



Haikubox Lesson Grades 2/3

Day 1 Why Count?

Teacher Background

<https://www.nsta.org/science-and-children/science-and-children-mayjune-2023/it-takes-village>

A key element of the *Next Generation Science Standards* (NGSS) is for students to engage in authentic science and engineering practices that scientists and engineers perform in their jobs ([NGSS Lead States 2013](#)). One strategy to implement these standards within the school curriculum is for students to participate in citizen science projects. Citizen science provides an opportunity for anyone to gather data alongside scientists in authentic scientific discovery (California Academy of Sciences), which not only fosters the use of science and engineering practices (SEPs) but also scientific literacy.

Engage

Teacher: Thumbs up if you have a birdfeeder at home. How many of you have seen birds flying around as you walk to school or play outside? Can you describe the birds you have seen? Talk at your table and describe the birds you have seen.

Share back some of the responses that you have heard or write them on the board. How are students describing the birds? Do students know the names of the birds they have seen?

Explore

Show the cover of the book [Bird Count](#) by Susan Edwards Richmond. Teacher: What do you think this book is about? (prereading) As I read, I want you to think of questions you have about bird counting.

Read aloud: [Bird Count](#) aloud pointing to the tally marks specifically.

https://www.amazon.com/Bird-Count-Susan-Edwards-Richmond/dp/1682632040/ref=sr_1_1?crid=3BKGSCHDLOBD&keywords=bird+count+by+susan+edwards+richmond&qid=1705345408&srefix=bird+count%2Caps%2C132&sr=8-1



Teacher: Talk at your table about the rules for the Christmas Bird Count. What questions did you think of while I was reading?

Share back some of the responses that you have heard or write them on the board.

Explain

The Christmas Bird Count is a real event. Why is it important to count the population of birds? (Share answer- "Ornithologists use bird count data to keep track of how birds are doing. Data can show when an endangered species, such as the bald eagle is making a comeback, or when climate change causes a species to migrate elsewhere."- Susan Edwards Richmond.)

Teacher: How did the main character in the story recognize the birds my name? (She must have been studying for years before.) How do you know? (This isn't her first bird count as she compared it to years before.)

Introduce Haikubox: This is the Haikubox! As scientists beginning to observe birds (ornithologists), we may need help with the identification of birds. This is our science tool that we will use today. The Haikubox uses bioacoustics or the song the bird makes to identify the bird. Let's look at my app from my home and the birds that I have just today! We will continue to analyze this data every day this week.

Show data from home on the app... Is there a spot to place the Haikubox near the classroom? If not, use home data for the week.

Elaborate

Save table and continue the data mapping at the beginning of class for 5 days. Name the birds or group of birds. Students will be excited to see the birds and hear their song!

Evaluate

Give students a table to list the top 5 birds from the Haiku app. Revisit the pages in the book that show the tally marks. Click on the graph under the bird for numbers of songs. Share the data from the Haikubox and students will tally the 5 birds together.

Teacher leads the analysis- What do you notice? What do you wonder? Some birds travel in groups and some are alone. What do you think that means?

Day 2
What is a Citizen Scientist?

Engage

Teacher: Let's look at our bird visits for today! I have pulled up today's data so far. Add it to your tally chart. Discuss at your table what you notice. (Any new birds?) Show some more features on the Haikubox app- What times do the birds call? Would that be important to know? Discuss at your table.

Share back some of the responses that you have heard or write them on the board.

Explore

Reread pages 1-3 in Bird Count.

Teacher: Why would it be important to be a citizen scientist? Why can't the ornithologists just do the counting? There are teams in the count circle and at the end, AI give the data to the circle chief. What do you think the circle chief will do with the data?

Explain

Our science tool, the Haikubox, works with the Cornell Lab of Ornithology and shares the data collected. How do you think that may affect the data (think about the rules)?

Teacher: Are there other ways to be a citizen scientist? Manatees and bees are other projects citizen scientists can participate in.

Elaborate

What challenges would there be as a citizen scientist? Discuss and create a table of pros (easy things) and cons (hard things).

Evaluate

Working in a table group, students should learn more about being a citizen scientist. Make a list of ways students in our community can help other scientists by observing nature.

Standards:

Next Generation Science Standards

2-LS4-1: Biological Evolution: Unity and Diversity: Make observations of plants and animals to compare the diversity of life in different habitats.

3-LS2-1: Ecosystems: Interactions Energy, and Dynamics: Construct an argument that some animals form groups that help members survive.

3-LS3-1: Heredity: Inheritance and Variation of Traits: Analyze and interpret data to provide evidence that plants and animals have traits inherited from parents and that variation of these traits exists in a group of similar organisms.

National Council of Teachers of Mathematics

Data Analysis and Probability

Grades Pre-K-2 Expectations: In grades pre-K through grade 2 each and every student should –

- pose questions and gather data about themselves and their surroundings;
- sort and classify objects according to their attributes and organize data about the objects;
- represent data using concrete objects, pictures, and graphs.

Grades 3-5 Expectations: In grades 3-5 each and every student should –

- design investigations to address a question and consider how data-collection methods affect the nature of the data set;
- collect data using observations, surveys, and experiments;
- represent data using tables and graphs such as line plots, bar graphs, and line graphs;
- recognize the differences in representing categorical and numerical data.