LESSON 4

Food Waste

Where does our food go, and how can we do better?

GRADE	TIME	FINAL PRODUCT
Grades 4–5	**Two class periods, 50 min each**	**Team-built food waste campaign artifact**

BIG IDEA

Food waste is a problem we can investigate, measure, and reduce.

ESSENTIAL QUESTION

How does food waste affect people and the environment, and what can we do about it?

ACTIVITY OVERVIEW

See the waste, sort the waste.

Across two class periods, students investigate where and why food waste happens, then audit their own cafeteria to see it firsthand. Investigation is the heart of this lesson.

Day 1 opens with a Show & Wonder using real school trash: students look at food someone actually threw away and ask why. They then work in expert groups on the 6-category Food Waste Card jigsaw, mapping causes and effects across the five stages of the food-waste system (Farm → Factory → Move → Store → Eaten?) plus the waste hierarchy (What happens next?). The class synthesizes with the Food Waste System diagram and previews tomorrow's hands-on audit with a prediction journal.

Day 2 is the audit and the design of a solution. Pairs sort real cafeteria waste into Compostable, Recyclable, Edible, Landfill trays, build a class graph, and then design a quick campaign artifact using the diagram's stages as a scaffold.

STANDARDS ALIGNMENT

Four subjects, one lesson.

SCIENCE (NGSS)

What students do

Obtain and combine information about ways people and communities can reduce food waste and protect Earth's resources.

Three-dimensional emphasis. SEP: Analyzing and Interpreting Data; Designing Solutions. CCC: Cause and Effect; Systems and System Models.

5-ESS3-1

ELA (CCSS)

What students do

Conduct short research using multiple sources. Write informative or opinion pieces with evidence. Engage in collaborative discussions and class presentations.

W.5.7 W.5.2 or W.5.1 SL.5.1

SOCIAL STUDIES (C3)

What students do

Analyze how individual choices and community systems influence resource use. Identify ways people work together to solve community problems. Explain how reducing waste supports the common good.

D2.Geo.4.3-5 D2.Civ.14.3-5 D2.Civ.12.3-5

HEALTH (NHES)

What students do

Practice decision-making for healthier food and waste habits. Advocate for behaviors that reduce waste. Examine how personal food actions affect human and environmental health.

NHES 5 NHES 8 NHES 1

BACKGROUND FOR TEACHERS

What to know before you teach.

Food waste is a global challenge with serious local impacts. About one-third of all food produced worldwide is wasted. When food goes to a landfill, it rots and releases methane, a greenhouse gas that contributes to climate change. Wasted food also means wasted farmland, water, energy, and labor.

The good news is that food waste doesn't have to go to a landfill. Some food is compostable, which means it breaks down naturally and feeds new plants. Some packaging is recyclable, so it can become new products instead of buried trash. And some food doesn't have to be "waste" at all: it can be eaten, shared, or donated.

VOCABULARY

Words to grow on.

Front-load these five terms at the start of Day 1.



food waste
Food that could have been eaten but was thrown away or left to spoil.



compostable
Able to break down naturally into compost.



recyclable
Materials that can be collected and processed into new products.



landfill
A place where garbage is buried under the ground.



food system
All the people, places, and steps involved in bringing food to our community.

MATERIALS & PREPARATION

What you'll print and cue up.

MATERIALS

- ☐ **Real food waste samples for Show & Wonder (Day 1)**: 3–4 items from a recent lunch or snack period, such as a half-eaten sandwich, a bruised apple, a chip wrapper, an

PREPARATION

- ☐ Coordinate with your cafeteria 1–2 days in advance: let them know you'll be collecting waste samples after a lunch period, both a small set for the Day 1 Show & Wonder and a larger

unopened granola bar. Photos work if real items aren't feasible. Displayed at the front for Step 1.

