

Long Teaching Sequence  
For students aged 13 to 14

# Can we use plastic forever?

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# TECHNICAL SHEET

**Topic** Production, use and destination of plastics in the Circular Economy.

**Summary** In this Teaching Sequence, students should form groups to produce texts and/or artistic expressions explaining their view on solutions for plastics in the Circular Economy. For this, they should do some research to broaden their repertoire on the subject.

**Suggested audience** Students aged 13 and 14 years.

**Estimated length** Four classes.

**Curricular components** Sciences, Arts and Geography.

**Materials** Computers with internet access, white paper (A4), markers. For the presentation: materials and/or tools necessary for the form of expression chosen by the group.

**Learning objectives**

**Concepts:** Technical cycle, sustainability, Circular Economy.

**Procedures:** Individual and group research; systematizing information; preparing proposals; writing.

**Attitudes:** Recognition of the value of teamwork. Respect for different points of view. Empathy. Weighting of facts.

**Keywords** Production, design, use, reuse, remanufacturing, recycling, disposal.

**Related SDGs**



## SUMMARY OF STEPS

### 1. Exploring

To start, take the time to raise awareness about the presence of plastics in our everyday life. Then, read the first part of the infographic on “**Manufacturing in the circular era: the new plastic economy**” and encourage a reflection on the destination of plastic waste and the possibilities of using plastic in the future. At the end of this step, launch the **How can we use plastic forever?** challenge and tell the students they should follow the next steps to come up with ideas to meet the challenge.

### 2. Investigating

At home, groups should search for information about the different types of plastic that currently exist: how they are produced; uses and applications; durability; forms of disposal, recycling, reuse etc.

### 3. Finding a solution

The individual research done in the previous step will be presented in the working groups. Then there will be further research on solutions for plastic in the Circular Economy. Based on all the information collected, responses to the challenge should be prepared in writing and/or as artistic expressions, the genre of which may be chosen by the group.

### 4. Sharing

In this final step, the groups will present their texts and the class will compile their work in the form of a collection to be shared with the school community.

# STEP BY STEP

## Introduction

Plastic is one of the most used materials to produce our everyday objects. It is present in almost everything, from straws to the wings of airplanes or space rockets. Despite its versatility and importance for contemporary societies, its incorrect disposal has created problems to people and the environment.

Every day, millions of tons of different types of plastic waste are discarded. Some goes to landfills and dumps, and some builds up in the environment. There is an immense amount in the oceans, threatening marine fauna.

It is essential and urgent to find solutions to reduce the disposal of this material as garbage. The Circular Economy proposes solutions in which the plastic waste can return to the production system as a raw material for new products.

The objective of this Teaching Sequence is to enable greater understanding of the problem, reflecting and thinking about solutions to it. Students and teachers should play the leading roles in the creation of a new present and a new future.

### **Recommendation:**

## Introductory class on Circular Economy

Before going about this Teaching Sequence, we recommend conducting the [introductory activity on Circular Economy](#). This step is important to present the main concepts related to the topic.

# 1. Exploring

## CLASS 1

Start activities by dividing the class into six groups. When forming the groups, try to ensure that each one of them has people with different skills (for example, writing, research and communication).

### Recognizing plastics in everyday life | 15 minutes

Talk to students to find out what they know about plastics. Ask if they have already noticed there are different types of plastic in their daily lives. Make a list of the answers that come up to the question:

Where can we find plastics in our daily lives?

Arrange the class into groups and ask them to write down a list of products that use plastic and that can be found at home or at school. When they are done, ask each group just how many products were listed and comment on the amount of products made from plastic in our everyday lives.

### Reading the infographic – part 1 | 25 minutes

To encourage reflection on the topic of plastics in the contemporary world and the prospects of the Circular Economy, present the first part of the infographic on **“Manufacturing in the circular era: The new economy of plastics.”** First, read the introduction, then the part whose title is “In the Linear Economy.”

Make sure the students take their time to analyze the infographic. Address the matter with them through questions. Encourage an initial reflection on the Teaching Sequence challenge:

Can we keep using plastics forever?

Lead the conversation considering the fact that virtually all the plastic consumed today has oil as its raw material, and oil is a non-renewable resource.

## Introduction to the challenge | 10 minutes

After reflection on the topic, tell the students that throughout this Teaching Sequence they are expected to seek answers to a challenge and that at the end they should present a written essay to justify their answers, in the genre of their choice. Then launch the challenge:

### How can we use plastics forever?

Guide the students, explaining that answering this question is the main objective of the project. Emphasize that, for the analyses to be consistent, they must learn more about this type of material and that, for this, they have to do some research and collect information. Tell them that the research will be done at home, individually, and that groups should prepare to cover all topics. Instructions on this research can be found in the Investigating step.

