

# Theme 3. Waste

Teacher guide - Ages 8-10

## Preparation

Review the material and watch the movies. Do some preparation on the topic. Collect plastic waste from one or more days before the introduction exercise. For the Outdoor Experience some materials are required (see Materials section below). Feel free to add any resources or materials you have available to enrich the lesson. Also check the Introduction lesson Teacher guide for useful tips and suggestions for preparing and giving the lessons within a theme.

## Learning Goals

The students...

- learn what waste (also organic waste) and litter are.
- learn what happens with waste.
- know what plastic waste is.
- discover there is too much waste (excess).
- learn what the term 'plastic soup' means.
- know the causes and consequences of plastic soup.
- know what waste separation is.
- know what recycling is.
- know what 'zero waste' means and what it entails.
- become acquainted with solutions to the waste problem.
- know what they can do to counteract the excess, the litter, the use of plastic and plastic soup.
- want to share what they have learned with others.

## Key Vocabulary

- litter
- plastic packaging
- residual waste
- plastic soup
- single-use plastics
- microplastics
- reusing/ recycling /refilling
- separating waste
- waste
- 'plasticarian'



## Introduction

[Slides 3-4]

Collect waste for one or several days and display it on a table or spread it over multiple tables before the students enter the classroom. Be sure to think about including plastic bags, plastic bottles (big and small), screw caps, packaging, old telephone cases, toys and organic waste, like a banana peel, leaves etc. (You can also drag the objects on the interactive whiteboard.)

Ask students what happens to all of this stuff. When the students indicate that it is waste, or that it is trash, you can suggest that they take a good look at what is on the table(s). *What happens with trash after you throw it away?*

Ask two or three students to sort the waste. Give an example of organic waste (for example a banana peel) and plastic. Organic waste also comes from plants, think about the leaves of a tree. This organic waste is usually broken down by other organisms. This is different for plastic; if you leave it for example in a forest, it will stay there for a very long time.

Ask: *What can we do with the plastic bags? (reuse them).*

- *What can we do with the plastic bottles? (Bring them to the supermarket for a deposit or recycle them).*
- *What can we do with the toys? (Bring them to a thrift store, a local charity, or location that can use them).*
- Any plastic that cannot be used at all goes into the plastic recycle bin, or otherwise into the trash.

After this, discuss the learning goals of this theme.

## Instruction

[Slides 5-7]

### Issue

Tell students that this lesson is about waste. The students will see that there are some problems with waste that are harmful for the environment.

*A long time ago, our problems with waste were not so big. Because there are more and more people, who use more and more things, particularly factory processed, and packaged things, our waste has grown too. We now produce too much waste, in fact. One of the problems with waste is that it often is burned which pollutes the air.* Note: The problem is not the waste itself; a problem is that waste accumulates.

Watch the video. *In addition to producing too much waste, there's another problem.*

*Waste that does not end up in the trash can but ends up on the streets causes pollution in nature. Litter does not magically disappear, it simply stays there unless someone cleans it up or it is moved by natural events. That means it can stay for a very long time. Plastic does not exist in nature, nature can't break it down.*

Complete exercise 1.

[Slides 8-11]

Tell students that plastic was invented halfway through the last century.

*Initially everyone was very happy with this new product. It is light, cheap, and waterproof. You could dye it any color and use it for a huge variety of products.*



Complete exercise 2 and discuss it with the class. *Which of these plastic products do you use in your daily life? Where do we see most of the plastics being used?* (toys, packaging, consumable items like lunchboxes). Note: in clothes for example, microplastics could be present.

Complete exercise 3. Tell students that you can split plastics (roughly) into two categories: *single use plastics like the packaging around fruit or vegetables at the supermarket and plastics for longer use like in markers or toys.*

[Slide 12-14]

*Many things are made using plastic because it is a cheap and sturdy material. In addition it is waterproof and keeps foods fresh. It is a lightweight product that can be shaped or colored according to the demands of a manufacturer. Does plastic only have advantages?*

Ask students to respond.

*The big disadvantage of plastic is that it pollutes the environment. We use way too much plastic which creates too much plastic waste: it accumulates. And even worse: a portion of this plastic simply ends up on the streets.* Complete exercise 4.

[Slides 15-16]

Together take a look at the images and show how much plastic waste is created in a year: 300 billion kilos (Note: these data may vary, depending on the source). *That is a huge amount. Unfortunately not all of this plastic waste ends up in the trash bin or in a recycling center. At least 100 billion kilos of trash end up on the street and in nature. And that waste does not just sit and stay, wind, rain and other natural events move the plastic to the rivers and lakes. That means that 10 billion kilos of plastic waste ends up in the ocean. That is another huge amount. If this trend continues then in 2050 there will be more plastic in the sea than there are fish.*

[Slides 17-19]

Watch the video about plastic in the ocean.

Explain that plastic in the ocean is bad for the environment. *The ocean is not a place where waste belongs. In addition, all of the plastic is harmful to the creatures that live in the ocean. They often think that the smaller parts of plastic are small creatures and eat them, which of course makes them unwell.*

Watch the video about plastic microfibers.

This is bad for people too. Eventually these microplastics end up in our food. Ask students to respond. Did they know about this? Complete exercise 5.

### **A solution**

[Slides 20-23]

Tell the students that people are working on solutions for the plastic soup.

