

Grade 4 Unit 3 Week 3- Observing Nature

Citizen Science Project: eBird

Benchmark Lesson	NGSS/ Garden Connection	Sense making (takeaways)
<p>Lesson 1- Build knowledge and Integrate and Ideas</p> <p>Lesson 2- Review Wk2 Strategies to Unlock text</p> <p>Lesson 3- “Birches” Read and Respond</p>	<p>-Bird beak investigation https://www.sciencefriday.com/educational-resources/a-new-beak-evolution-lab/ https://betterlesson.com/lesson/631891/the-birds-and-the-beaks http://sciencenetlinks.com/lessons/bird-beaks/</p>	<p>Ss are engineering a beak and testing out which beak types are most effective. <i>Teacher focus: Connect finding of beak investigation back to local birds. Focus discussion on how the design of the beak determined what type of food could be obtained. Consider benefits/ downsides to specializing</i></p>
<p>Lesson 4- Analyze Research prompt</p> <p>Lesson 5- “In Summer” Read and Respond to a Poem</p> <p>Lesson 6- “In summer” Read and Respond</p>	<p>-Pose question: “What elements of our campus system supports the bird population, and how?”</p> <p>-Nature walks and data submission</p>	<p>Ss are positioned as the experts. Having researched local birds, collected data out the campus, and identified unknown birds sets Ss apart. <i>Teacher focus: Discussion should be focused on the campus and how our campus supports the bird population. This discussion will then lead Ss to consider what changes will need to be made to the campus</i></p>
<p>Lesson 7- Evaluate Print Sources</p> <p>Lesson 8- Close Reading: Compare a Poem to a Photograph</p> <p>Lesson 9- Word Study</p>	<p>-Nature walks and data submission</p> <p>- Class data (all observations made) analysis and discussion question: “How well does our school campus support wildlife?”</p>	<p>Ss must have meaningful discourse with classmates (Partner Conversation Support: Table Tent) on the topic of the school campus that they share and whether or not the resources are supporting the wildlife populations based on what Ss have been observing <i>Teacher focus: Bring Ss into a position in which they are the experts who have knowledge about our campus ecosystem. Discussions about what changes need to happen to the campus can only be had included the experts</i></p>

<p>Lesson 10- Evaluate Online Sources Lesson 11- Close Reading- Understanding Fig. Lang. Lesson 12- Word Study</p>	<p>-Nature walk and data submission -Class data analysis discussion</p>	<p>Ss will need to communicate respectfully. Explaining ideas, making suggestions to others, and working with classmates to reach a consensus about what changes they want to be made to their campus based on what has been observed by the Ss <i>Teacher focus: Making a recommendation for a change on school campus is important for Ss so they can see the impact they can make. However before making a recommendation Ss need to have had an opportunity to learn about and understand their campus at a deeper level.</i></p>
<p>Lesson 13- Use Keywords to Search for Relevant Sources Lesson 14- Close Reading: Analyze Diff. between Prose and Poetry Lesson 15- Takes Notes on Index Cards</p>	<p>-View Great Blue Heron Hunting - Read Great Blue Heron</p>	<p>Ss will demonstrate their understanding of structure and function and how that impacts how the Great Blue Heron will survive on campus. Ss will justify their answer <i>Teacher focus: There is not a right or wrong answer, how Ss justify will demonstrate their understanding of structure and function and how survival depends on the efficiency of it</i></p>

Week Three Lessons 1-3

Week 3- Opinion- Would you prefer to observe nature in New England or the Mojave Desert? To develop an opinion, conduct research using this guiding question: What are the natural features of these two regions? Read and take notes from two or more sources to answer the question? List your sources.

Lesson 1- Build Knowledge and Integrate Ideas

SL4.1a-d, SL4.2, SL4.6

- Reflecting on last week's readings, relating back to the essential question and the readings

Lesson 2- Review Week 2 Strategies to Unlock Texts

SL4.1a-d, SL4.2, SL4.6

- Reviewing figurative language: personification, simile and metaphor

Lesson 3- "Birches": Read and Respond to a Poem, Part One. Lines 1-20 on page 22

RL4.1-2, RL4.5, RL4.10, RF4.4a, W4.10, SL4.1a-d

- Review rhythm, rhyme, meter, stanza breaks (**stanza and rhyme not in this poem**)
- Students read 21-59 on own. Personification is focus.

Connections to NGSS/Citizen Science Project

As a way to deepen students' understanding of the connection between the structure of a particular bird beak and the function (food source/methods of obtaining food), students will test different bird beaks and their ability to obtain food from various sources.

There are different variations of this lesson. In some, students use given materials to construct their own beaks, and in others students use ready made beak materials. It is important to choose the lesson design that will fit the needs of your class at the time this lesson is being taught.

<https://www.sciencefriday.com/educational-resources/a-new-beak-evolution-lab/>

<https://betterlesson.com/lesson/631891/the-birds-and-the-beaks>

<http://sciencenetlinks.com/lessons/bird-beaks/>

Sense-Making- Take-aways from class discussion:

- How did the design of the beak determine what type of food source you were able to obtain?
- What are the benefits/downsides to specializing?
- How can/do birds adapt to a changing environment?