## 2. Investigating

### AT HOME

So that their research can actually contribute to building their repertoire and guiding the resolution of the challenge, tell students to pay particular attention to the following topics.

In this research, they should try to answer the following questions:

- What is plastic?
- Where does it come from?
- What are the types of plastic?
- How are they produced?
- How are they usually discarded?
- What kinds of plastics are recyclable and what are not?

## Recyclable plastics:



Students should write down the information in their notebooks or in a folder with printed texts. If possible, their research can be stored digitally.

**Recommendation:** It is very important that students understand that they are expected to do more than just bring printed materials, they should read and select the most relevant information in them. That is, the information they bring should make sense within the context of the project. Therefore, it is essential for them to read and write down their own notes.

## Evaluation

For the evaluation of individual research, the following criteria may be used:

- Have all aspects been addressed?
- Did they take their own research notes?

## 3. Finding a solution

### CLASS 2

Recap the homework, check their research and arrange the room in groups again.

#### Knowledge sharing | 10 minutes

Have all students present their research to their colleagues and share the lessons learned.

#### Reading the infographic – part 2 | 5 minutes

At this point, show the second part of the infographic on “**Industry in the circular era: the new plastic economy,**” in which Circular Economy solutions for plastics are presented.

Explain that there are some Circular Economy ideas for the new plastic economy, but that there are many more solutions under development and some already in place. Ask them to do further research and look for possibilities and inspiration on how we can use plastics forever.

#### Investigating solutions | 25 minutes

To collect more information, students should do some online research. Come up with some ideas to facilitate their search for information:

- Everyday use
- Processes for reusing product parts
- Returnable products and packaging
- Recycling at different points of the chain
- Alternatives to plastics



- How to ensure proper disposal
- Other data.

Students can do their research in the sources indicated in the infographic, in this Teaching Sequence and in other references available online. If it is not possible to conduct research in the classroom due to lack of time, ask them to do it at home.

**Recommendation:** It is important that the research be done on trusted websites to ensure reliable information.

## Choosing a form of expression | 20 minutes

The end of the class will be used to choose a writing genre and/or a form of artistic expression and to start planning the writing.

Tell the students that their key ideas should be put in writing in the format of their choice. Present the following options so that they can choose according to the will and skills of the group members.

News	Multimedia reports	Infographics	Podcasts	Interviews	Comments	Opinion articles
Reviews	Vlogs	Games	Posters	Advertising	Jingles	Drawings
Paintings	Cartoons	Videos	Photos	Theater	Dancing	Models

The students should choose the format of their project and prepare to bring the necessary materials in the next class. It would be interesting to assign the role of each member of the group at this point to save time at the start of the next class.

## CLASS 3

## Survey of initial ideas | 10 minutes

With everything set and in place, it's time to start. Begin by placing the challenge question on the board:

**How can we use plastics forever?**

Have them discuss how best to answer this question in the face of everything they have learned on the subject and to write down their thoughts on their notebooks.

## Writing work | 40 minutes

Ask the students to form groups and start working as follows: with their main thoughts already listed on their notebooks, they should think of a plot, that is, a route. This plot should include the following steps: introduction to the matter; exploration of ideas; and conclusion wrapping up the ideas that came up along the way. Let them take their time during the class and tell them that the projects should be finished by the next class so that the groups can present them.

The groups should also think about the format of the presentation of their written work and maybe rehearse its reading or some other type of performance. There are possibilities that involve audio and video. This can be done at the end of the class or outside the classroom, before the next class.

### Important tip:

Depending on the choices made by the groups, some of them may need a larger and/or quieter space to work. In such cases, please guide them to more suitable spaces.

The Teacher must pay close attention to all the groups to ensure that their work fulfills the proposed objective: create a written piece or and/or artistic expression that addresses solutions for the use of plastics in the Circular Economy.

## Evaluation

The evaluation is continuous through observation and appreciation of the engagement and dedication of each group member. Teachers should also see how students behave during occasional conflicts.

## 4. Sharing

### CLASS 4

#### Presentation of the texts | 45 minutes

In this class, the groups will present their work. Those that chose some kind of performance can be filmed during their presentation. Make sure all groups have the same time for their presentations and comment on the importance of everyone paying attention to their classmates.

If possible, invite other rooms at the school to watch the presentations.

#### Work archive | 5 minutes

Gather the projects of all groups so that you can later create a digital file, which can be in the form of videos, links, prints or photographs. Share this digital file with the students and try to reach the entire school community as well as the contacts of the people who are part of that community.

