

Lesson 4.5: Green Choices: Waste, Reuse, Materials, and the Safety and Conservation Quiz

Unit: Unit 4, Spaces We Live In (Environmental Design and Management) **Topic:** 4.1 Safe, Healthy, Sustainable Homes **Grade:** 6 to 8 (written at grade 7; see Differentiation for the grade 6 support and grade 8 stretch) **Days:** 1 class period of 40 minutes (day 97 of the year; the last 15 minutes are the Home Safety and Conservation Quiz) **Room:** Either (classroom or FACS lab; no kitchen needed)

Standards

- NYS module line: NYS EDM 1. Healthy, Safe, Sustainable Living Spaces d) Investigate ways to conserve natural resources in family, school, work, and community settings
- NYS module line: NYS EDM 2. Environment and Interior Design d) Research how environmental and green home factors influence the design of functional, safe and aesthetic living spaces
- CTE theme line: CTE SUS 2. Environmental Management c) Describe ways individuals can adjust behaviors to minimize the impact of their choices on the environment
- CTE theme line: CTE SUS 2. Environmental Management f) Explain factors to consider when assessing the environmental impact of housing decisions
- NYS FACS Learning Standard 3 (Intermediate), Key Idea: Students will understand and be able to manage personal resources of talent, time, energy, and money and make effective decisions in order to balance their obligations to work, family, and self.; Performance Indicator: Students understand the resources available to them, make informed decisions about the use of those resources, and know some ways to expand resources.
- CDOS Standard 3a Universal Foundation Skills: Systems
- National FCS 3.0: 3.4.1 Look into where homes and businesses get energy and water, how waste is handled, and where pollution comes from.
- National FCS 3.0: 2.2.3 Practice habits that conserve, reuse, and recycle so resources and the environment last.

Enduring understanding and essential question

Big idea: A green home is not a home full of new green products. It is a home where less comes in, less goes out, and what is there lasts. The greenest choice is usually the one that costs the least. **Essential question:** When is buying something new the greener choice, and when is it just shopping?

Objectives

By the end of this lesson, students will be able to:

1. (Low: remember or understand) Given the four Rs for a home (reduce, reuse, recycle, compost as “rot”), define each and sort twelve household items into the right bin.

2. (Mid: apply or analyze) Given a described room with eight items, identify at least six greener swaps and classify each by the green factor it improves (natural light, materials, indoor air, water, waste).
3. (High: evaluate or create) For the described room, choose the three swaps that do the most good for the least money and defend the choice in one sentence each, then show what they know on the Home Safety and Conservation Quiz.

Vocabulary

Tier 2 (general academic): reduce, reuse, durable, impact Tier 3 (FACS): recycle, compost, upcycle, secondhand, natural materials, indoor air quality, VOC (low-VOC paint), natural light, fast furniture. See the unit vocabulary list for Turkish, Portuguese, and Spanish.

Materials and setup

- Handout, one per student: Handout 04.05 - Greener Room Swap.md (the four-bin sort, the described room, the swap table)
- Twelve real items or pictures for the sort (a glass jar, a cardboard box, a banana peel, a plastic bag, a T-shirt with a hole, a phone charger that works, a chipped mug, a stack of junk mail, a pizza box with grease, a wooden chair with a loose leg, a plastic water bottle, coffee grounds) and four bins or four labeled corners of the table: REDUCE (do not bring it in), REUSE, RECYCLE, COMPOST
- The quiz, one per student: Assessment 04.1 - Home Safety and Conservation Quiz.md
- Calculators, one per student, for the quiz
- Slides: Slides 04.05 - Green Choices Waste Reuse Materials and Safety and Conservation Quiz
- Timer visible to the class
- Setup notes: the quiz starts at minute 23 no matter what; set the timer. Print the quiz single-sided. Allergy check: the banana peel and coffee grounds are props; no one handles food. *[Sal: a real compost caddy with a lid, if the school has one, makes the “rot” bin real.]*

Pre-assessment

Yesterday’s Day 2 exit cards (the top three fixes) show who already ranks by savings. The do now today asks what students threw away yesterday, which shows whether “waste” means garbage only or includes energy and water.

