



System Model of a Wheat Plant

Week 1 – Day 5

Lesson Overview

The purpose of this lesson is to assess student learning about the previous four lessons—the major components that plants need to grow, photosynthesis, the role of plants in the Earth's water cycle, and the specific structures and functions of a wheat plant. The Assessment will entail having students individually draw a system model of a growing wheat plant, followed by developing and performing skits in groups.

Lesson Vocabulary

system, model, wheat, and plant growth

Standards and Learning Targets for Lesson

Learning Targets

• I can use a criteria list to draw and label a system model of a wheat plant.

Next Generation Science Standards

- 5-ESS2-1 Earth's Systems
 - Develop a model using an example to describe ways the geosphere, biosphere, hydrosphere, and/or atmosphere interact.
 - Systems and system models A system can be described in terms of its components and their interactions.

Idaho Science Standards

- 5.S.1.5.1 Goal 1.5 Understand Concepts of Form and Function
 - Explain how the shape or form of an object or system is frequently related to its use or function.
- 5.S.3.2.1 Goal 3.2 Understand the Relationship between Matter and Energy in Living Systems
 Communicate how plants convert energy from the sun through photosynthesis.

Common Core ELA Standards

- LS.5.6 Language
 - Acquire and use accurately grade-appropriate general academic and domain-specific words and phrases, including those that signal contrast, addition, and other logical relationships.

Materials

- Wheat plant system model examples (provided)
- Large pieces of blank paper: one for each student to draw a model
- Writing and art supplies: pencils, colored pencils, markers, protractors, rulers, etc.





- High-quality system model criteria list
- Anchor chart paper or board

Lesson Duration

Approximately 2 hours

Lesson Description

Review

- Let students know that today they will be drawing a model of the wheat plant that includes all the components needed for plant growth and survival:
 - Water: taken up through roots, transported to leaves through the xylem, required for photosynthesis, and transpired through stomata in leaves
 - Soil: contains water and nutrients which plants take up through roots
 - Air: exchange of gases in photosynthesis (plants use carbon dioxide, and make oxygen)
 - Sunlight: required for photosynthesis, and photons stimulate chlorophyll in the chloroplast
- Allow them to ask questions to clarify any misconceptions they may have prior to the assessment.

Unpack the Learning Target

- Write the learning target on the board or on chart paper: *I can use a criteria list to draw and label a system model of a wheat plant*.
- Discuss the meaning of key words.
- Discuss the purpose of the lesson in terms of what students will be able to do by the end of the lesson.

Assessment

- Provide students with an example of a model (See the wheat plant system model examples provided.)
- Distribute the criteria checklist for system model assessment and instruct students to include all the components on the checklist.
- Distribute a large blank piece of paper to each student. Have students use pencil to draft their systems model and then complete it with colored markers.

Sharing

- When students are finished with their posters, have them share them in student groups or with the whole class.
- Have each student share with the whole group one thing that surprised them about plants or wheat this week.





Reinforcement activity

- Divide students into groups. Give them time to develop a skit about a wheat plant that incorporates the major components needed for plant growth. Encourage them to be creative about the plot of their skit but to include basic structures of a wheat plant and elements of photosynthesis, the water cycle, and the wheat plant life cycle.
- You can provide students with a list of required vocabulary and concepts to include in their skits.





High-Quality System Model Criteria Checklist

High-quality posters will include:

- _____ A realistic drawing of a wheat plant (both above and below ground)
- _____ All major structures of the wheat plant with labels
- _____ What a wheat plant needs to grow (air, soil, sunlight, and water)
- _____ Photosynthesis (where the process is occurring)
- _____ The parts of the wheat plant that are in the water cycle (water uptake through roots and transpiration through the stomata)
- _____ Optional: the life cycle stages of a wheat plant





Wheat Plant System Models - Examples



Color images available for download at reacchpna.org/education/elementary-curriculum



Fifth Grade Curriculum: Wheat Farming and Climate Change in the Inland Pacific Northwest



