Watershed Experience Lesson 8:

Data review: Asking Questions and Representing Data

ACTIVITY TYPE: *Lab-style classroom activity*

AUDIENCE: *High School*

TIME FRAME: *1.5 hours*

SUMMARY:

*In this activity, students use The Question Formulation Technique to develop their guiding question. Then they look at different ways that scientists can represent data. They choose the best method for communicating data that will answer the question. *If students are not yet familiar with graphing and representing data, use the **Foundations of Data** slide show and include the shoe size vs height activity first. Otherwise use the **Forming Questions and Representing Data presentation***

MATERIALS:

- *Student lab packets*
- *PowerPoint presentation*
- *Large Paper and colored markers*
- *Graph paper and poster paper (optional)*
- *Computers*

PREPARE AHEAD:

Decide on the best tools for your students to use for this project based on the experience they have so far. If they are experienced using digital data software like Excel or Sheets, these are great tools to use to analyze data and make graphs. If not, they can use this lesson to learn those programs, or represent their data with graph paper or posterboards.

ENGAGE:

Ask students: How can science create change?

Discuss this idea as a group: science is a tool for us to understand our world, and if we want to, we can use this knowledge to make decisions that benefit the environment, our communities, and a healthy watershed. You are learning to use this powerful tool. Today we will see how we go from a whole bunch of data points to meaningful, actionable information.

PROCEDURE:

Start with the slide show. Put the students into their small groups. Give each group a large sheet of paper and some markers. Walk them through the Question Formulation Technique using the slides.

Once they have come up with their guiding questions, explain that they will need to come up with a way to represent data to help answer that question.

Discuss what it means to represent (show it on a graph or chart) and evaluate (make meaning from) the data. The slide show contains a quick review on the types of graphs they can use and when to use them. This can be helpful for when you set them loose to do their own evaluation.

Go back to the first slide, the map of the Watershed, and have them look at the data they collected. They will now need to represent that data visually (graph or chart), and evaluate what

it may mean for the watershed. Explain the tools that they'll be using, whether you chose a digital or analog method.

Depending on your student's experience with this process, you may want to direct their work a bit more than this. If this is their first time doing something like this, you might assign specific data categories to each group.

BACKGROUND:

To help the students define their focus, this lesson uses The Question Formulation Technique, created by the Right Question Institute, a simple yet powerful strategy to teach students how to formulate their own questions. The Right Question Institute also offers strategies to help them learn skills to engage, advocate, and navigate in systems where decisions that affect them are made. This can be helpful for the follow-up action/advocacy lesson. You can find videos and tips for using the QFT at https://rightquestion.org/education/

Source: The Question Formulation Technique (QFT) was created by the Right Question Institute (rightquestion.org).