



Missoula Urban Demonstration Project
YOUTH EDUCATION PROGRAM in Sustainability
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Talking Trash

Lessons in Waste Management: Recycling, Composting and Trash

Objectives:

1. Students understand the term “decomposition” as well as how long it takes for different items to decompose.
2. Students understand the reasons for having a landfill, along with the problems associated with it, and begin thinking of alternatives to sending trash to the landfill.
3. Students know what items can be recycled in Missoula and how this can be done. Students feel empowered to reduce the volume of trash they throw away.
4. Students begin thinking of creative ways to reuse and recycle items they would normally throw away.

OPI Content Standards Addressed in this Module

End of Grade 4

- Social Studies 5.4: Describe how personal economic decisions, (e.g. deciding what to buy, what to recycle, how much to contribute to people in need) affect the lives of people in Montana, United States and the world.
- Art 1.2: Use a variety of materials and sources to experiment with an art form.
- Art 1.4: Collaborate with others in the creative process.

End of Grade 8

- Social Studies 5.1: identify and explain basic economic concepts (e.g., supply, demand, production, exchange and consumption; labor, wages, and capital; inflation and deflation; and private goods and services).
- Art 1.2: Select a variety of materials and sources to demonstrate a specific art form.

End of Grade 12

- Social Studies: 3.3: assess the major impacts of human modifications on the environment (e.g. global warming, deforestation, erosion, pollution).

Introduction

Welcome students to the station and explain that you will be talking about what happens to things that we throw away. Ask if any of the students remember what “decomposition” means. Discuss how decomposition is the process of breaking down into a natural state- turning into dirt. Ask if students know any other words for this process (rotting, biodegrading). Three things are required for decomposition to happen: air, water and sunlight. With these three elements, most objects will eventually decompose. But how long does this take?

Activity 1: Decomposition Timeline (Grades K-12)

Materials:

- Trash Timeline date cards
- Banana peel card
- Paper bag
- Orange peel card
- Wool sock
- Cigarette butt card
- Plastic bag
- Leather boot card
- Tin can
- Aluminum can
- Disposable diaper card
- Plastic jug
- Styrofoam
- Glass bottle
- Decomposition Cheat Sheet

Preparation: Before students arrive prepare a timeline on the floor of the classroom space using the laminated cards provided.

Give each student one piece of trash and explain that they are going to form a timeline. Have students line up on the timeline at the number of years they think it will take for their object to decompose. Ask each student to share how long they think their item will take to decompose. Next, read off how long each item actually takes to decompose. Have students rearrange as necessary.

After students take a seat, ask them for their reactions to this activity. Ask if they think that objects receive the air, water and sunlight that they need to decompose when they are in the dump.

Activity 2: Garbage Games: Red Light/Green Light (Grades K-5)

Materials:

- Trash items and cards from “Decomposition Timeline” activity
- Missoula recyclables cards

1. Explain that not all trash needs to be sent to the landfill. Ask if students know of anything else they can do with the items we discussed in the timeline besides sending them to the landfill. Items such as the banana peel and orange peel, as well as a shredded paper bag, can be composted. Ask if students know what composting is and have them explain it to their classmates.

Items such as the tin can, aluminum can, and plastic jug can be recycled. Ask if students know what else can be recycled here in Missoula. Point out the numbers on the bottom of the plastic jug and explain that numbers 1 and 2 can be recycled here. Pass the jug around so that they can all see this. Make sure they know that glass is recyclable in only a few locations in Missoula.

2. Have students line up at a starting line and tell them they will be playing a type of red light green light. When you hold up an item that can be composted or recycled they should run. When you hold up an item that is NOT recyclable or compostable they should stop. (You can add modifications to this if desired: i.e. kids can hop on one foot if an item is compostable and skip if an item is recyclable.) If they are moving when they aren't supposed to be they have to return to the starting line. The first student to reach the leader and tag them is the winner. Play several times to get some energy out of the kids!

Activity 3: Trash Tales (Grades K-5)

Gather students in a seated group and read The Dumpster Diver. Ask students throughout the reading if they can find anything in the illustrations that has been reused. After book, ask if they have any ideas about trash they have at home/school that they can reuse/make into something else.

Option: Read through Recycle by Gail Gibbons (to be checked out from the Missoula Public Library- J628.4458 GIBBONS). Info about the Three Rs (reduce, reuse, recycle) begins on page 8.

Activity 4: Trash Monitoring Worksheet (Grades K-12)

Materials:

Bathroom Scale
Trash Monitoring
Worksheet
Calculator

If you will be visiting a class again, or their teacher is willing to follow up in class you can use the Trash Monitoring Worksheet.

Post the Worksheet at the front of the class. Explain to the students that they will be weighing their trash at the end of the day, every day for two weeks. The weight needs to be recorded on the worksheet each day.

BUT! They don't want to count the weight of the trash can. Ask students how you can account for the weight of the trash can and plastic bag? (They must weigh the trash can and liner EMPTY first and record the weight in the space provided. This weight must be subtracted from the overall weight every day before recording on the worksheet)

Students should observe what types of items are being thrown away and think about whether or not they are recyclable or compostable.

Upon returning to the classroom the worksheet should be discussed. (Check with the teacher for students younger than 5th grade to see which math problems they are able to solve.)

Analyzing the Data

1. How many total pounds of trash did they have?
2. What is the average weight of trash each day? (total weight/10)
3. If they used this amount of trash every day for the whole school year, how many pounds of trash would they produce? (average weight x number of days in the school year ~180.)
4. Do they produce more trash at home or in the classroom? Would their average trash weight be higher at home?

