

Lesson 2.2: Creating a Base Map of Our School Grounds

In this lesson, students will create a base map of their school grounds and interview the school grounds staff (or volunteers) to understand their challenges in maintaining the school grounds.

Grade Level: 6 - 12 or equivalent

Subjects: Science, social science, geography, communications (interviewing)

Concepts/Vocabulary: Base map, map elements

NGSS Performance Expectations:

Middle and high school:

- Asking questions and defining problems
- Developing and using models
- Constructing explanations and designing solutions
- Engaging in argument from evidence
- Obtaining, evaluating, and communicating information

5E Unit: Explore

ESA 4DEE:

- Human-Environment Interactions
- Cross-cutting Themes
- Ecology Practices
- Core Ecological Concepts

Universal Design for Learning Connections

Key knowledge (Students will know that):

- Maps are symbolic representations of a space that emphasizes our relationships to the things within the space
- There are certain standard elements and symbols of any map, including a title, cardinal directions, legend or key, and scale. These symbols must be explained in order to understand the map's message
- Maps represent the viewpoints and interpretations of those creating them
- Management of school grounds involves experienced staff (or volunteers), funding, supplies, equipment, and a vision or purpose for what the school grounds should be

Key skills (Students will be able to):

- Create a basic map of their school grounds with the standard elements represented
- Research and write interview questions
- Ask interview questions and follow-ups in a professional manner and draw conclusions from these exchanges

Key dispositions (Students will value):

- The process of determining and reaching consensus on what is represented on maps
- The labor and resources necessary to maintain the school grounds
- The need to involve all stakeholders when trying to make change happen

Technology Connections: Internet resources

Materials:

- Large paper for creating maps
- Color and standard pencils or other drawing tools in contrasting colors if possible
- Yard or meter sticks and/or tape measures
- Printed or digital maps, satellite images, aerial photographs of the school campus if available
- Notebooks/electronic journal for each student to be used throughout the project as observation journals

Estimated Time for Lesson: 4 45-minute class periods

Lesson Objectives

Students will:

- Create a base map of their school grounds with standard map elements and symbols (title, cardinal directions, legend or key, and scale).
- Research and write interview questions for school grounds maintenance staff (or volunteers).
- Demonstrate their skills at interviewing and asking follow-up questions.
- Draw conclusions from their interviews.
- Document their thoughts about the activities in this lesson in a journal.

Assessment Opportunities

- Contributions to class discussion
- Verbal responses to pre-assessment question
- Interview questions
- Base map students create
- Journal entries describing key takeaways from this lesson

Background

Maps have been around in some form for at least 5,000 years. They show us how to get from place to place, where things are currently located, and what we envision for the future. They are a tool to help us explain the world and allow those not living in a place to still experience it. Maps are interpretations of place and time, and therefore attention must be paid to who created a map and whose viewpoint is being represented.

In this lesson, students will prepare a base map of their school grounds, with standard elements and symbols including a title, cardinal directions, legend or key, and scale, as well as locations of buildings and other parts of the built environment, plants, and wildlife. They will also research and write questions for interviewing staff (or volunteers) that maintain the school grounds about their work and the resources needed.

Getting Ready to Teach

This lesson follows a sequential step pattern and requires background knowledge (see above). Students should have a working knowledge of how to read and interpret physical maps, including orientation, legend, and scale.

Students will be interviewing the staff or volunteers responsible for maintaining the school grounds. It may be helpful to identify this person(s) ahead of the lesson and

invite them to your classroom, letting them know that they will be interviewed by students.

Students should be prepared to spend time outdoors on their school grounds for part of this lesson.

Please open the links prior to teaching the lesson. You may also refer to additional resources at the bottom of this page.

The Lesson

Part I. Review Parts of a Physical Map

1. Using a physical map as an example, review with students the parts of a physical map, including a title, cardinal directions, legend or key (what do symbols mean), and scale (how to measure distance).
2. Explain that by mapping the school grounds we will create a foundation for representing how biodiverse and culturally representative they are, setting the base for envisioning how they might be improved in these areas.

Part II. Draft Questions and Interview School Grounds Staff

3. Do a quick written pre-assessment by asking students to consider **"What resources are necessary to maintain the school grounds?"** They may come up with ideas such as labor, funding, instructions to staff, maintenance policies, lawn mowers, other equipment and tools, and materials such as grass seed, plants, fertilizer, compost, topsoil, and pesticides. They can record their ideas in their journals. Students can work individually or in groups.
4. As you discuss the answers as a whole class, let the students know that they will be drafting questions to interview the staff or volunteers who are responsible for maintaining the school grounds in order to gain a better understanding of how the process works and the challenges entailed, such as specific areas that are difficult to maintain.
5. Give the students some time to come up with interview questions. They may also want to include some possible follow-up questions, and to do some internet research to support their work.
6. Once the questions are drafted, discuss them as a whole class and decide which questions will be asked. Give everyone in the class a role in the interview process: making introductions, explaining the project and expressing appreciation for the visitor's time and information, asking initial questions, asking follow-up questions, taking notes, etc.
7. At the end of the interview, invite the visitor to accompany the students as they do their mapping exercise.