Do now and hook (Time: 4 min)

On the board: “List everything you threw away yesterday that you can remember. Put a star next to anything that could have been reused or recycled.”

Debrief in one minute: hand vote, how many starred at least half. Hook: hold up the T-shirt with the hole and the working charger. “One of these is trash. Which one? Trick question.

Neither. By the end of today you will know where every one of these twelve things goes, and then you will fix a room that is doing everything wrong.”

Procedure

Step	Teacher will	Students will	Time
1. Direct instruction: the four Rs and the green factors	One slide: reduce (do not bring it in: junk mail, a single-use bottle), reuse (the jar, the box, the T-shirt as a rag, the chair fixed), recycle (paper, cans, clean plastic and glass by the local rules; not the greasy pizza box), compost or “rot” (the peel, the grounds, yard waste). Then the green factors in a living space, one slide: natural light (fewer lamps, better mood), materials (wood, cotton, wool, secondhand, durable, not fast furniture), indoor air (low-VOC paint, plants, no aerosols, a window that opens, no smoking), water (low-flow, fix leaks), waste (the four Rs). Run the twelve-item sort as a class: hold up each item, class points to a bin, one student says why.	Fill in the four Rs and the five green factors on the handout, Part 1; sort the twelve items on the handout, Part 2, as the class does it.	6 min
2. Learning activity: the Greener Room Swap	Pairs. Read the described room on the handout (a teen bedroom with eight	Read, swap, classify, price. Eight rows.	10 min

	items that are wrong: a broken blind that blocks the window, a particleboard desk that wobbles, a can of air freshener, a plastic storage tub set, a fast-furniture bookshelf, a bag of clothes for the trash, a dripping radiator valve with a bucket, a fan running all day with the door closed). Task: for each item, write the greener swap, the green factor it improves, and whether it is free, cheap (under \$25), or money. Circulate with the clipboard check.		
3. Share	Take two pairs' top three (the swaps that do the most good for the least money). Settle on the board: free first, then cheap, then money; the free ones usually win.	Report; mark their own top three.	3 min
4. Assessment: the Home Safety and Conservation Quiz	Hand out the quiz and calculators. Read the directions once. Fifteen minutes on the timer. Collect at the timer. Quiz covers Lessons 4.1 to 4.5: hazards by room, detectors, the emergency plan, a	Take the quiz alone, calculator allowed, nothing else.	15 min

	breaker item and a drain item, energy and water math with numbers given, the three Rs.		
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Questions to ask

Monitor understanding:

- Why does the greasy pizza box not go in recycling?
- Which of the four Rs does the least harm? Why does reduce come first?
- The fan runs all day with the door closed. Which green factor is that, and what is the free fix?

Deepen learning:

- The particleboard desk cost \$60 and lasted two years. A secondhand wood desk cost \$40 and has lasted thirty. Which one was cheap?
- Who decides the recycling rules where you live? Why are they different in different towns?
- Is a “green” product you did not need greener than the thing you already own?

Check for understanding

Clipboard checklist during Step 2: for each pair, a yes or no on “swap would actually reduce the impact,” “green factor named correctly,” and “price label matches.” Two of three on the first four rows is “got it.” A pair swapping the wobbly desk for a new desk gets the question: “What is under the desk right now that could fix it for free?” (a folded piece of cardboard, or the screwdriver from Lesson 4.3).

Closure (Time: 2 min)

Collect the quizzes at the timer. One line on the back of the quiz, ungraded: “One thing in your own room you will reuse instead of throwing out.” Two students read theirs as they hand it in. There is no 3-2-1 today; the quiz is the closure, and the “needs more” sort is done on the quiz results before Lesson 4.6.