For example: *The Ocean Cleanup organized by Boyan Slat. Boyan is a Dutch boy who went to Greece on vacation when he was 16 years old. While diving, Boyan saw more plastic than fish and decided that something had to change.*

*For a school project, he worked on a plan. A number of years later, the plan really turned into reality. Boyan's plan collects plastic from the ocean by using tidal power. The plastic floats into the apparatus which means that it then can be removed and cleaned up.*

Watch the video and complete exercise 6.



[Slides 24-26]

Ask students if they can imagine a life without plastic. *A long time ago, we did not even have plastics.* Have them think back about old times.

*Using less plastic is a good solution. But there are other good solutions.*

Ask students which other things they could do to help with the plastic problem.

Write their solutions on the (interactive) whiteboard, for example:

1. *Use less plastic.*
2. *Create alternatives to plastic and start using them.*
3. *Always ensure that plastic trash is carefully thrown away and does not end up as litter.*
4. *Recycle plastic. An important step to doing this is to sort waste so the plastics are available for recycling.*

Complete exercise 7.

[Slides 27-28]

Watch the video. *Another solution is to recycle plastics. We can create new plastic things from old plastic waste. Waste that cannot be recycled is called residual waste. And even residual waste can be utilized!*

Complete exercise 8.

### **What can you do?**

[Slides 29-31]

Look at the given table, see exercise 9, and discuss the options with the students. Discuss what they can do themselves at home and what could happen at school. Review the entire table as a class. Ask students if they have any additions and where they can make changes. As a class, complete the table together.

*Now that we know too much waste is such a big problem, there are people who are trying to live a zero-waste life, and people who are trying to produce as little waste as possible. They discover that there are alternatives to many pre-packaged options. For example they might take linen or cloth bags to the bakery to avoid a plastic bag for their bread. Or they bring a basket to the grocery store to carry their fruit and vegetables.*

Teach students the word 'plasticarian'. Explain that *a plasticarian is a person who tries to use no plastic at all. That means for example: no plastic bags, shampoo bottles, or foods packaged in plastic. For example: They would buy a wooden toothbrush instead of a plastic toothbrush (with natural bristles).* Ask students if they think that they could become a 'plasticarian'.

## **Suggested related theme**

Theme 2 about energy is related because by burning waste you can create renewable energy. Theme 4 about Circular economy, the students will learn more about waste cycles and relates to reusing waste to create circular usage.



## Worksheet

[Slide 32]

Complete the worksheet. Discuss the exercises that students complete. Discuss the answers from exercise 1. When students work in groups for exercise 2, students can present the answers as groups. The drawing for exercise 3 can be completed on a separate sheet of paper. Discuss the answer for exercise 4: a 'plasticarian' is a person who avoids all single-use plastics, tries to live plastic-free, or does not eat using plastic/food that has been stored in plastics. Exercise 5 is about litter. If you litter, you could get a fine. What do students think about that? Tell students for exercise 6 what you will do yourself, are there any things that can be modified for the class? For exercise 7 you can discuss ideas. As a class, select one or two crafts to actually do as a class.

## Practical Assignment

[Slide 33]

Make a poster about reducing plastic waste. Use the poster to tell and teach others about this topic. Hopefully this will help motivate others to use less plastic. Watch the video to learn how to make a poster.

## Closing

[Slide 34]

Discuss the learning goals and set expectations with students about working on their practical assignment (making the poster). Make sure that the completed posters are clearly posted in your school.

## Outdoor Experience

[Slide 35]

Ask students to collect trash around the school. Give each group a box and a trash bag to collect waste. Plastic waste and reusable waste goes in the box. Dirty and residual waste goes into the trash bag. Once back in class, sort all of the waste from the boxes that students collected. Students must decide what happens with the collected waste: sorting or recycling or reusing.

## Extras

[Slides 36-41]

Game: Hangman

Exercise 1

Ask students to respond to statements.

- If you see litter on the street, you're required to clean it up.
- Children can't do anything about the waste problem.



### Exercise 2

Collect plastic trash for one week. Sort in two categories, single use plastics and plastics for longer use. At the end of the week, review the plastics you have collected. For the single use plastics, see where you could have used other materials. Save plastic that you can reuse. Example: the plastic tub that held my cherry tomatoes I am now using as a pencil holder.

Extra video material. (see interactive whiteboard).

## Materials Required

For the introductory exercise: collect some plastic waste.

For the poster: Poster paper (or bigger), pens, pencils, and markers.

For the Outdoor Experience: boxes and trash bags.

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## Theme 3. Waste

### Answer Key - Ages 8-10

#### Exercise 1

**Select the word that correctly completes the sentence.**

- Together we create *too little / just the right amount / **too much*** waste.
- Waste that ends up on the street or in ***nature** / trash can / inside* is called litter.
- Paper / **plastic** / wood* waste causes extra problems because it never breaks down and disappears.

#### Exercise 2

- Litter: small pieces of rubbish that have been left lying on the ground in public places.**
- Plastic soup: all of the plastic polluting the ocean, it accumulates.**
- For example: reduce the use of plastic bottles and packages.**

#### Exercise 4

**What does the word “plasticarian” mean?**

**A “plasticarian” is someone who avoids plastic everywhere, they don’t eat or drink using plastic or food that comes from plastic packaging. They also sometimes call themselves plastic-free.**