8. After the interview is completed, engage the class in group discussion to draw some conclusions about the school grounds maintenance process. Students should note these conclusions in their journals.

Part III. The Concept of Space and Making Maps

9. To begin making our maps we will define the concept of **space**. As a class, work to create a definition of space as a geographer would use it (location, distance, direction, pattern, shape, and arrangement). Write it somewhere that is visible to the entire class.
10. First let the students see the school campus as laid out on paper maps. Then introduce digital images, for example satellite or aerial images such as those from Google Maps and Google Earth.
11. Ask students to identify the buildings and features of the campus on the maps and images.
12. Let students know that they will be going outside to begin building their maps of their school grounds.
13. Invite the staff person or volunteer responsible for school grounds maintenance to accompany the students and share their expertise. This would be a good time to confirm any challenging places to maintain so students can identify them on their maps, and to have a discussion about ideas for changing those spaces, perhaps by turning them into habitat gardens or other natural spots that do not need much maintenance. Ask what changes to the school grounds maintenance would make the staff person's job easier or safer.
14. Using yard or meter sticks and/or tape measures, paper, and drawing tools, students will create rough maps showing the space of the school grounds. Included should be locations, distances, directions, patterns, shapes and arrangement of different plant and wildlife areas, buildings, and other structures. Also included should be orientation, legends or keys, and scale.
15. Once back inside, students can refine their rough maps. Students can use the maps introduced earlier in this lesson as well as return trips to outdoor locations as they do this work.
16. After the maps are complete, students can share and discuss their spatial features. Here are some questions you could ask.

Part IV. The Concept of Place and Adding to the Maps

17. We'll now take a look at the school grounds as a **place**, a space with human and physical components that interact dynamically. In the same manner as in #9 above, work with the class to create a definition of place as a geographer would use it. Write it somewhere visible to the entire class.

18. As part of your discussion, ask students to describe physical/natural characteristics, such as natural vegetation, landforms, and water features; and human/cultural characteristics, such as land use, built components, and the population using it.
19. Refer back to the maps students created in Part III. Ask the students to add features and labels on their maps to indicate the current physical and human characteristics of the school grounds. They might include land use, traffic/movement, types of vegetation, topography, signage, artwork, etc. Students can do internet research or interview local experts as resources for this information, in addition to going back out to the school grounds to "ground truth" their maps. They can use this [suggested classification of habitat/land types](#).
20. Legends for the symbols and features should be included on the maps and all details should be labeled.
21. Once the students are satisfied with their maps, share them in small groups or a whole-class discussion. Here are some [discussion ideas](#). Create a large overall master map with features from the students' maps. Keep this map to refer to in later lessons.
22. Ask students to reflect on this question and put their responses in their journals for later reference: **"Did you discover any information through your time on the school grounds, research, and conversation with the school grounds staff or volunteer that gave you ideas for changes that could be made on the school grounds, especially related to increasing biodiversity, perhaps on hard-to-maintain areas?"**
23. Discuss their answers, and have students record conclusions in their journals.

Part V. Presentation Preparation

24. Have students open their journals and record their main takeaways from this lesson, including big ideas, relationships, and goals.
25. Remind them that this overall project culminates in a presentation or other means of advocating for more ecological and culturally diverse school grounds.
26. Using the [Presentation Rubric](#), ask students to record some ideas in the "Presentation Ideas" section of their journal for the slide(s) or piece(s) of information to be included from Lesson 2 in the project presentation, if you will not be using slides. Label these ideas "Lesson 2.2" or with some other label that helps organize the information to align with the rubric. Students can work in their groups (which you may keep for the duration of the project) or individually.
27. Collect the journals to keep for assessment and to ensure that all students are collecting the information needed for their presentations.

Additional Resources

- [History of Mapping](#) article
- [Decolonizing the Map: Creating the Indigenous Mapping Collective](#) article

Extensions

- Have students do some historical research on what the land that their school is on was like in the past. Who lived there? What uses did the land have? What plants were there? What animals?
- Students could do some "micro-mapping," taking a small part of the school grounds they have identified as a possibility for change and map what changes they would make. It could be a hard-to-maintain area that could be made into a habitat garden with native plants, eliminating the need for mowing, or some other area that could be improved for biodiversity.

In the Next Lesson (L 2.3)

Students will research the elements of ecological school grounds.

Acknowledgments

Parts III and IV of this lesson were adapted from the [Association of Fish and Wildlife Agencies, *Schoolyard Biodiversity Investigation Educator Guide*, 2011](#) and [Landscape Investigation Guidelines, 2022](#)