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

**Module 2: Chemical Aquatic Science**

Name: **Brittney Driggs**

Activity: **Phases and modes of scientific process**

1. Why did you choose to do this activity?

**I choose to do this activity because it is one of the mandatory activities and we need to bring this one to our next in person meeting. Also I previously did the properties of water activity, so they will be able to reflect on that activity.**

2. What are your classroom learning goals?

**Student to gain an understanding that everyone learns differently and we have to be able to adapt. Also for them to have an understanding that the scientific process doesn’t have to go in one direction and that it can be more of a multi-directional approach. Also to understand what metacognition is and how they can be megacognative.**

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

**This activity will help me tie in all of my learning goals because I plan on initiating this activity with a personality test and stress the importance of realizing that everyone thinks differently. Also I plan on helping them develop their metacognative skills through the use of this activity.**

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

**Tuesday, November 27, 2012**

*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’m not really sure how much connection there will be to the ocean with this activity. The students will be reflecting on the properties of water activity so they might make connections to the ocean through that. Also we might discuss how the ocean is has different meaning and importance to everyone, so this shows how people think differently.**

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

□ 7. The ocean is largely unexplored

**Preparation**

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

**I plan on preparing my students by starting off with a personality or learning style test. The students will share their results and this will show that everyone thinks differently. Also I will have the word metacognition on the board and have students brainstorm what this means and give examples of when they used their metacognative skills. Also I might incorporate the optional introduction about the fish tank set up and have them practice identifying the actions.**

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 think that the most difficult concept for my student to grasp would be metacognition. I will have to give examples of how people think metacognatively and have them share ideas of when looked back on their thoughts and feelings. Another misconception will be that the scientific process is linear, this is what they students have learned through out their education and we even discussed the scientific method in the beginning of the year as steps you take to solve an investigation. We will have to address this, maybe through discussion and examples of when this wasn’t true.**

**Questioning and Assessment Strategies**

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

**Through out the activity I will stop the students to spark discussion or use questioning strategies. I will have to question them on identifying what action they are taking. Students might think that them thinking about something or communicating is an action not necessarily thought or communication. Also I will question them on why they choose each phase or mode that they did and to explain with the rest of the class.**

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

**I will use the whole activity as a form of assessment as well as the activity questions. Also the next activity I do, I will have them reflect on it and use that as a form of assessment.**

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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) | Description, induction, deduction | Mode(s) | Authoritative knowledge, technology |
| Teacher | I will guided them through this lesson and uses questions strategies that helping them to reflect on the process they went through to complete the previous activity that they are reflecting on. | Teacher | Give the students a personality test and have the word metacognition on the board. Spark discussion about what metacognition is. |
| Student | Student will evaluate their work on a previous activity and determine that they did, what they communicated and what they thought. They will be reflecting on their work and metacognative skills. | Student | Take the test, share their results and discussion how there are differences. Share ideas of when they used their metacognative skills. |
| Assess (look for) | Students using their reflection skills and evaluating their work. | Assess (look for) | Results from test, discussion on their metacognative skills |
| **INSTRUCTION** | | | |
| Mode(s) | Description, authoritative knowledge, transitive knowledge | | |
| Teacher | I will teach the students the different phases and modes that related to the TSI pedagogy. I will guided them through the different procedures and stopping them to spark discussion and use questioning strategies. | | |
| Student | Will share ideas from their test, and how they reflected on the previous activity. Also share their ideas of what the phases and modes mean to them. | | |
| Assess (look for) | Discussion and sharing of ideas | | |
| **INVESTIGATION** | | **INVENTION** | |
| Mode(s) | Description, transitive knowledge | Mode(s) | Transitive knowledge, induction, deduction |
| Teacher | Provide the students will the tables to fill out. Model for them how to fill out the table, give an example and use the optional introduction as an model for them. | Teacher | Explain or give examples of what the phases/modes mean and go over the TSI pedagogy. |
| Student | Students will reflect on a previous activity to complete a table an identify what they were doing during the activity. | Student | Give examples of when they used their metacognative skills, also give examples or explain in their own words the phases and modes. |
| Assess (look for) | Megacognative skills, identify if their steps where an action, communication, or thinking. | Assess (look for) | Their examples and understanding of the phases and modes. |

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

**Since this activity focuses on the TSI phases and modes, they will be guided through the phases during the entire activity. They will be able to apply these phases and reflect on an assignment they already completed. I will start of with initiation and have students gain an understanding of what metacognition is and how people think and learn differently. We will then go through the procedures given in the activity and go through out the phases of inquiry in a multi-directional way.**

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

**For this activity all the modes will be introduced and discussed. However, the main modes that the students will be utilizing are: description, authoritative knowledge, induction, deduction, and transitive knowledge. Through out the activity, they students are required to reflect on a previous activity and descript what they were doing and what skills they were using. Also they will be required to share their ideas and apply their knowledge of the phases and modes during their reflection.**

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.