

Waste Education Reduction Program

Grade Level: 3rd-6th

Length of Lessons: 1 hour

Objectives:

SWBAT explain the difference between a need and a want.

SWBAT differentiate between items that produce a lot of waste and items that do not produce a lot of waste.

SWBAT recognize the choices they can personally make that affect the amount of waste they individually produce.

Minnesota Academic Science Standards

4.1.2.1.1 – Describe the positive and negative impacts that the designed world has on the natural world as more and more engineered products and services are created and used.

5.3.4.1.3 – Compare the impact of individual decisions on natural systems.

5.4.4.1.1 – Give examples of beneficial and harmful human interaction with natural systems.

AAAS Project 2061 Benchmarks

4B/M11a* – The wasteful or unnecessary use of natural resources can limit their availability for other purposes. Restoring depleted soil, forests, or fishing grounds can be difficult and costly.

4B/M11bc – The benefits of Earth's resources—such as fresh water, air, soil, and trees—can be reduced by deliberately or inadvertently polluting them. The atmosphere, the oceans, and the land have a limited capacity to absorb and recycle waste materials. In addition, some materials take a long time to degrade. Therefore, cleaning up polluted air, water, or soil can be difficult and costly.

8B/E3a – Discarded products contribute to the problem of waste disposal.

8B/H7 – The development of new materials and the increased use of existing materials by a growing human population have led to the removal of resources from the environment much more rapidly than they can be replaced by natural processes. Disposal of waste materials has also become a problem. Solving these problems requires systematic efforts involving both social and technological innovations.

Core Knowledge Sequence for Science

Grade 3 Science V – Man-made threats to the environment: Air pollution: emissions, smog; Water pollution: industrial waste, run-off from farming

Grade 3 Science V – Measures we can take to protect the environment (for example, conservation, recycling)

Materials

You'll need just the one reduction program green bin. Make sure you have all of the following things and you'll be ready to go!

General info:

- Directions to the school
- Contact info for the school
- Notes on class times and teacher names
- Teacher evaluation
- Enough recycling and reduction brochures for the day (1 per student)

- Enough Build Your Own Lunch worksheets for the day (1 per group of 3-4 students)
- Program notes if you want them
- Blue folder that contains all this info

Cereal Packaging:

- Malt-O-Meal Bag
- Cardboard Box Roll
- Fun-size box roll
- plastic cereal bowl
- price tags for each item

Build Your Own Lunch (there should be six of every item on this list):

- Paper Bag
- Plastic Bag
- Reusable Lunch Box
- Lunch-able
- Sandwich in a plastic bag
- Sandwich wrapped in tinfoil
- Sandwich in a Tupperware container
- Can of peaches
- Applesauce
- Grapes in a plastic container
- Juice box
- Can of juice
- Water bottle
- Granola bar
- Chips in a disposable bag
- Pretzels in a plastic container
- Cheese and crackers pack

Other activities:

- *The Lorax* book

Location

Classrooms at Rice County schools

Background Information

Trash (or waste) is becoming more and more of a big deal as time goes on. People have always made trash, of course, but with a growing number of people on this planet using a larger number of products, concern over our garbage continues to grow.

In the last 40 years, the global population has doubled. The US accounts for about 5% of that population, and 30% of the world's waste. The average American produces between 3-5 pounds of trash per day.

There are different methods for dealing with waste, but Rice County currently uses the landfill method, burying trash in the ground and putting it out of sight. When it comes right down to it, there is no way around waste and the production of waste, but what needs to be done is to come up with ways to produce less waste. We need to look at the decisions that we make when it comes to the use of our goods.

Our waste HAS to go SOMEWHERE, and when it is put into the landfill, the waste is not gone, but just out of sight. Waste can either pile up or be buried somewhere in Rice County. What are some ways that we can reduce the amount of waste that we produce? In Rice County we recycle 60% of our waste, but our landfill is still filling up quickly. Each person generates between 3 and 5 pounds of waste per day. All of the citizens of Rice County produce over 150 tons per day. When thinking about the three R's - Reduce, Reuse and Recycle - we often jump right to recycling. What can we do to reduce waste that focuses more on reducing and reusing?

In Rice County, 3 out of every 5 pounds of waste is recycled and recycling is something we all do, or should be doing. When we look at what can be recycled, those things rarely get made in to what they once were. Often times, items such as soda bottles and various food containers made from plastics are turned into something else, using new plastic to then make more soda bottles. Recycling is a great way to help reduce the amount of waste that goes into our landfill, but there are other choices we can begin to make to help make an even bigger impact. We need to begin "closing the loop," by buying products made from the things we recycle, such as recycled school paper, recycled tissue, and clothing from plastic bottles. No matter how much we recycle, we still produce waste, but what other choices can we make to cut back on what goes into the landfill?

