

# Doing the Research!

## 1. Lesson Overview

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| <b>Resource Summary</b>                 | This activity will help students understand how researchers collect data by simulating a study plot and taking data in their own schoolyard.<br>This is lesson 2 of a 3 lesson mini unit.  |
| <b>Grade Level/ Subject</b>             | Grades 6-8   |
| <b>Time Frame</b>                       | 1-2 lessons (50-60 minute class periods)   |
| <b>Materials and Preparation Needed</b> | <ul style="list-style-type: none"> <li>• 4 meters of string (cut for groups of students; it will be formed into a square and they will need two each per group)</li> <li>• Pencil</li> <li>• Data sheet</li> <li>• Rulers (enough for each group to have a couple for measuring plant height in cm; small rulers would work the best)</li> </ul> |

## 2. Learning Goals

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| <b>Lesson Objectives</b>         | <p><b>Students will be able to:</b></p> <ul style="list-style-type: none"><li>• <b><u>Explore</u></b> various research done by the ITEX-AON network through a hands-on simulation outside at their school.</li><li>• <b><u>Apply</u></b> information found on the website to guide their learning with the hands-on investigation.</li><li>• <b><u>Describe</u></b> the arctic ecosystem and research being done to gather information about climate change.</li><li>• <b><u>Explain</u></b> trends and patterns in the data by graphing the information.</li></ul> |
| <b>Standards</b>                 | <p>MS-ESS3-5 Ask questions to clarify evidence of the factors that have caused the rise in global temperatures over the past century.</p> <p>MS-ESS3-3 Apply scientific principles to design a method for monitoring and minimizing a human impact on the environment.</p> <p>Key Concepts: Arctic Ecosystem, Climate Change, Research Techniques, Hands-on Practice</p>  |
| <b>Polar Literacy Principles</b> | <p>7B-1: This baseline information is coupled with regular scientific explorations to the Poles to collect samples and measurements, including photographic evidence.</p> <p>7C-1: Combining current data with historical data, scientists can construct models to understand connections in the past and improve predictions of future environmental conditions at the Poles.</p> <p>View the <a href="#">Polar Literacy Principles here</a>.</p>  |

### 3. Educational Resource Procedure

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| Opening Activity   | <p>Introduce the lesson by reviewing information from the ITEX-AON webquest the day before.</p> <p><b>What</b> is something NEW you have learned about the arctic region?</p> <p><b>How</b> do scientists study the arctic ecosystem?</p> <p><b>Why</b> is the Arctic Region an important place to study?</p>   |
| Activity Procedure | <ol style="list-style-type: none"><li>1. Review the <a href="#">ITEX-AON website</a> focusing on the <a href="#">research portion</a>. Inform students that they will be gathering data outside like real scientists!</li><li>2. Pass out the “<a href="#">Doing the Research</a>” <a href="#">lab sheet</a> and explain the activity to students.</li><li>3. They will set up two plots, each with 1 meter of string on each side in a square shape. Then they will draw and identify the plants in each one. Encourage students to add color too! Identification of the plant species will determine where you are located and the age group of students. If identification is not possible, feel free to have students describe the plant as best they can.</li><li>4. Then count the plants in each plot and record the data.</li><li>5. Finally, measure the height of each plant (cm) they included in their plots. Record it also on the data sheet.</li><li>6. Provide enough time for students to make their plot, identify/draw/describe the plants, count the plants in each plot, and then measure the height. Ideally, this should be done in one class period, but you could do more, if needed.</li><li>7. Once back in the classroom, it is time to analyze the data. Take some time for a discussion too. Using the numbers collected, they will now create a bar graph. I always remind my students to use a ruler, focus on neatness, and label everything! Once done with that, then students will answer the analysis questions.</li><li>8. Continue to review the data with students focusing on what it tells us about our area versus the Arctic.</li><li>9. When finished, have students submit their assignment for a formative assessment grade.</li></ol> |
| Reflection         | <p><u>Closing</u>: At the end of class, have students answer this question:</p> <p><b>“What is <u>one word</u> you can use to describe your learning today?”</b></p>  |
| References         | <ul style="list-style-type: none"><li>• ITEX-AON: <a href="#">ITEX-AON a collaborative research project - Grand Valley State University (gvsu.edu)</a></li></ul>  |

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|                             | <ul style="list-style-type: none"> <li>• North Slope Borough Wildlife Management: <a href="https://www.north-slope.org/departments/wildlife-management/">https://www.north-slope.org/departments/wildlife-management/</a></li> <li>• Polar Literacy: <a href="https://polar-ice.org/">https://polar-ice.org/</a></li> <li>• Polar STEAM: <a href="https://polarsteam.info/">https://polarsteam.info/</a></li> <li>• Next Generation Science Standards (NGSS): <a href="https://www.nextgenscience.org/">https://www.nextgenscience.org/</a></li> </ul> |
| <b>Supporting Documents</b> | <p>Mini Unit PPT</p> <p>ITEX-AON Network Lab Investigation</p> <p>Doing the Research! Handout</p>  |