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Grades: 7-10

Integrated Curricular Areas and Corresponding Core Curriculum Content Standards:

Language Arts 3.4.12.A.3, 3.4.12.B.4, 3.5.12.B.2

Science 5.4.12.G.1

Social Studies 6.1.12.C.11.b, 6.1.12.C.14.d, 6.1.12.C.16.a

Visual Arts 1.3.5.D.1, 1.4.5.B.5 or 1.3.12.D.2, 1.4.12.B.1

Extensions 3.3.12.A.1-3, 3.3.12.B.2

Language Arts 3.1.12.H., 3.2.12. especially D. 3.3.12.B.5

Social Studies 6.1.12.A.16.c

Time Allotments:

Teacher preparation: 1 hour

Lesson and Activity: Day 1, 10 minutes; Day 2, 60 minutes, can be broken into two sessions

Content Objectives: Students will be able to –

List at least 5 reasons that commercial items are packaged;

Explain that packaging makes up a considerable portion of recyclables and a smaller portion of MSW.

Explain why so much of our recyclables derive from packaging;

Explain how a small portion of packaging creates big environmental problems;

Discuss how changes in packaging create new problems but also solve old ones;

Explain basic functional requirements of packaging;

Suggest improvements that meet those needs.

Process Objectives: Students will –

Classify examples of packaging into recyclable and non-recyclable;

Note which are biodegradable;

Suggest in writing or drawing a redesigned and improved package;

Write a narrative that lists the pros and cons of a commercial package, or describes the ideal criteria for a well-designed package.

Materials:

Teacher: Chalkboard and chalk or large paper and markers

Samples of packaging from home or school – including excessive packaging

Students: Paper and markers or electronic drawing software, cameras or cellphones

Anticipatory Set – Day 1:

Teacher presents a ridiculously overpackaged product, in or out of the package. She asks that students spend some time over the next few days finding such an overbuilt package, and bring it into class (product not needed), or finding one still in the store and taking a picture of the package (consider providing a note to managers asking that students be allowed to do so) and bringing the print to class. Students should bring all components of a package. Students will need some time, maybe a week, to do this. Mention that at least 40% of our waste is packaging, and most of that is cardboard, which should be recycled. Students should look for other kinds of packaging, even if it’s smaller.

Anticipatory Set – Day 2:

Gather student examples, real and printed. Teacher may add items from home to round out the collection. Suggested items: snack foods in baffling packages, plastic bubbles for electronics, jewelry boxes, toy packaging, mail order boxes with Styrofoam inserts (solid and peanut form), plastic bag cushions, disposable drink bottles with cap, cans, extremely ornate liquor or perfume bottles, pharmaceutical packaging, DVD cases, cosmetics on a card held down by plastic, pens and pencils likewise, and plastic carry-out bags for anything.

Have students tell why their packaging choice is annoying to them. Answers will probably include, hard to open, too lumpy, doesn’t explain what’s in it, too many layers.

Teacher’s Presentation or Modeling:

Teacher should ask students: Why is packaging sometimes so large and complex? List their suggested reasons. If students can’t think of many, ask:

Why the big case for a small DVD? (Antitheft). What other items are overpackaged to prevent shoplifting? (Cosmetics, pencils, nail files).

Why are CDs in a hard plastic case? (Prevents scratches).

Why are eggs sold in foam boxes? (Avoids breakage).

Why are medicine containers so big? (Avoids tampering, and use by children, and gives a big surface for labeling.)

Why are clothes placed into bags? (Keeps them clean).

Why is food sealed? (Keeps it clean, insect-free, prevents spoilage).

Why do aspirin bottles and toothpaste tubes need paper boxes? (They stack on a shelf, they’re easier to read.)

Why are shipping boxes big? (To accommodate the cushioning of peanuts, foam shapes, or bags. Discuss the options: do they like peanuts? They’re messy but can be reused and recycled through UPS. Do they like Styrofoam? It works really well but has no market for recycling. Would they be happy getting things delivered in plastic bags instead of boxes, as some clothing is shipped?)

Why are some toy packages so big? (To accommodate big pictures that appeal to children.)

Why does packaging use so many colored inks? Why are some so fancy? (To attract attention).

Do they prefer beverages in glass or plastic or aluminum? (Many people prefer glass – it keeps cold. But it’s heavy and breakable, and requires more energy in manufacture. People are resisting the move to wine in boxes, because it seems less classy.)

Do you like getting a bag with each purchase, or is it annoying? (Plastic bags make up about 0.1% of waste in landfills: a tiny amount, and they don’t take up energy. But they escape the trash through littering and accident, and they float and blow around).

To sum up, packaging must protect the item, must prevent theft (a huge consideration), and also should advertizes the goods. Sometimes it’s for convenience and is designed to be inexpensive and disposable. Sometimes it serves no real purpose but customers like it.

Part I:

Guided and Independent Practice:

Have students categorize those packaging samples according to whether they could recycle it in their town.

Have students decide which are “biodegradable”, looking it up if needed.

Divide the class into small groups, and ask each to select a packaging example and design, in pictures and words, an alternative package that might be easier to reuse or recycle, or might use less materials, but would still meet the needs of a package.

Have a spokesman from each group share their design.

Closure:

Discuss the advantages of redesign: less garbage to ship to landfills, less cost, possibly less litter or more biodegradable litter. Note particularly that plastic bags and take-out food packaging could be used less or designed to break down, since it is often a component of litter. Note that the smallest portions of the packaging industry are the most troublesome, while cardboard is recycled, and doesn’t contribute much to litter. Moreover, anything properly placed into the trash need not compose because it will be contained in a landfill. But trash that escapes is much more trouble if it doesn’t break down.

Assessment:

Teachers will consider spoken contributions, written summary, and drawn design

Extensions:

Research towns and states that are thinking of banning plastic bags or requiring retailers to charge for each bag. Do students think the government should step in and prevent the use of these bags? What kind of bags wind up in litter?

Research reusable packaging like plastic pallets and the boxes that libraries use to ship things back and forth between each other.

Collect samples of really well-designed packaging: small, protective enough, either biodegradable or recyclable.

Write to manufacturers and ask how they developed their package. Ask if they can make their packaging out of something you can recycle, and if not, why?

Teacher background:

* Litter in a landfill need not decompose, and it’s better if it doesn’t: the whole mountain of trash would settle and compact, and it’s liner or cap could be damaged.
* Plastics used in packaging have specific virtues and flaws: some are too brittle to be molded into screw threads. Some are not safe for food. Some break down in the sunshine. Some can be exposed to high heat, so that food can be pasteurized in them.
* New packaging such as tetrapac will always cause problems at first, because there’s no way to recycle them. But they may replace glass, which is a high-energy and breakable container material, or wax-paper cartons, which are hard to recycle. New packaging material like plastic bag pillows eliminate the mess of peanuts and take less material and very little energy.