**Date of Lesson:** April 16, 2018

**Group Member(s):** Jasmine Leung

**Title:** The 3 R’s

**Subject/Topic:** Material Waste and Waste Reduction (3rd graders)

**Overview/Learning Objectives:** Help students learn more about the impacts of their material waste, how to properly sort/throw away different kinds of waste, and that the best way to reduce waste is to generate less or it (or none of it).

**Key Words/Terms:**

* Biodegrade = when things that are made of natural materials break down, such as plants, food, and other things that are/used to be living things
* Recycling = when what something is made of (it’s material) is used to make something new
* Compost = soil which is made from biodegradable things
* Landfill = a place where trash and garbage is taken and stored. After it is full, soil is put on it (called a “cap”) and the land may be used for other purposes (e.g. UW is on landfill)
* Reduce = to use less
* Reuse = to use again, sometimes in new/different ways
* Waste = things you can do longer use, are not using anymore, or is no longer useful to you

**Materials List:**

* Blank paper (white preferred)
* Markers, Crayons
* Stickers
* Various clean items to sort into waste, recycling, and compost (I will provide)
* Bins to sort items into (I will provide)
* Labels for game 2 (I will provide)

**Outline:**

 **Introduction** – 7 mins

Can someone tell me what recycling is? How about composting?

(Go to whiteboard) Why don’t we list things that we can recycle and compost?

 Write list

Does anybody know what happens when we recycle things? Where does it go?

It goes to recycling and composting centers. In these places, they process the items. Recycling items are turned into their original material (plastic, paper, metal) to be reused. Compost

 Today we are going to learn more about recycling, composting, and the landfill.

**Activities** – Rotate Stations between activities 1-2, 1 mentor per station, 12 mins/game

**Activity 1**: Sort It!

Pre-Game (1-2 min):

So we can sort things into 3 places: Recycling, Compost, Landfill.

What is the difference between the three? Review what we talked about in the intro and review the list of things we came up with as a class.

Is recycling, compost, or landfill better than the other do you think?

Are all materials of a certain class recyclable?

Are all types of paper things recyclable? All types of plastic things recyclable? Can you think of anything made of plastic, paper, etc. that you can’t recycle?

Don’t tell them the answer but tell them to think about it during the game (you’ll tell them at the end).

Now we are going to play a game to see if you guys know what is recyclable, compostable, or has to go to the landfill. (do you think you’re an expert?)

Game:

Students will be given a pile of different (clean) items to sort into landfill, recycling, and compost bins (labelled and provided).

4th/5th graders:

Have students work in a team to sort the items in the proper bin. Once they are confident that their choices are correct, sort through the bins, praise them for any they got right. For any less-obvious items that they sorted correctly, ask them why they decided to put that item in that bin. For any items that are incorrectly sorted, remove them and ask the students to try again.

If you have extra time: do individual speed round. Stickers as prizes (1st place gets to pick first).

If necessary, you can drop hints. (e.g. what material is it made of? Check the label, maybe you can find a clue, do you think the item’s size matters?)

Post-Game:

Ask students why they think some things, even if made of the same material (e.g. plastic bag vs. plastic bottle, paper towel vs cardboard) might be sorted in different places. Use sorting items as examples and ask what is different about the items (e.g. plastic bag is thin and gets caught in things so isn’t ideal for most recycling machines, cardboard is very thick so it can’t be composted)

Ultimately: Size and material matters. All plastic isn’t alike, all paper isn’t alike. Generally, if it is smaller than a sticky note, such as bottle caps, plastic forks, etc. it has to go to landfill. The reason is that it gets stuck in the machine.

For paper, if it is very “processed” (like photos, or has stuff on it) it can only be recycled, not composted. Very big items and electronics sometimes have to be taken to special places because they contain chemicals or technological parts that have to be specially processed. You can ask them what items might qualify in this category (e.g. batteries, TVs, phones, lightbulbs).

**Activity 2**: Impacts of Material Waste (esp. ocean pollution)

Pre-Game (1-2 min):

When we throw things away and they end up in the landfill (or elsewhere, not in recycling centers or compost centers). Do they just sit there forever? Or do they break down? Some things break down and some things don’t. Has anyone heard of the word biodegradable? What does it mean?

Things that break down naturally without the help of chemicals, extra heat, or the help of humans is called biodegradable. Compostable things are considered biodegradable.

What do you think might break down or not break down? Let them share, praise correct answers. At the end, ask “Does *everything* break down?” Point out that you can technically break things into smaller and smaller pieces, but that doesn’t mean it’s not there.

