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

**Module 3: Biological Aquatic Science**

Name: Joanna Lee Activity: Scientific Language

1. Why did you choose to do this activity?

This activity is the basis for all science thinking so students can understand the definitions first before using the vocabulary in its context throughout their education.

2. What are your classroom learning goals?

Ultimately, the goal is to cover the 7th grade life science standards, then to develop the students’ interest into becoming lifelong learners with a curiosity to learn about the world around them using an investigative, problem solving strategy. I would also like to see the student evolve through maturation in working independently so they are self-reliant while able to get along with others who are different from themselves. To accomplish this, the class is taught using differentiation so all students get varied modes of instruction so all can succeed. I use standardized grading so students learn to turn in quality work the first time and learn to revise work that is does not meet their/parents’ standard.

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

This lesson allowed students to understand the differences between opinion, hypothesis and theory when conducting investigations in life science. Students must understand that observations can be fact or fiction and determining the difference between the two words. This understanding and other vocabulary explanations will have an impact on their hypothesis, design and conclusion of their experiments.

4. What date do you plan to start this activity? Friday, January 25, 2013.

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

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| **Benchmark** [**SC.7.1.1**](http://165.248.30.40/hcpsv3/imr/report_by_code.jsp?code=SC.7.1.1) | Design and safely conduct a scientific investigation to answer a question or test a hypothesis |
| **Benchmark** [**SC.7.1.3**](http://165.248.30.40/hcpsv3/imr/report_by_code.jsp?code=SC.7.1.3) | Explain the need to revise conclusions and explanations based on new scientific evidence |

**Ocean**

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

The examples of opinions, hypothesis and theories will relate to the ocean its organisms.

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.

□ 6. The ocean and humans are inextricably interconnected

**X** 7. The ocean is largely unexplored

**Preparation**

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

Students will brainstorm common vocabulary science words on the blackboard and write their own definitions to be shared orally and written on their worksheet.

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.)

Instructional struggles include time limits (41 minute class period) to share out in front of the class if time permits. Otherwise, share out sessions will be in pair/share or small grouping.

**Questioning and Assessment Strategies**

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

Strategies will include addressing student answers by infusing different words to make the sample statements/hypothesis “appear” or “sound” different so that they question and discuss their answers on whether the statements are opinion, fact, hypothesis or theories.

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

The assessment will be completion of their worksheet and discussion among their group members

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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, deduction ,transitive knowledge, authoritative knowledge | Mode(s) | Description, curiosity |
| Teacher | Pose questions to students to explain why they marked a particular statement as fact, opinion, hypothesis, law or theory | Teacher | Ask students to brainstorm commonly used science vocabulary words  List vocabulary words on blackboard then ask students to form their own definition  Review the correct definition of fact, opinion, hypothesis, law and theory  . |
| Student | Share out in groups their assigned worksheet statements with the class; support the reason for their revision to the statements to determine if it is a fact, opinion, hypothesis, law or theory | Student | Brainstorm common science vocabulary words in small groups, then report out |
| Assess (look for) | Correct explanation of statements are they written, then revised | Assess (look for) | List of words and definitions on group papers  Understanding of common words |
| **INSTRUCTION** | | | |
| Mode(s) | Authoritative knowledge | | |
| Teacher | Review demeanors of scientists and explain that scientists use certain vocabulary with the same understanding of its definitions | | |
| Student | Remember the demeanors from an earlier lesson and model scientific thinking | | |
| Assess (look for) | Understanding of scientists’ demeanors, characteristics by their observing their behavior and discussion with each other | | |
| **INVESTIGATION** | | **INVENTION** | |
| Mode(s) | Induction, curiosity, experimentation, description, transitive knowledge | Mode(s) | Curiosity, experimentation, description, induction, transitive knowledge |
| Teacher | Further monitoring, asking questions to encourage students to change the opinion statements into fact statements; decide a procedure for the hypothesis to be tested; explain other experiments that qualify a statement as a law or theory | Teacher | Prepare students so they practice the demeanors of scientists as they review the worksheet and determine if the statements are opinion, fact, hypothesis, law or theory |
| Student | Change the opinion statements into fact statements; decide a procedure for the hypothesis to be tested; explain other experiments that qualify a statement as a law or theory | Student | Discuss and decide if worksheet statements are fact, opinion, hypothesis, law or theory |
| Assess (look for) | Worksheet completed with corrections/changes of statements in a different color ink to show revisions | Assess (look for) | Worksheet is filled out, students are demonstrating demeanors of scientists |

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

The students will view the phases of inquiry chart as the teacher reviews the lesson on scientific language at the beginning of the lesson and at the end.

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

The focus mode of this lesson is authoritative knowledge with reference to transitive knowledge. The students will review chapter 1 in the textbook, dictionary or the teacher for the correct definitions and examples because each statement must be explained as to why it is an opinion, hypothesis or theory.

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.