Objective

By the end of this lesson, the student will be able to understand and create box plots (box-and-whisker plots) to visualize bee pollen count data. The student will also learn how to interpret these visualizations in the context of pollinator citizen science.

Materials and Prep

- Paper and pencil for drawing and calculations
- Ruler for drawing the box plot
- Data on bee pollen counts (can be fictional or gathered from local sources)
- Access to a computer or smartphone for research (optional)
- Understanding of basic statistics (mean, median, quartiles)

Activities

- **Research Pollinators:** Begin the lesson by researching the importance of pollinators and their role in ecosystems. The student can create a short presentation or write a paragraph summarizing what they learned.

- **Collecting Data:** If possible, the student can spend time observing local flowers and estimating bee pollen counts. They can record their observations in a table format to prepare for data visualization.

- **Creating Box Plots:** Using the collected data or provided fictional data, the student will create a box plot. They will identify the minimum, first quartile, median, third quartile, and maximum values to draw the box and whiskers accurately.

- **Interpreting Box Plots:** After creating the box plot, the student will analyze it to understand the distribution of the data. They can answer questions such as: "What does the median tell us about the pollen count?" and "Are there any outliers?"

- **Present Findings:** Finally, the student can present their box plot and findings to a family member or friend, explaining the significance of their research and the importance of bee pollen counts in the context of pollination.

Talking Points

- "A box plot is a great way to visually summarize data, showing the spread and centers of the data set."
- "In our box plot, the box represents the interquartile range, which contains the middle 50% of the data. This helps us see where most of our pollen counts fall."
- "The whiskers extend to the smallest and largest values, giving us an idea of the overall range of our data."
- "Outliers are points that fall far outside the typical range. They can indicate unusual observations that are worth investigating further."
- "Understanding bee pollen counts is crucial because it helps us gauge the health of pollinator populations and the effectiveness of our ecosystems."