Possible Reader's Workshop Stations:

- Reflection on investigation- If you had to build a beak again, what would you do differently and why?
- Write a poem about observing nature on campus/in neighborhood
- Write a poem or prose from the point of view of the bird being researched
- Look at new eBird data that was submitted by class or other citizen scientists

Community and Citizen Science Core Activity:

- Develop expertise, Contribute Data, Make Meaning

Key Youth Practice:

- Engage with complex social ecological systems

Key Educator Practice:

- Frame the work globally and locally, Position youth as people who do science

Youth Learning//Environmental Science Agency:

- Develop science content and practice skills
- Self-identify as expert

Week Three Lessons 4-6

Lesson 4- Analyze a Research Prompt

W4.7, SL4.1b-d

- Model Prompt- Would you prefer to observe aquatic animals in the Atlantic Ocean or the Mississippi River? Use question in book on page 31 instead:
- **Opinion- Would you prefer to observe nature in New England or the Mojave Desert? To develop an opinion, conduct research using this guiding question: What are the natural features of these two regions? Read and take notes from two or more sources to answer the question? List your sources.**
- What is the main topic of my research?
- What information will I need to find?
- What decisions will I need to make about my research?
- What am I asked to present based on my research?

Lesson 5- "In Summer": Read and Respond to a Poem, Part 2

RL4.1-4.2, RL4.10, RF4.4a, W4.10, SL4.1a-d

- Review rhyme, rhythm, stanza breaks and meter
- Modeling, reading aloud, annotating point of view of nature

Lesson 6- "In Summer": Read and Respond to a Poem, Part 2

- Discuss accuracy, rate and expression

Connections to NGSS/Citizen Science Project

Key to shifts in NGSS is the understanding of the term modeling. When asking students to model, we are asking them to apply a current set of ideas, the [scientific model](#) that they currently hold. One way to have students engage in the practice of modeling is to have them make their thinking visible. Here, we are not simply asking them to draw a picture, but engage with the phenomenon and help answer a question with a clear purpose. For this task, students will be working on understanding the system of their campus as their phenomenon. The question they will be working towards is “What elements of our campus system support the bird population, and how?” Using large whiteboards or chart paper, have the students work in groups of 2-3 to illustrate the system of their campus, how it works, how it supports wildlife, etc. Depending on the science lessons that may have come before this unit, criteria to be included for each representation of the system may differ.

[Engaging with the thinking of others](#)- Once each group has had a chance to complete their representation of the campus system, students should be given time to provide feedback to one another. Engaging with the thinking of others can be challenging at first. It is important to be clear as to the purpose of feedback, and set classroom norms with clear criteria for what is appropriate feedback. [Post-it notes](#) are a great way to give feedback in a way that allows for the original group to take in the feedback provided and make changes, if necessary, to their representation.

Sense-Making- Take-aways from class discussion:

- Data Submission- continue to submit and analyze patterns in data
- How does the behavior of each species differ? What do you think is the cause?
- After reviewing the representations of other groups, what was your big “ah-ha”? Did anything surprise you? What changes did you make to your poster after seeing both the models of others and your feedback?

Possible Reader’s Workshop Stations:

- Look at new eBird data that was submitted by class or other citizen scientists
- Reflection- what changes did you make or think need to be made to your group’s representation?
- What was missing from your representation? What did you find engaging in the models of others?

Community and Citizen Science Core Activity:

- Develop expertise, Contribute Data, Make Meaning

Key Youth Practice:

- Engage with complex social ecological systems

Key Educator Practice:

- Frame the work globally and locally, Position youth as people who do science

Youth Learning//Environmental Science Agency:

- Develop science content and practice skills
- Self-identify as expert

Week Three Lessons 7-9

Lesson 7- Evaluate Print Sources

W4.7-8, SL4.1a-d, L4.1h

- Model evaluating print sources - which hold value for research?
Questions:
- Does the cover my topic?
- Is the author an expert on the topic?
- Is the book up-to-date on the topic?
- Does the book have helpful tools for finding the information I need?

Lesson 8- Close Reading: Compare a Poem to a Photograph

RL4.7, RL4.10, W4.10, SL4.1a-d

- Reread lines 17-23 compare “Birches” poem to photograph
- Ask students to write a poem or paragraph about something in nature that they respond to strongly. Remind them to use descriptive language to give the reader a sense of what they might see, feel, hear or think if they were physically there.

Lesson 9- Word Study

Connections to NGSS/Citizen Science Project

As students collect data on their campus, researched the bird population that shares the space and make observations focusing on the resources being used by plants, insects and animals alike, the question of how well the school campus supports the wildlife population arises. Questions like “How do you know when an ecosystem is balanced or not?” or “What signs tell researchers that there is a problem with a population?” often come up. Before opening up this topic to the class, it is important for students to have time with partners to think through their own understanding using a dialogue protocol such as [Partner Conversation Support: Table Tent](#) that will allow each student equitable time and support to ensure they have a chance to voice their opinions and reflect on the perspectives of others.