- [ ] **Food Waste System diagram**: projected or printed as a poster; the Nourish at-a-glance map of the 5-stage food-waste system + waste hierarchy. Used as synthesis anchor at end of Day 1 Step 3, and as design scaffold during Day 2 Step 3.
- [ ] **Food Waste Cards**: printable PDF, 24 cards in 6 categories of 4 cards each; one set per class. Categories align to the diagram ("On the Farm," "At the Factory," "On the Move," "At the Store," "Eaten?" and "What happens next?"). Each category is color-coded and icon-tagged so the jigsaw structure is visible at a glance.
- [ ] **Waste Audit Data Sheet**: printable PDF, 1 per pair for Day 2 audit.
- [ ] Sorting trays labeled Compostable, Recyclable, Edible, Landfill (4 per class).
- [ ] **Real food waste samples from cafeteria (Day 2 audit)**: collected the day of, larger than the Show & Wonder set. OR pictures of cafeteria waste OR sanitized containers (Option B if real food not possible).
- [ ] Gloves and tongs for safe handling.
- [ ] Chart paper and markers for the class Food Waste Web.
- [ ] Sticky notes for cause-and-effect mapping.
- [ ] Day 2 artifact materials poster paper, markers, or digital slide access.
- [ ] Exit ticket slips for closing commitment.
- [ ] **Optional short film**: *Why Does Food Waste Matter?* (WWF, 6 min, YouTube). Kept as an optional resource: send home to families, use as sub-plan reference material, or play during Day 2 Step 1 framing if your class benefits from a video anchor.

set for the Day 2 audit. (Alternative: photograph cafeteria waste in advance.)

- [ ] Set up the Day 1 Show & Wonder display: 3–4 items on a small tray at the front of the room, out of sight until Step 1.
- [ ] Cue up the Food Waste System diagram (projected or printed as a poster). Confirm it's visible from every seat during Day 1 Step 3 and Day 2 Step 3.
- [ ] Print and cut Food Waste Cards (one set per class; 24 cards in 6 categories). Pre-stack one category per envelope before class so expert groups can pick up their category quickly.
- [ ] Print the Waste Audit Data Sheet (1 per pair).
- [ ] Prepare sorting trays with labels: Compostable, Recyclable, Edible, Landfill.
- [ ] Lay out chart paper for the class Food Waste Web (or use a whiteboard).

DAY 1

Discover: where and why food is wasted.

50 minutes

1 Show & Wonder: real school trash

10 MIN

TEACHER

- Set the scene: reveal the tray of 3–4 real items from a recent lunch or snack period. Give students a beat to look. **"This food came from our cafeteria today. Someone in this building threw it away."**
- Wondering: ask, **"Why do you think this ended up in the trash? Could it have been eaten, saved, or shared?"** Capture ideas on chart paper; accept all.
- Packaging vs food: hold up one wrapper and one food item side by side. Ask: **"What's the difference between packaging waste and edible food waste? How might each affect the environment?"**
- Vocabulary Set A: introduce food waste and food system. Preview compostable, recyclable, and landfill, which students will meet in the fact cards next.
- Bridge: food waste isn't just a here-and-now problem. It happens at every stage of the food system. Let's find out where.

STUDENTS

Look at the real items and think: why did each one end up in the trash?

Share your ideas: was there another option (eaten, saved, shared)?

Notice the difference between packaging waste and food waste.

2 6-Category Fact Card Jigsaw

15 MIN

TEACHER

- Form 6 expert groups of ~4 students each. Give each group ONE category envelope: "On the Farm," "At the Factory," "On the Move," "At the Store," "Eaten?" or "What happens next?"
- Each group becomes the expert on their category. They read all 4 cards together and talk about what each says.
- For each card, the group writes ONE sticky note with cause and effect. Example: Cause: **"Farmers can't pay to pick all their crops"** → Effect: **"Healthy food stays in the field."**
- Circulate. Coach for cause-and-effect language; model one out loud if needed.
- Vocabulary Set B is picked up organically as students read: compostable, recyclable, landfill.

STUDENTS

As an expert group, read all 4 cards in your category.

Talk about what each card means. Use kid-language.

Make a sticky note for each card: cause → effect. Get ready to post them on the class chart.