Differentiation and supports

- ELL: the four bins have a picture and the word in Turkish, Portuguese, and Spanish (see Vocabulary 04.md); the described room has one item per sentence; the quiz is read aloud on request and the word bank from the unit stays on the wall; sentence starter for the swap: “Instead of, **use** because ____.”
- IEP and 504 (general): extended time on the quiz (finish at the start of Lesson 4.6 in the first ten minutes, or during a support period); the quiz has a matching section and a short answer section so no one writes paragraphs; a printed copy of the four Rs and

the five green factors stays on the desk during the swap task but not during the quiz; fidgets allowed; a quiet seat for the quiz.

- Grade 6 support: the swap task uses five items instead of eight; the quiz gives the math items with the watt-hours already computed.
- Grade 8 stretch: after the swap, students write a two-sentence case to the landlord for fixing the radiator valve (the water and the money); the quiz has one stretch item at the end, worth no points, on payback.
- UDL checkpoint used: multiple means of representation (real objects sorted into real bins before any words on paper) and multiple means of action and expression (the swap can be written or drawn, and the quiz mixes matching, short answer, and one scenario).
- No-kitchen or no-machine alternative: not a lab; no alternative needed.

Assessment

Objective	Standards met	Learning task	Assessment (formative or summative; tool)
1. Define the four Rs and sort twelve items	SUS 2. c); EDM 1. d); National FCS 2.2.3	The sort, Step 1; quiz items 11 and 12	Formative in class; summative on the quiz
2. Identify six greener swaps and classify them	EDM 2. d); SUS 2. f); National FCS 3.4.1; Std 3 PI B	The Greener Room Swap, Step 2	Formative; clipboard checklist; handout scored complete, partial, or missing
3. Choose and defend the three best swaps; show Topic 4.1 on the quiz	EDM 1. b), c), d); CDOS 3a Systems; Std 3 KI	Step 3 share; the quiz, Step 4	Summative; Assessment 04.1 - Home Safety and Conservation Quiz.md, 30 points, Topic assessments category; one retake after a review

Homework

None. The quiz is done. Optional: find one thing at home headed for the trash and give it a second job. Tell me what it was.

Connections

Science: the science teacher's unit on ecosystems or the carbon cycle is where "rot" gets its explanation; FACS gives the bin at home. Community: the town's sanitation or recycling office has the local rules on one page and often a speaker; the state's own EDM module

suggests a carbon footprint activity, which the science teacher may already run. *[Sal: pull the town's recycling rules page and put the real rules on slide 4; every town differs.]*

Sources

- NYS Middle Level CTE FACS Content Module 04, Environmental Design and Management (nyctecenter.org, June 2018), lines 1. d) and 2. d). Copy in 02 Standards/NYS Module PDFs/.
- NYS Middle Level CTE Theme Module, Sustainability, lines 2. c) and 2. f). Text per 02 Standards/NYS ML CTE FACS Modules - verbatim extract of all twelve.md.
- NYS Learning Standards for Health, Physical Education, and Family and Consumer Sciences (1996), Standard 3, Intermediate. Wording per the crosswalk, Part A.6.
- National Standards for Family and Consumer Sciences Education 3.0 (LEAD FCS Education, 2018), competencies 3.4.1 and 2.2.3, per 02 Standards/STANDARDS SOURCES - web research.md.
- Sal's own materials: the "Sustainable Style" Brentwood packet (Unit_1_Interior_Design) supplied the sustainable-alternatives table and the secondhand-first idea, rewritten here as the Greener Room Swap.

Teacher notes

- The quiz starts at minute 23. If Step 2 is running long, stop it; the swap table can be finished as the Lesson 4.6 do now. Never shorten the quiz.
- Common mistake: "recycle everything." Reduce and reuse come first because recycling still costs energy and half of what goes in the bin does not get recycled. The greasy pizza box is the item that makes the point.
- Common mistake on the swap: buying a new "green" thing for every row. The free column exists so students see that most of the room is fixed by moving, fixing, or stopping something.
- Grade the quiz before Lesson 4.6. The results sort into "got it" and "needs more," and the "needs more" students get the retake review during Lesson 4.7 Day 1's sort activity, when the class is working in teams.
- *[Sal: your town's recycling rules on slide 4. Students argue about plastic numbers; let the real rules settle it.]*