

Lesson #3: Great Adaptations

How Plants Adapt to Different Environments

03

Big Idea



Being able to adapt to any situation is very useful, especially if you are a plant. Just like humans, plants become well-equipped to survive in the conditions around them. Developing special adaptations such as longer roots, big broad leaves, stems filled with extra water reserves, or growing taller than their neighbours are all helpful for a plant's survival.



Suggested Steps:

1. We recommend starting with the discussion in the first activity.
2. Afterwards, watch the video to learn more about specific plant adaptations.
3. If time allows, do the second activity.
4. Close the lesson with a journal reflection prompt or My Climate Story handout.

Guiding Questions:

- What physical attributes and behaviours do plants have to survive in different areas?
- What plants grow in different habitats?
- How do plants help support and depend on the environment they are in?

Learning Objectives

I know (knowledge), I can (skills), I understand (conceptual understanding)



I KNOW

- ↳ Some examples of different climates that require plant adaptations.
- ↳ The difference between native, introduced, and invasive plants/species.



I CAN

- ↳ Suggest creative ways that plants can meet their needs through adaptations.
- ↳ Identify specific plant parts, such as roots, stems, or leaves, and how they can adapt.



I UNDERSTAND

- ↳ How different environments pose different challenges for plants and humans to survive.
- ↳ The role humans play in speeding up plant adaptation for us in agriculture and other uses.

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Activity 1: I'm Going On An Adventure! (Survival Wear)

Time: 25 mins

Process: 8 steps



Materials Needed:

- Flip Chart paper or whiteboard and markers

- Page with habitats listed

1. Before beginning the activity, think of a commonly-known environment, such as a desert, rainforest, jungle, farm, etc. Don't reveal your choice to the students.
2. Explain to the students that they will have to guess what environment (or location) you are thinking of by thinking about the clothing and other gear you are going to bring.
3. There are two options for guessing. The first is to slowly list off some of the gear and clothing you would bring, repeating the phrase "I'm going on an adventure and I'm bringing" Start to ask the class for their guesses after listing off 3-4 items.
4. The other option is to have students think of an item to complete the sentence "I'm going on an adventure and I'm bringing ..." The teacher then thinks about whether the item is appropriate to bring with them to the environment, and tells them "Yes, you can come," or "Sorry, you can't come!"
5. Once students have guessed the environment correctly, ask another student to model the same structure and see if you can guess their mystery environment.
6. Note down sight words and ask your students some prompts on why they chose particular clothing and gear. What were their considerations? Weather? Access to food and water? Dangers? Anything else?

7. Explain to your students that plants have to have certain modifications or 'superpowers' of their own to survive where they are. Can we think of any special abilities they may need, like us and our clothing and gear choices? Why would they need these special abilities?
8. Close by noting their ideas down and revisiting them later to see if they have any other ideas to add.



Accommodations or Extensions

- ↳ As a review activity -or if they are restless and want to get moving- have students go in pairs or trios and take turns being the guesser or the leader. You may want to list some environments for them first to have as inspiration.

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Activity 2: Ready, Set, Grow Roleplay

Time: 30 mins

Process: 11 steps



Materials Needed:

- “Plant Personality” Sheet (one per student)
- Rope or string (enough to make one necklace per student)
- Pencil, pen and/or markers
- “Plant Environment” Posters printed, single or double-sided.

Discussion

1. Ask your students to think about the different needs of plants, and the different parts of plants that may be bigger or smaller to help support that plant meeting its needs.
2. Draw out a simple plant and ask students to identify the parts. What plant parts might need to change to help so all of the plants' needs are met? We call these adaptations.
3. Go through each of a plant's needs and think about possible adaptations together. What about getting more light? How about staying warm or cool from air temperatures? What about too much or too little space, water or nutrients? Jot down some of their ideas.
7. Go over each of the different areas, and ask students to do a drawing of an imaginary plant on the worksheet. Then, fill in how much or how little of each need their imaginary plant requires. After, cut out and holepunch their plant info cards, making small necklaces for the students to wear.
8. Set up a four-corners style game in the classroom, with four of the different “Plant Environment” mini-posters on the walls.
9. Ask students to ‘walk like a plant’ over to each environment and think about which one would be best for them to live in. After a few minutes, countdown to 10 and have the students go to their ideal environment (corner).



Activity

4. For this activity, each of your students will roleplay a plant with different adaptation features.
5. Start by handing out the “Plant Personalities” worksheet and walk students through the different diagrams.
6. Tell students they each will pretend to be a different plant. Just like when you buy a plant at a store or plant from a seeds, a label indicates what kinds of conditions you do best in.
10. Discuss why they chose the environment they did, and who their neighbours are. Did they also have similar needs to you?
11. If time allows, switch each of the mini-posters to new environments and do the activity one more time.

Accommodations or Extensions

- ↳ What do you think your imaginary plant would look like if it was real? Draw it in your journal as a reflection.
- ↳ With the right materials, you can adapt this activity into more of a dress-up roleplay. Try giving students different sized strings to represent roots attached to pant belt loops and create, create paper crowns with different leaf sizes. Use blue felt or construction paper water droplets attached with clothespins for water, aluminium foil bracelets for light, and NPK circle badges for the amount of nutrients they need. They can walk like giants or very tiny plants to show how much space they need!

Lesson #3: Weather Warriors

My Climate Story Reflection



As part of planting seeds for climate stories, your students are developing their own story to help them walk through their role in climate change. You can use this assignment in place of -or to support- a journal reflection.

The companion worksheet for developing My Climate Story for this lesson asks your students about the choices they make. We can make healthy choices in how we treat others and ourselves, and these choices have an impact. This also includes the choices we can make that will help the planet stay healthy too, including plants!

For further guidelines on helping your students develop their own Climate Story, check out the explanation in the Teacher's Guide (page #).

Reflection/Journal Prompts

- If you had adaptation powers like a plant, what would you be really good at?
- Describe and/or draw a plant you think would be helpful if you moved to another planet.
- How can you keep plants safe from invasive plants?



Assessment/Evaluation

Formative evaluation can be done through noting student suggestions and participation in both activities. Both worksheets can assist with summative evaluation, as well as the journal or reflection questions.

Extension Activities:

- ↳ Consider "Adopting a native plant" as a class or for each individual student. Research and learn more about the adaptations of a native plant near you, and build an awareness campaign so others will be able to identify and protect it in the natural spaces around them. You may even want to grow some seeds in the classroom!
- ↳ Invasive plants are all around us. Bring in some examples and explore with your students what characteristics they have that have made them successful in your community (for example purple loosestrife can produce over a million in a single growing season) Provide information to others on how to prevent their spread.