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

**Module 2: Chemical Aquatic Science**

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Activity: Processes of Inquiry

1. Why did you choose to do this activity?

 I chose this activity because it was required. I also feel that more information on

 Phases of Inquiry will benefit my class. The first introduction was with the

 Practices of Scientists and that didn’t totally seal the information for them. They

 were still unsure of the phases and what exactly they are.

2. What are your classroom learning goals?

I’m hoping my students will become more familiar with the Phases and realize that science isn’t always linear like the scientific method. I also believe that learning and practicing being metacognitive will be a positive and hopefully pervasive skill. All middle school students should be learning how to think about what they are doing and thinking, it will broaden their perspective and help create more collaborative global contributors.

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

 I feel that in my classroom we are continually revisting the concept of slowing

 down and thinking about what we do, say or think before jumping in and judging anyone or anything. So, breaking the activity down into all of its steps my students may take the time to think about what they did and reflect on what they were thinking and doing during each step.

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

 December 3, 2012

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

7.1.3 Explain the need to revise conclusions and explanations based on new scientific evidence

 \*This is a reach. There is no real directly related benchmark for this activity.

**Ocean**

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

 I only connected it very shallowly. I just related being a marine biologist and the

 need to be able to think about processes you go through and also be able to

think about how you think about things and not having judgment or predetermined outcomes in mind.

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 will revisit the discipline and demeanors of scientists and the Phases of Inquiry Poster. We filled the poster diagram in with words that were understandable by the students, generated by the students, as a reference for them.

 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 the students will want to keep their investigations and experiments in a certain order as that’s what they’ve been taught is the way science is done. Recalling the exact steps performed may be hard as they easily forget the smaller, detailed steps. Will the activity tie in with the others we’ve done in class in a manner that they can understand why we are doing it??

Questioning

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

 I will question on previous knowledge, specifically regarding the scientific method.

 I will question on how we learn anything and if it’s linear or cyclical. I will ask the

students about a time that they learned something new or had a memorable experience and have them recall the steps and parts of that experience to help them start to break things down into steps and think about their thoughts of the experience (metacognition right??). I will be asking them to recall the activity they did (Properties of Water) during the last 2 class periods.

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

I will collect the “Steps of your Scientific Practice” sheet that they will do together with me on the Properties of Water, Cohesion and Adhesion Part D. The students will do partner discussion, small group and whole group discussion to complete the activity.

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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 | Mode(s) | Description |
| Teacher | Have pairs discuss what exactly they did during the paper clip floating activity and what the results were. | Teacher | Scienc/life is not linear. When did you have an experience that went in order from one step to the next without any distractions or deviations (“bird walks”). |
| Student | Discuss with partner to refresh memory and solidify what the results were from the previously targeted activity. | Student | Discuss with partner to left a memorable childhood experience |
| Assess (look for) | Discussion, share, listen | Assess (look for) | Taking turns, staying on task, listening, asking questions, staying on time |
| **INSTRUCTION** |
| Mode(s) | Description |
| Teacher | Group brainstorm activities from past 2 days (Cohesion/Adhesion). Look in lab notebooks to help memory. Focus on Part D “Floating a Paper Clip” and list all steps they can remember and I write on the board. Number them in the order the students think they need to be. Have students copy onto their own papers. Discuss difference between action, communication and thought and have them label the steps. Revisit the Phases of Inquiry using the poster on wall and the copy in their lab notebooks. Label the steps as to which phase each one was in. |
| Student | Discuss with partner, whole group and do whole group steps, type of step and which phase each step was in. |
| Assess (look for) | Participation in partner and group discussion, completion of Steps of your scientific practice worksheet. |
| **INVESTIGATION** | **INVENTION** |
| Mode(s) | Description | Mode(s) | Description |
| Teacher | Facilitate discussion and ordering of steps. Write legibly so the students can use as a reference of their work | Teacher | Na |
| Student | Discuss with partner and whole group to make sure order is correct. | Student | Na |
| Assess (look for) | Participation in discussion and completion of worksheet | Assess (look for) | Na  |

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

I will guide them through by discussing and defining each phase as we do it on the worksheet together. We will recall Activity D and discuss the phases they went through in an after the fact manner.

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

Description because they will be describing events from a previous activity and what exactly they did during that activity and what their results from that activity were and why they suppose they had the results they did.

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.