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

**Module 1: Physical Aquatic Science**

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Activity: Kinesthetic Moon Model

Why did you choose to do this activity?

After density bag activity, we did thermohaline circulation activity and that brought the students around to a discussion on recent full moon and if that would create a low tide or not.

What are your classroom learning goals?

Learning goals: to reinforce that there is one ocean on the planet and that it is moving, there would still be tides without the moon but it does have an effect on the tides, basic understanding of the phases of the moon and the relationship between the earth, moon and sun in space.

How does this activity tie into your classroom learning goals?

The Kinesthetic Moon Model activity is very hands on, hence the name, and I have an active, boy dominant class that learns well through movement. My goal is to expose the students to interesting, interactive and fun activities in order to promote a desire for further scientific learning.

What date do you plan to start this activity?

10/24, 10/25 and 10/26

*If applicable:* HIDOE standards this lesson will address

7.1.1 Safely design and conduct an experiment to test a hypothesis

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

7.7 Understand the relationship between force, mass, and motion of objects; and know the major natural forces: gravitational, electric, and magnetic

**Ocean**

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

The students brought it up as a discussion about being at the beach at night during the recent full moon and noticing the moons light reflecting off of the ocean surface. Tied in by linking to thermohaline circulation activity recently done in class. Students live near the ocean so everything connects easily.

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

X 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**

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

\*Tied to personal experience through student initiated discussion on full moon

\*Tied to recent activities with density and ocean circulation

\*Tied to student initiated discussion on tsunami and ocean movement

\*Students wanted to know how the full moon would create a low tide

1. 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 misconception that the moon is the cause of all tidal action – the script provided should address this

\*classroom discussion to explore misconceptions, knowledge base and movement towards deeper understanding.

\*classroom management could be hard once the students have their ‘moon balls’ in a new to them darkened room. Lots of boys in my class that are very active and vocal. Maintaining calm and focus might be hard.

\*Students might not know as much as I assume they do about the moon, earth and sun relationship. I might not know enough to answer them accurately.

1. Select the TSI Mode(s) of Inquiry that you will focus on for this activity. (check all that apply)

X Curiosity

□ Description

□ Authoritative knowledge

X Experimentation

□ Product evaluation

□ Technology

□ Replication

X Induction

X Deduction

X Transitive Knowledge

**Questioning and Assessment Strategies**

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

\*assess prior knowledge, checks for understanding is inherent in the script provided after each step, apply new information as the script for the activity unfolds and progresses the last questions and activity are scaffolding for the new ones, they will need to analyze their prior knowledge to incorporate new information and synthesize it when discussing with partners, small groups and whole group.

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

Since each step of this activity builds on the information/experience from the last step there is built in assessment of following directions and building on the new information as well as implementing the information. I administered the end of activity questions as a formal assessment that the students did as small lab groups. They were able to collaborate, discuss, remember and synthesize the activity information in order to complete the questions and draw the models.

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.