with your partners' results?”

Interpretation: What can this inform you about what ways you prefer to FIRST approach a task, or information? What can this tell you about how you were thinking? WHY was it so important for us to discuss our answers? Do you notice how certain activities tend to get us thinking in different ways? Was there EVER a point when the 'straight instruction' station' (the readings) was helpful to you? Is that sort of authoritative knowledge ever useful?

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

Description will be very important for this activity, since students need to describe and discuss their thoughts during activity. Also, replication will be important because students need to see that everyone else' answers are different and that that's OK.

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.