



LESSON OBJECTIVE

- ✎ Learn how to care for and grow living plants
- ✎ Create detailed observations of grass growth

GRADE

- ✎ 5

STANDARDS

- ✎ Life Science
- ✎ Mathematics

TIME REQUIRED

- ✎ 45-60 min + 2-3 weeks to observe

VOCABULARY

- ✎ Grassland
- ✎ Germination
- ✎ Grazing
- ✎ Tussock

MATERIALS

- ✎ Reusable plastic containers (like cottage cheese containers)
- ✎ Sponges
- ✎ Grass seeds
- ✎ Plastic wrap
- ✎ Spray bottle filled with water
- ✎ Journals
- ✎ Optional: scissors, sharpies

RECOMMENDED ASSESSMENT

- ✎ Science journals

Introduction

Grasslands cover about ¼ of the Earth's surface and are specialized ecosystems that support a lot of life all over the world, including in Africa (zebras, giraffes, wildebeest) and here in Indiana (cows, horses, rabbits). We can't bring African zebras and giraffes into the classroom, but we can help students understand why these grazing animals depend on grass for food by growing some in the classroom.

State Science Standards

5-LS1-1: Support an argument that plants get the materials they need for growth chiefly from air and water. **[Emphasis is on the idea that plant matter comes mostly from air and water, not from the soil.]**

Mathematical Process Standards

PS.2: Reason abstractly and quantitatively
 PS.4: Model with mathematics
 PS.5: Using appropriate tools strategically

Lesson Plan

Background Knowledge –

- *Grassland*: a large, open area of country covered with grass, especially one used for grazing
- *Grazing*: to eat grass or other plants that are growing in a field or pasture
- *Germination*: the process of a seed sprouting
- *Tussock*: a clump of grasses

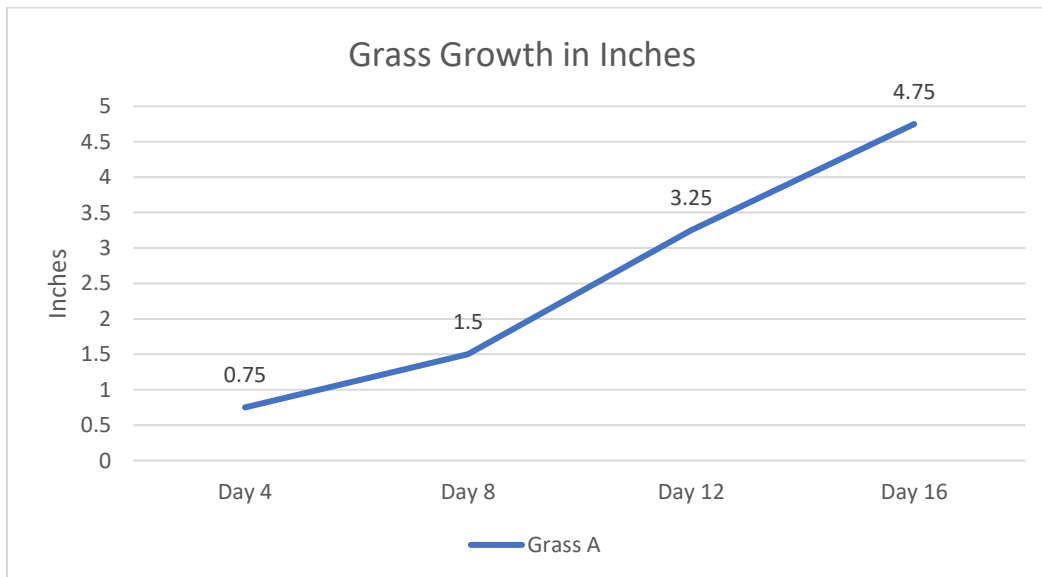
Activity –

1. Ask students: what do plants need to grow? (Sun, air, water, soil, warmth, time.) If we take some of those things away, can a plant still grow? Which of those do you think are the MOST important for a plant to grow?
2. We're going to try and grow grass using only water and air. Can we do it? (Alternative if you don't have very many types of seeds: set up an experiment and grow some seeds with soil and some without and see if there are any differences. Can the students come up with other types of experiments? What if we tried to grow grass using Kool-Aid instead of water? See if the students can come up with a unique idea so that this experiment is led by student interest.)



