

Compost Challenge

Grade Level: 6-8

Subject Area: Science:

- Earth Science
- Environmental Science

National Standards:

Standard A:

- Ability to do scientific inquiry: design and conduct a scientific investigation

Standard B:

- Transfer of energy

Content C:

- Structure and function in living systems
- Population and ecosystems

Standard F:

- Population, resources, and environments

Objective:

- Students will work cooperatively in groups to make decisions and complete the project.
- Students will predict and evaluate information.
- Students will understand the compost process and issues surrounding municipal waste.

Materials:

- Rolypig©
- Two buckets
- Data Sheet
- Library books
- Rubber gloves
- Pencil
- Poster boards

Background:

In the United States each person produces approximately 3.5 pounds of trash a day, of which 25% is food and yard waste that is biodegradable. When this waste is put in a landfill, it can take years to decades to decompose. When it is left outside or put in a composter, it will decompose in as little as a few weeks to a few months. Once this material is turned into dirt, it can be used as fertilizer in gardens or left on the ground to fertilize the local flora and fauna. If this trash is put in a landfill, those valuable nutrients will not return to the ground to be used by plants.

Procedure:

Day 1:

Class discussion:

1. Ask students what they know about trash.
 - a. How much do they produce?

- b. Where does trash go?
 - c. What are different things we can do with trash?
2. What is composting?
3. Why do we compost?
4. How does composting happen without human intervention?
 - a. Why is composting important to nature?

Project:

1. Split the class into two groups.
2. The challenge is for each group to make the best compost mixture they can.
3. Give each group a data sheet.
4. Each group will have half of the class period to look over the library books on composting, determine the 10 items they will include in their compost mixture, and assign everyone one item to bring in for the next class. (Fill in data sheet)
5. Each group creates a poster of their mixture to post in the classroom.

Homework: Each student must bring in one item for their team. The teacher can provide extra items such as dirt or worms if needed.

Day 2:

6. When the students arrive in class, have them deposit their items in their team bucket.
7. Each team weighs their bucket and takes the temperature of their mixture and records the data.
8. Team 1 deposits their compost in the Rolypig©. Team 1 fully rotates the Rolypig© two times. This will put the mixture in chamber three.
9. Team 2 deposits their compost in the Rolypig©. Rotate the Rolypig© one full rotation. Leave the Rolypig© for one week.

Closure for day 2:

- Have student record in their science journals
 - Estimate how far along the compost will be by next week.
 - Which materials they think will compost the fastest and why.

Day 3:

10. In one week Team 1 removes their mixture and puts it in their bucket.
11. Team 2 rotates the Rolypig© two full times and then removes their mixture.
12. Both teams record the temperature and weight of the mixture.
13. Team 2 puts their mixture in the Rolypig© and rotates the pig two full times.
14. Team 1 puts their mixture in the Rolypig© and rotates the pig one full time.
15. Repeat steps 10 through 14 until one team has turned this mixture into dirt.

Data Sheet:

Name: _____

Team Name: _____

The ten items in your mixture and who will bring that item:

1.Item: _____ Person bringing that item: _____

2.Item: _____ Person bringing that item: _____

3.Item: _____ Person bringing that item: _____

4.Item: _____ Person bringing that item: _____

5.Item: _____ Person bringing that item: _____

6.Item: _____ Person bringing that item: _____

7.Item: _____ Person bringing that item: _____

8.Item: _____ Person bringing that item: _____

9.Item: _____ Person bringing that item: _____

10.Item: _____ Person bringing that item: _____

Date: _____

Weight: _____

Temperature: _____

Observations:

Date: _____

Weight: _____

Temperature: _____

Observations:

Date: _____

Weight: _____

Temperature: _____

Date: _____

Weight: _____

Temperature: _____

Observations:

Date: _____

Weight: _____

Temperature: _____

Observations:

Observations:

Questions:

1. What made one compost mixture decompose faster than the other?
2. Why did the compost emit heat?
3. If you had to design a new mixture, what would you put in it and why?
4. How might this information be important in everyday life?