**Lesson Plan For SLN Meeting, March 2, 2016**

**Title:** Tracking Great White Sharks (You’re gonna need a bigger boat)

**Core Science Idea**: Animal behavior follows patterns that can be described and explained

**SPI’s** (standards):

**SPI 0607.2.3** Identify the biotic and abiotic elements of the major biomes.

**SPI 0607.2.4** Identify the environmental conditions and interdependencies among organisms found in the major biomes.

**SPI 0707.7.7** Analyze and evaluate the impact of man’s use of earth’s land, water, and atmospheric resources.

**SPI 0807.5.2** Analyze structural, behavioral, and physiological adaptations to predict which populations are likely to survive in a particular environment

**SPI 0807.5.3** Analyze data on levels of variation within a population to makepredictions about survival under particular environmental conditions.

**Progression** (Where in the unit/quarter storyline does this fall?): In 6th grade this lesson might be used during the Ecology quarter as it supports and extends those standards. In 7th grade this lesson could be used as an extension of how man impact water resources. In 8th grade this lesson fits the Life science quarter, particularly the adaptation and variations of populations unit.

**Science and Engineering Practices (HOP)**: Primarily Asking Questions and Defining Problems, Analyzing and Interpreting Data, and Obtaining, Evaluating, and Communicating Information.

**Anticipations:** Students will believe they migrate is because the food supply dwindles (like birds), students will believe weather plays a part in the migration, students will believe they move around to find a mate, students will believe they do/don’t travel depending on how old they are

**Lesson Flow**- What the students will be doing, where discussions will take place, What public records will be generated, what students are putting in their notebooks, etc

* **Setup**: You’re gonna need a bigger boat scene from Jaws. (2 Minutes)
* **Focus Question**: Think of an animal that migrates. What factors influence this behavior and why? *(Private thinking time)* (1 Minute)
* **Beginning Task**: Each table has a stack of data cards. Each person in the group take some cards and review them by looking closely at the data, including the migration map, the card provides. Using only your cards, try to determine if you see any patterns in the data that may help explain why great white sharks travel over long distances. Use your Scientists notebooks to list your patterns as questions using the sentence stem “I wonder \_\_\_\_?” . (4-6 Minutes)
* **Student Talk**: Students will share questions using go-round protocol, adding to their lists of questions from fellow group members until all questions in the group have shared all their questions. (2-4 Minutes)
* **Group Work**: Groups will then work together to create an argument (or more than one) using the data from the cards that explains why great white sharks travel over long distances. Facilitators will be using Accessing and Advancing questions to determine and push thinking about the evidence. After groups have been working for a while they should come to the conclusion that no one argument can explain all the data. Groups will then be given the opportunity to decide on 4 questions about great white sharks they would like to research more. (See anticipations above). Groups may begin plans for an artifact. **Key Teacher Move**: during this time facilitators will look for questions that will help place group members into expert groups. (15-20 Minutes)
* **Expert groups**: Group members reconstituted and given the following instructions: Read and annotate your article, as you read think about the question you are researching. Answer the questions: What new evidence does the article provide? How does this evidence answer my research question? How does this article explain the data from the cards? What further questions do I now have? (10-15 Minutes)
* **Group work continued:** Complete a 4 square organizer in your notebook as members of your group Share (6-8 Minutes)
* **Artifact:** Create a Claim that answers the questions **why do sharks migrate over long distances,** Provide 2 pieces of evidence supported by the data- include your reasoning (10 minutes)
* Interpret and Compare (If time allows)
* Selecting and Sequencing Student Ideas- Attached (10 minutes)

Assessing and Advancing Questions:

What is your evidence for that? How did you come to that conclusion? What does the data say? Is there a difference between \_\_\_ and \_\_\_? Where in the world is that happening? Does that support your hypothesis? How does that fit with your original idea? Which of your wondering questions have you answered?

Materials: Shark Data Cards, Articles, Chart paper, markers

Extensions/Elaborations: List of further questions for research- Does weather have an effect? What about ocean depth? What about water temperature? What about structures on ocean floor? Does length of time between dates?

Assessment: Exit Task Great White “One Word” Formative assessment