

DESIGNING IMPROVED COMPOSTING SYSTEM

Garden

Grade 8 • 140 mins

Fall, Winter, Spring, Summer • Indoor and Outdoor



NEW!

GRADE 8

SCHOOL PARTNER
LESSON PLAN

SUBMITTED BY

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ESSENTIAL QUESTIONS

- How can we better recycle organic waste?



MATERIALS

- Compost Project Packet (Do not print pages 5 & 7)
- 2 liter soda bottles (up to 2 per group)
- Food detritus for composting
- Tacks (air holes)
- Tape (clear packing tape)
- 1 item of choice (from home with teacher approval)
- Mesh wire
- Coffee filters
- Wire
- String



VOCABULARY

- Compost
- Decomposition
- Aerobic respiration
- Anaerobic respiration



ASSESSMENT

Observational Checklist and Student Design Plans

PREPARATION

Teacher needs to start collecting two liter bottles a few weeks in advance.



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TEACHER BACKGROUND

Teacher should have understanding of the needs of composting systems, engineering design principles, and cellular respiration.

LESSON DESCRIPTION

Students will learn about composting and design, build, and test two-liter mini composting systems.

LEARNING OBJECTIVES

- I can apply scientific principles to design a method for monitoring and minimizing human impact on the environment.
- I can work in teams to compromise on solutions to problems.

Life Skills Learning Objectives

Community Life Skills

CLS. 1 Students demonstrate problem solving and resolve conflict as a team.

ACADEMIC STANDARD CONNECTIONS

8-MS-ESS3-3: Apply scientific principles to design a method for monitoring and minimizing human impact on the environment.

HEALTH STANDARD CONNECTIONS

4-M-1.3 Describe effective strategies for dealing with difficult relationships with family members, peers and boyfriends or girlfriends.

*Lesson Sequence**Engage***Cultivate Curiosity (10 mins):**

Students are brought downstairs and given a brief explanation and viewing of BCA's compost system.

*Explore***Root Around (60 mins):**

Students will work in groups of 3–4 to design and build miniature composting systems. They should use their understanding of aerobic and anaerobic respiration to aid in this process.

*Explain***Grow Understanding (40 mins):**

Students will answer a set of questions in their research packets about the fundamentals of design including Engineering Design, Composting, Aerobic Respiration, and Anaerobic Respiration.



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Elaborate **Observe The Fruits (30 mins):**

Students will design an experiment to test the quality of their composting systems using food detritus from the school kitchen and cafeteria.

Evaluate **Reflect (10 mins):**

Students will observe the decomposition of their food detritus over the next few weeks and analyze the relative success of their design systems, reflecting on the design principles that led to their relative quality. This will take ten minutes per day on days following the placement of the composting systems.

**ADAPTING FOR INDOORS**

Most work can take place indoors except for the placement and observation of composting systems.

CONNECTIONS TO KITCHEN LESSONS

Food waste from all other kitchen lessons can be composted using these systems.

POSSIBLE EXTENSIONS

Any idea for improved composting can then be applied to the larger schoolwide composting system.

ADDITIONAL RESOURCES

Google search for composting system plans.

**OTHER COMMENTS**

This lesson will take two days.



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