3 Class Food Waste Web + system synthesis

12 MIN

TEACHER

- Display chart paper titled **"Food Waste Web,"** marked with the 6 categories from the jigsaw.
- Invite groups to post their cause-and-effect sticky notes under their category. Quick walk-and-notice: students read what other groups posted.
- Class discussion: Which category has the most sticky notes? Where does waste happen most? Any surprises?
- Display the Food Waste System diagram. **"Here's the whole food-waste system in one picture. Every stage (Farm, Factory, Move, Store, and finally us) creates some waste. Do you see how our sticky notes match the stages here?"**
- Point to Stage 5 (Eaten?): **"Tomorrow we investigate THIS stage: our school. We'll look at what happens when food gets to us."**

STUDENTS

Post your group's sticky notes on the Food Waste Web under your category.

Walk and notice what other groups discovered.

Look at the Food Waste System diagram: where does your category live?

4 Frame the audit + prediction journal

10 MIN

TEACHER

- Show the sorting trays and Waste Audit Data Sheet. Walk through the four categories: Compostable, Recyclable, Edible, Landfill. Give one example per tray (e.g., banana peel → Compostable; unopened juice box → Edible).
- Model safety norms: gloves and tongs, no touching moldy food, disposal at end of class.
- Prediction journal: project the stem: **"In tomorrow's audit, I predict we'll find the most ___ because ___. I predict we'll find the least ___ because ___."** Students write 2–3 sentences.
- Preview Day 2: tomorrow is the audit: investigate, sort, graph, and then design a quick solution.

STUDENTS

Look at the sorting trays. Ask a question if a category is unclear.

Write your prediction in your journal.

DAY 2

Investigate + Act

50 minutes

1 Quick frame + sorting demo

5 MIN

TEACHER

- Refer back to the Food Waste Web and yesterday's predictions. **"Today we find out."**
- Bring out the cafeteria waste samples and sorting trays.
- Demonstrate sorting one tricky item together (e.g., a banana peel with a sticker: peel is compostable, sticker is landfill).
- Assign pairs and distribute Waste Audit Data Sheets.
- *Optional:* if your class benefits from a video anchor, play the WWF short film *Why Does Food Waste Matter?* here (6 min). Not required; the Show & Wonder + Fact Cards + diagram already frame this.

STUDENTS

Recall your prediction from yesterday.

Watch the sorting demo and notice the rules.

Pair up and get your Data Sheet.

2 Waste Audit + Class Graph

22 MIN

TEACHER

- Have pairs sort items from the cafeteria into the four trays. Circulate with the guiding questions on the board:
  - Where should this go, and why?
  - How do we decide if it's edible or compostable?
  - Would everyone in the class sort this the same way?
- Data recording: pairs fill in the Data Sheet with quantitative counts per tray plus qualitative observations (which items show up most).
- Build the class graph together: tally chart or bar graph on the board for whole-class totals. Which category is biggest? Which is smallest?

STUDENTS

Sort items into the four trays with your partner. Discuss the tricky calls.

Record counts and key items on your Data Sheet.

Help build the class graph.

Notice what your data reveals about your school's food waste.

3 Analyze + Design a lean campaign

15 MIN

TEACHER

- Class discussion: What patterns do we see in the graph? Did the biggest category surprise you? What did your prediction get right or wrong?
- Frame the design: **"Now we design a solution."** Point to the Food Waste System diagram. **"Pick one stage where waste happens (Farm, Factory, Move, Store, or Eaten?) and design a quick campaign for it. The diagram's HOW WE CAN HELP panel has starter ideas."**
- Pair or small-group build:
  - Choose one food-system stage from the diagram.
  - Pick a product format: poster (chart paper), 1-slide (digital), OR infographic (drawing with labels).
  - Must include: your stage, one specific waste problem at that stage, one specific solution, and at least two vocab words (compostable, recyclable, landfill, food system, food waste).
- Circulate. Coach for clarity: one memorable takeaway.

STUDENTS

Look at the graph and the diagram. Where does your team want to focus?

Choose your stage and your product format.

Build your campaign: name the stage, the problem, the solution, and use two vocab words.