3. Plan to plant as many different kinds of grasses as you can. Collect seeds from the tops of wild grasses or pick up seed packets from a garden center. Wet each sponge and place it in the container.
 - a. In your journals, draw and describe what the seeds look like. Describe color, texture, smell, and any other characteristics.
 - b. Have students make some predictions: how long do they think it will take for each type of grass to sprout? Which seeds will grow the quickest (and what about those seeds makes you think that)?
 - c. Scatter grass seeds thickly and evenly on top of the sponge. Be sure to mist the sponges daily. Cover overnight with some plastic wrap to keep warmth and moisture in and place them in an area that receives sun, such as a windowsill. Within a week, students should have a fresh green patch of grass.

4. Have students set up their journals to record observations and graph the results. Have them observe the grasses as they grow and encourage students to make comparisons between the different types of grasses. Note the differences in color, coarseness, germination time, growth rate, etc. Students can discover how fast grasses grow by taking measurements daily. Have them choose and mark one shoot and measure it from top to bottom. They can record their findings in both numbers and actual-size drawings. They can then graph the results, using increments of $\frac{1}{8}$ or $\frac{1}{4}$ inches on the vertical axis and spans of 1, 2, 3, or 4 days on the horizontal axis.



5. After the first week, predict how tall your grass will be at the end of the second week. Other than height, will anything else change as the grass grows? Will the shoots become thinner/thicker, smoother/rougher, or change in another way?

6. Since grass grows from the base of the stem, not the tip, grass can be “mowed” and it doesn’t harm it. Grazing animals like our cows or Africa’s zebras essentially mow the grass when they graze. Have students mow their mini grasslands with scissors. Will the grass grow back at the same rate? Measure the grass after mowing. Based on their graphs of the previous 2 weeks, can they predict how tall the grass will be in another week?
7. Ask students: Why do you think the grass is not affected by being trimmed? Why do animals depend on grass for food? *(It grows quickly, so it makes it easier to find abundant food.)* Do you think all animals like the same part of the grass or are some parts (new shoots, longer grasses, closer to the roots) tastier to some animals? If so, how might that help animals survive? *(Different animals will often eat different parts of the grasses; this allows multiple species to exist in the same environment and still have food to eat.)*

Post Activity –

Go on a grass safari. Ask students: are all the grasses the same height? Has the area been mowed recently? How can you tell? Do you see any seed heads? Do you see any grass growing in clumps (tussocks)? What animals around here might graze on these grasses? In your journals, compare and contrast the grass you grew inside and the grass growing outside. Is there a difference in the color, thickness, or texture? Draw the differences.

Discover Further

Extending the Lesson –

- Read books about insects and grass dwellers. Follow up by visiting a grassy field or meadow and have students collect insects in a bug carrier made from a plastic cup covered with fabric netting held with a rubber band. Look for other signs of animal life among the grasses. Make sure to release the bugs after students have had a chance to observe them.
- Have some fun and show your students how to make a grass whistle. Stretch a sturdy blade of grass (at least 3 inches long) between your thumbs and blow gently. As students practice, suggest they adjust the tension to get different sounds.
- Cut the plastic grass containers down to a smaller size so the grass is exposed. Use some of the extra plastic material you just cut off and a pair of scissors to draw and cut out silhouettes of African grazing animals with sharpies. Have students place these in their mini grasslands to create a mini safari.



- Investigate how many products we use are made from grasses. Challenge students to make a list or bring items from home that are derived from grasses. Items could include wheat flour, bread, spaghetti, rice cereal, vinegar (made from rice), popcorn, oatmeal, millet (found in bird seed), sugar, molasses, or a bamboo fishing pole. Most of the items listed are from the cereal grasses, which cover 70% of all cultivated land.

Learn More –

When you visit the Fort Wayne Children's Zoo, you'll see a lot of grazing animals in Africa. Are there any other grazers at the Zoo? What do all of the grazers have in common? What are some differences? Visit our website to see our catalog of animals at the Zoo: kidszoo.org.

Resources

Delve Deeper: Grasslands have different names depending on where you are in the world. In America, we call them prairies. In Africa, they are called savannas. Learn more about the African savanna, listen to a video and make a perception sketch, and explore Africa's food webs with the National Geographic Resource Library: <https://www.nationalgeographic.org/activity/african-savanna-community-web/>.