Now we’re going to play a matching game to learn about how long things take to break down.

 Game:

Students will be given labels containing time periods on them. They have to match the label with the item based on how long that item takes to break down if left in the environment. Have them do it in teams or individually if they would like to compete against their friends.

After they rank everything, let them know if they are right or wrong and give them a chance to correct their rankings. If they are still wrong, point out which ones are wrong and let them try again. After another try, you may tell them the answers.

If extra time: challenge round, ranking them blindfolded?

During the game, ask them why they think some things might break down faster than others.

 Post-Game:

As we see, some things break down and some things don’t. Some things take a very long time and some things break down very quickly. What did you notice about the things that all broke down faster? What do they have in common?

 All are paper or food – compostable/biodegradable items

 Also, some things (eg plastic) break down into smaller pieces. Why might it be bad if things don’t break down? Why might it be bad if things just break into smaller pieces? (think animal ingestion, water and soil pollution, even human health effects)

Why does it matter if we use something that breaks down more quickly if we sort them correctly? why might we still want to use things that break down faster?

Sometimes even things we recycle or compost don’t end up where they are supposed to be. Sometimes places say they recycle it but don’t. Sometimes it gets blown away and goes to the ocean. So we always want to use the one that breaks down the fastest because that way even if it does not end up recycled, it will be less harmful to the environment (e.g. paper vs plastic)

**Activity 3**: Reduction & Reuse – do in larger group

Pre-Game

Do you think it’s better to recycle something, compost something, or not use it at all?

If you don’t have to use something, or as much as something, it can be better!

Can anyone give an example of when we might not need to use as much of something (e.g. use less paper towels)?

Can anyone think of something we could use instead of a plastic or paper bag to carry groceries in? (e.g. a backpack, a reusable bag)

 Game:

Pass out pieces of blank paper, markers, and crayons. Draw with the students in groups and talk with them while you do it.

Ask students what thing they will do to reduce waste (other than recycling and composting, it has to relate to either reducing what waste you make or using a better alternative). Ask them to write what they will do and illustrate/draw themselves doing it. We will collect them at the end and create a class book! Don’t forget to write your name!

Circle and check in with students. If they need help thinking of ideas, ask them prompting questions to guide them to different ideas, try not to directly suggest any (e.g. “what is something that you throw away a lot?”, “do you use a lot of plastic bags at home? What could you use instead? What other things besides plastic bags could hold things?”

 Post-Game: Ask people to share their drawings

 **Conclusion**

What is something new that someone learned how to compost today? Recycle?

Is everything biodegradable? Does everything break down? Who can tell me some things that take a long time to break down?

Why is this bad? What would be the best things to use: a reusable bottle or a plastic bottle? How drinking something out of an aluminum can vs. a plastic bottle? What about using a paper bag or plastic bag? What could you use instead of a paper or plastic bag?

Which is better, reducing, reusing, recycling, or composting?

That’s it for today. Now we’re going to have snack!

Snack: Fruit (less material waste), oranges

**Special notes:**

 Requested lesson by Concord

Card for Matching Game: (x3)

|  |  |
| --- | --- |
| Vegetables | 5 days – 1 month |
| Paper Towel | 2-4 weeks |
| Newspaper | 6 weeks |
| Plastic-coated Paper Milk Cartons | 5 years |
| Soda Can (Aluminum) | 200 years |
| Glass Bottle | 1 million years |
| Styrofoam Cup | 500 years – forever\* |
| Plastic Bag | 500 years – forever\* |

\*Break down into smaller pieces, don’t really disappear

Items for sorting game: (x3)

|  |  |  |
| --- | --- | --- |
| **Recycle** | **Compost** | **Landfill** |
| Plastic Cup (usually) | Food-Soiled Paper  | Pen |
| Notebook Paper | Paper towel | Plastic Wrap |
| Clean Aluminum Foil | Food (fake) | \*Plastic Jug Cap |
| Glass jar  | Wax paper (paraffin)  | Plastic Utensils |
| Newspaper | Compostable Cups | Resuable Water Bottle\* (one I bring in) |
| Plastic Bags\* (bunch up) | Disposable Chopsticks (check) | Random Items |
| Plastic Jug with Cap\* |  | Plastic Straw |
| Shampoo Bottle |  | Styrofoam |
| Toilet Paper Roll |  |  |
| Plastic Water Bottle |  |  |
| Milk Carton (with plastic lining) |  |  |