

**The Bio/Diversity Project**

**Lesson 6: Introduction to Data Visualization with Excel**

Grade Level: 4-12th

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| <b>AZ Science Standard:</b>   | <p><a href="#">Cheat sheet for AZ science standards</a></p> <p>6.L2U1.13</p> <p><i>Develop and use models to demonstrate the interdependence of organisms and their environment including biotic and abiotic factors</i></p>                                                                                                                                                                                                                                                               |
| <b>Learning Objectives:</b>   | <ol style="list-style-type: none"> <li>1. Students will use Excel (or Google Sheets) to create bar and pie charts from bird diversity data.</li> <li>2. Students will learn to download, save, and submit visualizations.</li> <li>3. Students will reflect on the purpose of visualizing biodiversity data.</li> </ol>                                                                                                                                                                    |
| <b>Scientist of the Week:</b> | <div>  </div> <p><b>Dr. Loni Philip Tabb</b></p> <ul style="list-style-type: none"> <li>• Uses math and data to learn about people's health</li> <li>• Looks at maps to find patterns about illness</li> <li>• Helps communities find out if they have clean air and safe places to live</li> <li>• Teaches students how data can help people and save lives</li> </ul> |

| Vocabulary                                                                                                                                                                                                                                                                         | Materials                                                                                                                                                                        |
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| <ul style="list-style-type: none"> <li>• Data visualization</li> <li>• Pie chart</li> <li>• Bar graph</li> </ul>                                                                                                                                                                   | <ul style="list-style-type: none"> <li>• Laptops with Excel or Google Sheets</li> <li>• Excel dataset from Lesson 5</li> <li>• <a href="#">Slideshow presentation</a></li> </ul> |
| <b>Guiding Questions:</b> <ul style="list-style-type: none"> <li>• <i>Why do scientists create charts and graphs?</i></li> <li>• <i>What can bar or pie charts tell us about biodiversity?</i></li> <li>• <i>How can data visuals help us share what we've learned?</i></li> </ul> |                                                                                                                                                                                  |

## Lesson 6: Introduction to Data Visualization with Excel

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### Engage/Introduction

**Time:** 10-15 minutes

**Objective:** Understand why scientists visualize data

#### Activity:

Along with the example data visualizations in the slides, ask students:

- What story does this chart tell?
  - How is this easier to understand than a table or spreadsheet?
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### Explore

**Time:** 20-30 minutes

**Objective:** Use Excel to create graphs

#### Activity:

Demonstrate how to:

- Input data
- Create bar and pie charts
- Edit titles, labels, and colors
- Export/download the chart as an image

In groups or pairs, students follow along.

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## **Explain**

**Time:** 10-15 minutes

**Objective:** Discuss chart clarity

**Activity:**

Students compare their charts with another group.

Class discussion: What makes a chart easy to understand? What could we improve?

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## **Extend**

**Time:** 10-15 minutes

**Objective:** Prepare graphs for submission

**Activity:**

Students upload or email their chart images to their teacher. (Discuss what method will work best!)

Discuss how these charts will be printed and used in next week's posters.

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## **Evaluate**

**Time:** 5-10 minutes

**Objective:** Assess understanding of graph creation and interpretation

**Activity:**

Think-Pair-Share

1. Think: Students individually think:
    - a. What did this graph help you understand about bird diversity?
    - b. Why is it important to use graphs in science?
  2. Pair: Turn to a partner and share your thoughts.
  3. Share: Select 2-3 volunteers to share with the class.
    - a. If someone had never seen this data before, and did not know about our experiment, what would the graph help them understand right away?
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