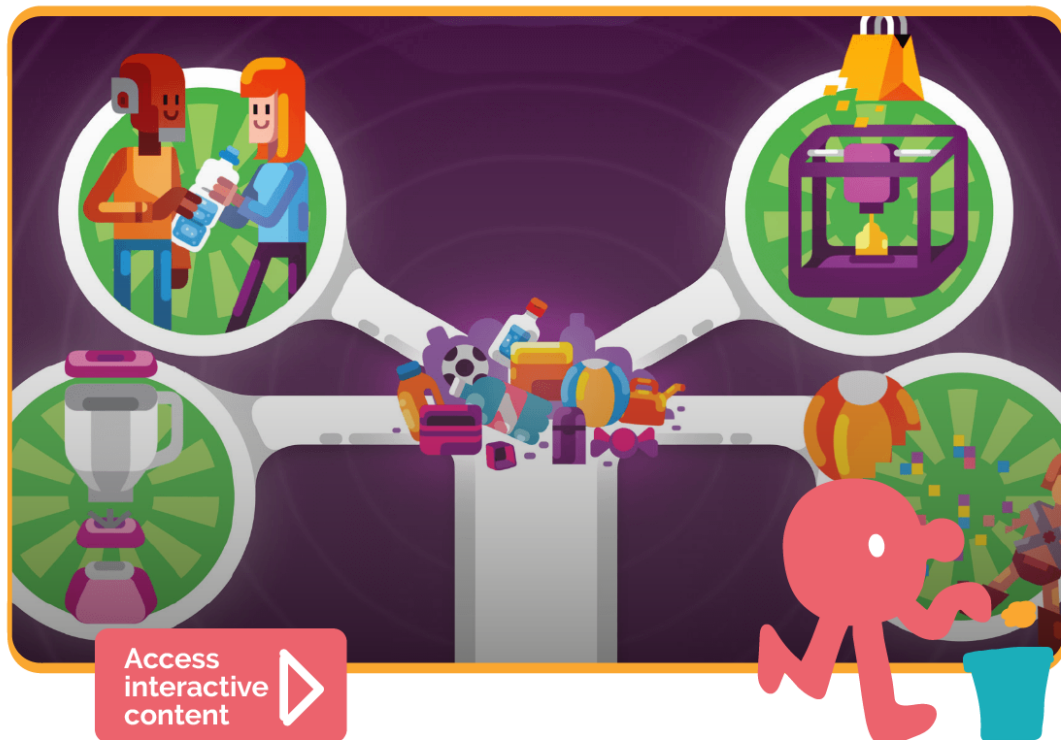
## Evaluation

Many moments of this Teaching Sequence enable evaluation, like the examples below:

- Individual research in the investigation step;
- The work done in the solution step;

- Development of critical and argumentative skills based on concepts, data and information;
- Presentation of their work.

With that we can identify students' understanding of plastics in Linear and Circular Economy.



# REFERENCES

## Videos:

Circular Economy: rethinking progress

<https://www.youtube.com/watch?v=OWxy4PXq2pY>

Meet the people rethinking ownership

<https://www.youtube.com/watch?v=oOKpymOgqWw>

NGO Global Footprint Network calculates humanity's Ecological Footprint.

<https://www.youtube.com/watch?v=SD4zArzv96s>

Meet the people rethinking ownership

<https://www.youtube.com/watch?v=oOKpymOgqWw>

Plastic pollution in numbers and images

[https://www.youtube.com/watch?time\\_continue=8&v=O2OoJO85VuE&feature=emb\\_logo](https://www.youtube.com/watch?time_continue=8&v=O2OoJO85VuE&feature=emb_logo)

Life Cycle Assessment

<https://www.youtube.com/watch?v=SkHE2clxv0U>

Precious Plastic Universe: a big bang for plastic recycling

[https://www.youtube.com/watch?time\\_continue=98&v=Os7dREQ00l4&feature=emb\\_logo](https://www.youtube.com/watch?time_continue=98&v=Os7dREQ00l4&feature=emb_logo)

## Websites:

Circular Economy - UK, USA, Europe, Asia & South America - The Ellen MacArthur Foundation

<https://www.ellenmacarthurfoundation.org/>

The Circular Design Guide

<https://www.circulardesignguide.com/>

New Plastics Economy - The Future of Plastics - New Plastics Economy

<https://www.newplasticseconomy.org/>

Circulate News - Medium

<https://medium.com/circulateneews>

Circular Idea - Circular Design and Economy in Brazil

<https://www.ideiacircular.com/>

A Big Bang for Plastic Recycling

<https://preciousplastic.com/>

**Texts and documents:**

What is Cradle to Cradle?

<https://www.ideiacircular.com/o-que-e-cradle-to-cradle>

What is Circular Economy?

<https://www.ideiacircular.com/economia-circular/>