The idea of reusing a product is one that may not appeal to a lot of people, but it is one that is now becoming more commonplace, from baby clothes exchanges to rechargeable batteries. Many years ago, people reused everything they could when they did not have the money buy the newest things. Items had to last more than just one year. One way people used to keep using clothing would be buy selling and buying used clothing at second hand stores, or at local yard sales. Now, for us as consumers, we must also make choices to get clothing that will last longer.

This program is funded by Rice County and designed and delivered by the staff at River Bend Nature Center. The basis is to get students to think critically about the consumer choices they are making and helping them understand that their choices do make a big difference.

Set-up & Prep

There isn't very much set-up or prep for this program. When you first walk into the classroom take a look around and decide where the best place to read *The Lorax* will be and also decide where the best place will be to dump out all Build Your Own Lunch materials.

Prior to Visit (for teachers)

- Classroom setup:
 - Nametags
 - Groups of 4 or 5 (build your own lunch activity)
 - Space to be read to (preferably in a group on the floor)
- Tell them about pre-visit materials on our website they can look at if they're interested:
 - <http://www.rbnc.org/wasteed.htm>
 - From homepage (www.rbnc.org): Programs → Waste Education
 - Review sheet, PDF on website

Introduction

- Introductions, ask who has been to River Bend before
- Does anyone know why we're here today? (*to talk about waste reduction*)
- Quickly mention the 3 R's, make sure to say something about that reducing is the most important and the hardest!

- What is waste? Examples? (*stuff we don't want, broken stuff, food we don't eat, etc.*)
- There are 4 things we can do with our waste: (have them list it off)
 - Throw it away
 - When we throw stuff away, where does it go? (*landfill*)
 - What is a landfill? (*big hole lined with clay or plastic that our trash goes in – show photos of a landfill and use modern landfill diagram to explain*)
 - Why is a landfill lined with clay or plastic? (*so it doesn't leak and contaminate groundwater. when it gets full the landfill is then covered*)
 - What is the problem with landfills? (*people don't want them in their backyards, we're running out of space to put them, some water contamination still happens*) To get at this, we usually have them imagine that Rice County's next landfill is located right next to their school...
 - Recycle
 - What is recycling? (*the process of taking something old and turning it into something new*)
 - What is an example of recycling? (*glass melted down to make more glass, or paper blended up to make more paper*)
 - When we recycle stuff does it go to the landfill? (*no*)
 - Reuse
 - What does reuse mean? (*to use something again*)
 - What is an example of something you can reuse? (*look around – some kids might have water bottles on their desks that can be a good example*)
 - How can you reuse paper before you recycle it? (*if one side is blank, use it!*)
 - Reduce
 - If they say this earlier on, you can just tell them you'll come back to it because it's our focus today
 - What does reduce mean? (*means make less waste, so the best thing we can do is to reduce the waste we produce because then less stuff goes to the landfill*)
 - There are two main ways we can reduce. One way is to throw away less garbage (by recycling and reusing things), and another way is to buy less stuff (have them think about when they buy something that has all kinds of packaging).
 - Good example is paper napkin vs. cloth napkin
- The things we talk about today all depend on choices. We won't tell you what choices to make, but we just want to give you the tools you'll need to make smart decisions.
- Transition to *The Lorax* by saying the story has some good examples that will help us think about the word reduce.

The Lorax

- BEFORE: Think about these three words while we read this story: need, want, and reduce. Find examples of these things in the story and then we'll share our ideas at the end.
- AFTER: Did everyone think about those three words?
 - Good, let's start with NEED. How is the word "need" related to this story?
 - Have them give examples of need – hopefully someone will bring up "thneeds." Do people really need thneeds? No, so that makes them a want. Do people really need to bigger their money? No, but we do need some money to live.
 - Let's move on to want. What are some wants from the story?
 - What are some of your wants?
 - Why do people buy things that they don't need? (*for fun, convenience*)
 - Do you have multiples of the things you need? (like multiple pairs of shoes or clothes? We can reduce how much we buy)
 - How does the word reduce relate to this story?

- What is something the Once-ler could have reduced? (*the number of trees he cut down, the number of thneeds he made*)
- Talk about how truffula trees are like natural resources in the real world and the thneeds are like the products we make from them
- Lots of things are affected and everything in the environment is related
- It's okay to buy things we want, it's just important for us to think about the things we buy and make sure that we will really use them.

