

Y-CITYSCI: A Youth-Led Citizen Science Network for Community Environmental Assessment

Introduction to Nature of Science and Citizen Science: Lesson 8

Grade Level: Middle school

Duration: 1 hour

Research

Next Generation Science Standards

Science and Engineering Practices:

Obtaining, Evaluating, and Communicating Information

Asking Questions and Defining Problems

Analyzing and Interpreting Data

Crosscutting Concepts:

Science Addresses Questions about the Natural and Material World

Scale, Proportion, and Quantity

Objectives

- 1) Students will define what data are.
- 2) Students will demonstrate how to collect data to answer questions.

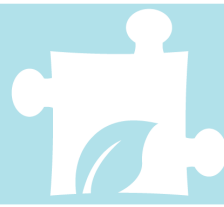
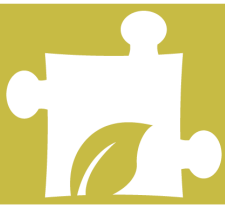
Materials

- “What is Data” video: <https://www.youtube.com/watch?v=pg12U1BAoA>
- Measuring tape (1 per group)
- Door Opening Data worksheet (1 per group)

Activities

Bellringer: Watch the “What is Data” video and discuss. Ask students what data were collected when using the citizen science apps, as well as what data the environmental scientists collected for their research from previous sessions. (5 minutes)





Lecture: Hold a discussion about what research is (an investigation of materials to establish facts or reach new conclusions) and how it affects our everyday lives. (Ex. any human-made product used by students was tested and researched in order to make the final product, etc). (10 minutes)

Activity: The students will now work in groups to conduct a brief research project using data around their school. Share the following Sumo Suit Friday Scenario with the students: The principal of your school has decided to implement Sumo Suit Fridays: all students will be given inflatable sumo suits and will have to wear their sumo suits every Friday. Some of the teachers are concerned that students will not be able to easily fit through the doors when wearing their sumo suits. Your task is to answer the question: Can students easily fit through the doors in your school when they are dressed in their sumo suits? When the suit is inflated, it measures 115 cm wide with a depth of 65 cm.

Data Collection: Ask students what types of data they should collect to determine if they are going to be able to fit through doors when wearing their sumo suits. Make sure that students are aware that not all door openings in the school are going to be the same width. Have students break into groups. Provide each group with the door opening data collection sheet and a measuring tape. Have students measure various widths of door openings around the school (make sure to do multiple openings like bathrooms, classrooms, metal detector, cafeteria, etc.). Talk to the students about what they should be measuring: doors, openings, door frames, etc. Provide students 10 minutes to collect data. **Have all students work in centimeters.** (30 minutes)

Discussion: Have students share their measurements when the class returns. Write these measurements on the board and point out the minimum, maximum, and range of the data. What is the mean door opening in the school? Use these data to answer the question: Will students be able to move through the doors when wearing the sumo suits on Sumo Suit Friday? (15 minutes)



Names:

Door Opening Data Collection Sheet

Record the measurements (in centimeters) of at least 5 doorway openings in your school.

Location	Width (cm)