Sense-Making- Take-aways from class discussion:

- What resources do you feel need to be added to our campus? Why?
- Are there birds that are in the area and not at our campus? Why?
- Is it important to increase the biodiversity? Increase a certain population?
- What chances do you feel should be made to the campus based on the evidence?
- How were the ideas/opinions of your partner different than your own? Did you change your idea/opinion after listening to their reasons?

Possible Reader’s Workshop Stations:

- Begin typing report
- Begin creating slides for presentation
- Structure and function of plants in garden

- Look at new eBird data that was submitted by class or other citizen scientists

Community and Citizen Science Core Activity:

- Share the work and take action

Key Youth Practice:

- Share findings with outside audiences

Key Educator Practice:

- Frame the work globally and locally, Position youth as people who do science

Youth Learning//Environmental Science Agency:

- Use citizen science experience to make changes in your life or community

Week Three Lessons 10-12

Lesson 10- Evaluate Online Sources

W4.6-8, SI4.1a-d

- Model- **Opinion- Would you prefer to observe nature in New England or the Mojave Desert? To develop an opinion, conduct research using this guiding question: What are the natural features of these two regions? Read and take notes from two or more sources to answer the question? List your sources.**
- Evaluate sources for: relevancy, reliability, how current the information is

Lesson 11- Close Reading: Understanding Figurative Language to Determine the Theme

RL4.2, RL4.10, W4.10, SL4.1a-d, L4.5

- Reread to find text evidence “In Summer” looking for examples of personification to determine the theme.

Lesson 12- Word Study

Connections to NGSS/Citizen Science Project

Classroom consensus building to determine Presentation of Findings/Recommendations:

Student engagement with place based learning can motivate them to engage with the world on a much deeper level, understanding the interconnectedness of the system with which they are a part of. Citizen science research also allows them to recognize that they have the opportunity to make positive changes within that system. “In short, [place-based education](#) helps students learn to take care of the world by understanding where they live and taking action in their own backyards and communities.” [Citizen science](#) projects deepen that engagement with the scientific community, allowing all students to see themselves as future scientists. During this class discussion around data analysis around this research project, students will be engaging with the practices of [constructing explanations](#) and [argumentation](#). Once they have shared their ideas as to what changes they feel should be made to their campus and why, they will need to determine who the target audience is. It is important, during discussions such as these, that teachers reinforce [classroom norms that ensure equitability](#) while allowing all thoughts and opinions to be shared. Using one of the dialogue protocols practiced, teacher talk moves, etc. can reinforce classroom dialogue and engagement with these practices.

Sense-Making- Take-aways from class discussion:

- Changes recommended should be based on the evidence collected. Yes, observations are evidence.
- **Highlight that they are the experts of this system. Students are the ones with this knowledge to be able to make evidence based recommendations. They have knowledge and understanding that no one else does because of their research.**
- Who is the target audience? Who would need this information? Who would be able to help in making these changes?
- What might be the effects of these changes? What might the impact be to the system?
- Engineering: 3-5 ETS1-1 Define a simple design problem reflecting a need or want that includes specified criteria for success and constraints on materials, time, or cost. Identify the criteria, constraints, cost, etc.
- Data submission and class data analysis discussion

Possible Reader's Workshop Stations:

- Opinion letter to _____
- Reflection- what were your biggest take-aways from this project?
- Data analysis- what patterns, differences, changes have you noticed?

Community and Citizen Science Core Activity:

- Share the work and take action

Key Youth Practice:

- Share findings with outside audiences

Key Educator Practice:

- Frame the work globally and locally, Position youth as people who do science

Youth Learning//Environmental Science Agency:

- Use citizen science experience to make changes in your life or community

Week Three Lessons 13-15

Lesson 13- Use Keywords to Search for Relevant Sources

W4.6-8, SL4.1a-d

- Model

Lesson 14- Close Reading: Analyze Differences Between Prose and Poetry

RL4.5, W4.10, SL4.1a-d

- Define Prose- compare and contrast "The Shimeradas" and "In Summer" and write a paragraph

Lesson 15- Take Notes on Index Cards

W4.6-8, SL4.1a-d

- Using keywords to take notes on research cards
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Connections to NGSS/Citizen Science Project

Assessing Learning: Show students video of a [Great Blue Heron Hunting](#). Pose the question: What would happen if a pair of heron's came to the campus? Would they stay and thrive? Why or why not. Use evidence based on your own observations about the ecosystem of your school campus, as well as from the reading [Great Blue Heron](#) to write a CER paragraph about your opinion of what would happen.

Sense-Making- Take-aways from class discussion:

- Highlight that there is not a right or wrong answer. The claims that are made and evidence cited are what you are looking at.
- Remind students that they are focusing on the structures and functions of the heron within the system that it survives in that allow it to survive, thrive and reproduce.

Possible Reader's Workshop Stations:

- Finish writing report
- Finish working on Powerpoint/Google slides for presentation
- Sketch out important factors of campus system

Extension Ideas:

- ❑ STEAM Connection: [Build a Bird Art](#). Create a bird, then design it's habitat, what it eats, where it lives, etc. based on the structures and functions chosen.