Discussing the Implications

1. What types of items were in the trash each day? Were any of them recyclable? Compostable?
2. Where could students recycle items? Does the school recycle? Where can you compost?
3. Does the school have recycling bins? Does the classroom use them?
4. Where do things go when they are thrown away?
5. If everyone recycled when they could, what difference would be made?

1e: The Earth as an Apple (all ages)

Materials:

- The Earth as an Apple Instruction Page
- Apple
- Knife
- Plate or Cutting Board

Follow the instructions on the Earth as an Apple instruction page. If students are old enough they can take turns reading paragraphs aloud as you cut the apple.

After finishing the activity discuss the implications. Is there much soil left for farming after all the un-farmable areas are removed? Is this amount of soil growing or shrinking? Is there a way to make more soil? (yes, COMPOST!) Talk about compost bins and what you can put in them. Explain that worm composting can work for people even they don't have a yard or space for a compost pile.

** 5-8th graders (and possibly younger grades as well) should discuss areas around Missoula where potential farm land has been covered up by construction, etc. What are the impacts that this has on their community and the environment?

Slice the apple up and give everyone some to eat. Next, slice up the core and give to students to put in the compost pile.

Optional Activity: Field Trips

1a: Landfill Tour (grades 6-12)

At least two weeks in advance call Jim Keeney at Allied Waste: (406)-728-9572.

Before going to the landfill, discuss the function that landfills have with the students. Possible discussion questions include:

1. Do you think that landfills are good for the environment? Why or why not?
2. What would the world look like if we didn't have landfills? How would we deal with our waste? Would we have as many disposable products?
3. What are some problems that could arise with landfills? Do they smell? Do they pollute the surrounding area?

Instruct students to write one question in their journals about the landfill. Tell students that it is their job to find out the answer to their question on the landfill tour.

After finishing the landfill tour sit down with students and discuss what they learned. Ask if any students want to share their reactions to the landfill tour. Have each student read their question and share with us the answer they discovered. If the group is small and this process goes quickly reflect on other aspects of the tour. Possible questions include:

1. How many students were surprised at how much garbage was produced in the Missoula area?
2. Did anyone see any recyclable materials that were thrown away? What were they?
3. What are some things we can do in Missoula to reduce the amount of trash that is thrown away?
4. If people quit buying products with plastic and Styrofoam packaging, would companies continue to produce it?
5. What are some things that the landfill is doing to reduce its environmental impact? What more could be done?

If time allows, have students journal about their experience at the landfill. Hand out the Recycling Handout to each student.

1b: Tour of Recycling Center (Grades K-12)

Before going to the Recycling Center, discuss the function that Recycling Centers have with the students. Possible discussion questions include:

1. What does recycling mean?
2. Why do we recycle some things instead of throwing them in the garbage?
3. Does anyone already recycle? What kinds of things can you recycle?
4. What can be made out of recycled products?

Instruct students to write one question in their journals about the Recycling Center. Tell students that it is their job to find out the answer to their question on the tour.

After finishing the tour sit down with students and discuss what they learned. Ask if any students want to share their reactions to the Recycling Center. Have each student read their question and share with us the answer they discovered. If the group is small and this process goes quickly reflect on other aspects of the tour. Possible questions include:

1. Does anyone remember what things are recyclable?
2. If you have recyclable items, where can you take them?
3. How many people have (had) something recyclable in their lunches today? What? What should you do with it?

Pass out the Recycling Handout which tells students where they can recycle.

Optional Activity: Recycled Paper Making

Materials:

2 large Rubbermaid tubs filled with water
2 blenders
13 bottles or rolling pins
13 Screen Paper Molds
13 Cake pans (9x13 or 9x9)
3 pieces of recyclable paper for each student (150 total)
5 bath towels
13 tea towels or cotton cloths
Newspaper
Drop cloths
Food coloring
Colored paper and magazine pages
Cookie cutters
(Glitter)
13 pairs of scissors
Sharpie markers to write children's names
Iron
Ironing station table
Blender station table
Drying tables for paper
Work tables for students

Preparation: Have 40 pieces of recyclable paper torn up and soaking in one of the Rubbermaid tubs before the kids arrive.

1. Explain to students the basic process of making recycled paper: tearing up old paper and soaking it for ½ hour, putting it in a blender, forming it over a screen, putting newspaper over it and rolling it out, removing it from the screen and letting it dry. Show some examples of recycled paper made in this way.
2. Instruct students to each tear up 3 pieces of paper into small pieces to add to the other tub of water. Adult helpers should go around collecting the paper scraps and leave it to soak for the next group of children.
3. Explain that they will get to work cutting up shapes and confetti to add to their paper. Children will come up one at a time when called on to receive their blended paper. They need to bring their screen and cake pan to receive their paper blend. They can add their own confetti and/or food coloring at this time. One adult can work at the blender station, and the other adult(s) can roam around the room helping students with their projects.
4. When students are done they need to bring their screens (with the cake pan underneath) to the ironing station. The second adult should carefully remove the paper from the screen, place a tea towel on top and iron it. Paper is then left to dry on the drying table. **Make sure each paper has the child's name on it!**
5. Use the remaining time to show students other recycled art projects they could make in Recycled Crafts Box book.

Conclusion:

Give students a chance to write in their journals. Students should write one thing they learned, one thing they have a question about and draw a picture. If time permits, have students share something from their journals and show the paper they made to other students. Ask students why they made recycled paper. What impact did it have? Why is it good to be creative and make new things out of garbage?