Cereal Packaging

- In this activity we'll be looking at packaging and thinking about more ways to reduce waste
- How many of you have eaten cereal before?
- You can buy cereal in a few different types of packaging: (you'll need volunteers as you go)
 - Bag: This bag holds about 32 cups of cereal (I like to write "32 cups" on the board because it helps the students remember the amount of cereal stays constant). What happens when we're done with the cereal? (*we throw away the bag*) What's another way we can buy cereal?
 - Box: start unrolling the thing – Outside we have a cardboard box, so we can recycle that. To get 32 cups we need more than 1 box since these are smaller than the big bag. What's on the inside of the box? (*the plastic bag*) Why is there a plastic bag in here? (*to keep the cereal fresh*) What do we do with the bag when the cereal is gone? (*throw it away, recycle the box*) What's another way we can buy cereal?
 - Little boxes (fun packs): Who has had cereal in these tiny boxes before? (say yes if you have – I think it helps them admit it too and they don't feel bad about it) We need to use a lot of these little boxes in order to get 32 cups of cereal. (start unrolling) When we buy a pack of these little boxes, they are all held together with plastic on the outside, which we throw away. Next we have the cardboard boxes, which we can recycle. What's on the inside of the little boxes? (*plastic bags*) We have to throw away the plastic bags.
 - Plastic bowls: Lots of schools offer cereal this way for a snack or for breakfast. We'd need 21 of these for 32 cups of cereal.
- Next, go over the cost of each of these options:
 - Bag = \$3.89
 - 2 boxes = \$9.78
 - Fun packs = \$13.35
 - Plastic bowls = \$17.09 (need 21 of them)
- So if you get the same amount of cereal in each of these options and they cost different amounts, what are you paying for? (they might not know so you can guide them) You're paying for the packaging, which is really just a bunch of garbage. I know I don't want to pay extra for garbage, do you? You also pay for the convenience of the smaller sizes.
- Now relate all of this back to choices. Since it's less expensive and it has less waste, it seems like the best choice is to buy cereal in a bag. Why might you want to buy the little boxes? (*car trips, camping, packing snacks, etc.*) Why might you buy the bigger boxes? (*the box protects the cereal so it doesn't get crushed, fits in cupboard, not all boxed cereal is sold in a bag*) So sometimes it makes sense to buy these things, and it's important for us to think about that when we go shopping. (you can do some of this as you unroll the examples)

Build Your Own Lunch

- In groups you're going to get a worksheet - only look at the side that says "Pack Your Lunch" (we'll do the other side later). Explain that they need to look at the list and pack a lunch like they normally would with their favorite foods from the list given. Tell them not to worry about waste at this point. They should work together to decide what to pack, and then send ONE person up to the front to collect their items.

- After the groups have their items, tell them to decide how much waste they have. Then ask if there are any groups that produced NO waste. If they say yes, have the group list off what they packed. Groups with a little waste? Have them share what they would have to throw away. (You probably won't have time to have everyone share every item.) Groups with a lot of waste? What will you have to throw away?
- Now have them flip over their worksheets and have them pack a lunch where they will have no waste when they're done eating. For groups that had no waste the first time around, have them pack a lunch that produces the most waste possible. Send ONE person up to the front to exchange items.
- Sharing here really depends on how much time is left in the program. If you're running out of time, you can go around and have each group say one thing they changed in their lunch so they would produce less waste (and have the kids that made the most waste say something they changed). If there's more time you can definitely have them share more about what they packed. You can mention that they probably don't get to make all of the choices about how their lunch is packed, but maybe they could tell whoever packs their lunch that they want to pack their sandwich in a Tupperware container instead of a plastic bag. Go straight into the conclusion and have them bring up their lunch materials at the end.
- Some other things that you might mention during this discussion:
 - What if you want juice not water? Could you put juice from a big container into your reusable water bottle? YEAH! Also, this is a good time to call back to the packaging ideas, the bigger containers for many food items have less packaging – it's not just true for cereal.
 - Make sure you correct any mistakes about what can/can't be recycled – applesauce cups can, juice boxes can't, etc.

Conclusion

- Thank them for being good listeners and working well together (if they were well behaved)
- Stress that it's important for them to go home and talk to their family/friends about what they learned because now they know more about this subject than most adults. We'll even give them a brochure they can take home that gives them more ideas for reducing waste and helps show their families what they learned today. (pass out brochure now or give them to teacher to distribute to mailboxes, whatever the teacher prefers)
- Encourage them to come to River Bend!
- Collect evaluation from teacher if she/he is finished.
- Don't forget to record how many students and adults were in the classroom!

Assessment

Reduction Review Handout

Extensions/Resources (for teachers)

<http://rbnc.org/wasteed/index.htm>

<http://rbnc.org/wasteed/reduction.htm>

<http://www.reduce.org/>

<http://www.mnexchange.org/>

<http://www.co.rice.mn.us/departments/recycling-solid-waste>

References

N/A