4 Gallery + commitment

5 MIN

TEACHER

- Post posters/slides/infographics around the room.
- Quick gallery walk: students circulate and read.
- Exit ticket: **"One way I will reduce food waste starting today is ___."** Collect and post on a class **"Food Waste Commitments"** wall.

STUDENTS

Post your team's campaign.

Walk and read other teams' campaigns.

Write your one-action commitment.

ASSESSMENT

What understanding looks like.

Students demonstrate understanding by:

- Using vocabulary (food waste, compostable, recyclable, landfill, food system) accurately in discussion, writing, and on their campaign artifact.
- Identifying at least one cause and one effect of food waste at a specific stage of the food system.
- Collecting and recording waste-audit data accurately on the Data Sheet.
- Creating a campaign artifact that names a problem and offers a specific, realistic solution.
- Engaging with other teams' work through the gallery walk and leaving substantive sticky-note feedback.
- Committing to one personal action via the exit ticket.

Look-fors for differentiation: students may show understanding through visual design, written captions, oral skit performance, or a combination. All four are valid.

DIFFERENTIATION & SCAFFOLDING

Build access in.

DAY 1, CAUSE-AND-EFFECT SUPPORT

Some students may struggle with the cause-and-effect framing on the Food Waste Cards. If needed, project a model cause-and-effect note at the start of Step 2 and walk the class through one card together before groups work independently.

FOR MULTILINGUAL LEARNERS

- Pre-teach the five vocabulary terms with visuals.
- Use sentence stems: **"One cause is ___." "One effect is ___." "A solution could be ___."**
- Allow campaign artifacts to be drafted partly in students' home languages.

FOR STUDENTS WITH READING IEPS

- Pair an audio reader with a strong peer reader during Food Waste Cards (Step 2).
- The Data Sheet can be filled in with check-marks and tallies; minimal writing required.

IF THE CAFETERIA AUDIT ISN'T POSSIBLE

- Option B: use printed photos of cafeteria waste or sanitized containers/packaging; students sort the **"mock waste"** the same way.
- Or: have students bring waste samples from home (lunch leftovers, wrappers) to sort in class.

HANDLING REAL FOOD SAFELY

- Provide gloves and tongs. Do not handle moldy or spoiled food.
- Bag and dispose of waste safely at the end of class; compost what you can.

EXTENSIONS

Five ways to go further.

EXTENSION 01

Food Waste Detectives at Home

Students become “food waste detectives” for a week. Provide a simple recording sheet: what type of food was wasted at home, why (leftovers not eaten, food spoiled, too much served), and what could have been done differently. Back in class, students compare findings in small groups and identify common patterns. Create a class “Top 5 Ways to Reduce Food Waste at Home” list and send it home as a family resource.

EXTENSION 02

School Food Waste Action Project

Students move from investigation to action by making a real change in their school. After reviewing the waste audit, they brainstorm ways to reduce cafeteria food waste: a share table for unopened food, a compost bin, smaller portion options, a food donation partnership. Small committees then plan steps such as outreach, posters, permission from school staff, or educational materials for younger grades. Present the action plan to the principal, cafeteria staff, or school community.

EXTENSION 03

Extended Campaign Action Plan (Day 3)

Teachers with a 3rd class period can expand the Day 2 quick campaign into a full Action Plan. Give teams 30–35 minutes to design a polished poster, slide deck, infographic, OR short skit (60–90 sec, “problem vs. solution”); same requirements as Day 2 (stage + problem + solution + vocab), with more depth. Close with a formal gallery walk and skits.

EXTENSION 04

School-Wide Waste Audit

Expand the classroom audit to the full cafeteria over a week. Pairs collect daily data, calculate totals, and present findings to school administrators with concrete proposals: a share table, composting program, or portion-size change. Natural home for cross-curricular math (percentages, averages, projections across a school year or district).

EXTENSION 05

Ugly but Tasty Campaign

Students design a creative campaign to show that imperfect produce is still delicious and healthy. Show examples of “ugly” fruits and vegetables (photos or real produce). In pairs, students make posters, slogans, or short skits encouraging people to eat or buy imperfect produce. Display posters around the school or perform skits during a school assembly to raise awareness.