



Classroom Teacher Preparation

Life Science 22: Photosynthesis - The Game

Please use the following to prepare for the next SfS lesson.

Description:

Students work in pairs to model photosynthesis through an interactive game. From their game evidence, students then develop an argument that plants need sunlight, carbon dioxide, and water to make food.

Lesson Objectives – SWBAT (“Students Will Be Able To...”):

3rd-5th

- Argue that plants depend upon sunlight, carbon dioxide, and water to make food.
- Demonstrate the process of photosynthesis through role-play during interactive game.

Disciplinary Core Idea (DCI)

LS1 From Molecules to Organisms - LS1.C Organization for Matter and Energy Flow in Organisms

- (3rd-5th) Food provides animals with the materials and energy they need for body repair, growth, warmth, and motion. Plants acquire material for growth chiefly from air, water, and process matter and obtain energy from sunlight, which is used to maintain conditions necessary for survival.

Science & Engineering Practice (SEP)

Engaging in Argument from Evidence

- (3rd-5th) Construct and/or support an argument with evidence, data, and/or a model.

Crosscutting Concept (CCC)

Energy and Matter: Flows, Cycles, and Conservation

- (3rd-5th) Matter flows and cycles can be tracked in terms of the weight of the substances before and after a process occurs. The total weight of the substances does not change. This is what is meant by conservation of matter. Matter is transported into, out of, and within systems.

Preparation:

This lesson is meant to be an introduction to photosynthesis.

Room Set Up for Activities:

This activity is structured for students to work in partners.

Space requirements: This game may be played inside or outside. If played inside, be sure that space is available for students to move freely (and quickly) about the room.



Safety:

Students will move about the room; chairs should be pushed in and desks arranged so that students may move freely and safely.

Related Modules:

This lesson may be taught as part of a sequence or group of related modules on *Life Science* for younger students. Modules include:

Life Science 25: Plant Structure and Function – Students learn about the main structures of functions of plants, followed by a dissection of common edible plants that will allow students to locate relevant plant parts and make everyday connections with plant anatomy.

Life Science 5: Food Webs – This module teaches the basics of food webs. Students first construct a food web model for a simplified Yellowstone ecosystem. They then consider what would happen to the ecosystem if the food web were disrupted by the removal of a native species and/or the introduction of an invasive species.

For other module sequences and groups, look here: www.sciencefromscientists.org/sequences

Standards Covered:

Please click the following link to our website to review the standards covered by this lesson, listed by state: www.sciencefromscientists.org/standards/

Lessons are matched to both national NGSS and local state standards.

After Our Visit:

Extend this lesson by building a balanced equation of photosynthesis using beads and pipe cleaners.

Access this Extension activity by visiting the Classroom Post found on our website at sciencefromscientists.org/cohorts. Use the name of your school/cohort and password to log in.

To help Evaluate, check out our Open Response questions online at sciencefromscientists.org/open-response-questions. They are freely available for all of our lessons for current teachers. Use the password supplied by your instructor to log in.

Additional Resources:

- Geared to a young audience, this poem offers a concise summary of photosynthesis: <https://mass.pbslearningmedia.org/resource/thnkgard.sci.ess.photosyn/think-garden-photosynthesis/#.WYDI3dPytn4>
- Photosynthesis game by Wonderville: <http://www.wonderville.ca/asset/photosynthesis>
- Crash Course Kids #5.2, Vegetation Transformation (simple explanation of photosynthesis) (2:59) <https://www.youtube.com/watch?v=EstPeBt9CyU>