

Theme 4. Circular Economy

Teacher guide - Ages 8-10

Preparation

Review the material and watch the movies. Do some preparation on the topic. Feel free to add any resources or materials you have available to enrich the lessons. 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 an economy is.
- know what a linear economy is (in a straight line: buy, use, dispose).
- discover the disadvantages of a linear economy.
- know what reusing/recycling is.
- know what a recycling economy is.
- know what a circular economy is.
- know the advantages of a circular economy.
- know how they can participate in/contribute to a circular economy.
- want to share what they have learned with others.

Key Vocabulary

- economy
- product
- the cycle
- service (services)
- linear economy (in a straight line)
- recycling economy
- circular economy
- raw materials
- energy
- fossil fuels



Introduction

[Slides 3-4]

Choose a product (toy, telephone, coffee machine, or something similar) and show this to the students. Tell them you don't use it anymore and you don't know what to do with it now. Let the students come up with ideas of what could be done with it and then summarize. *I can throw it away, give it away, take it apart and use the parts separately, sell it or trade it with someone else. There are quite a few possibilities. But what would be best for the environment?* Let the students react and discuss this. Then discuss the learning goals of this theme with the students.

Instruction

[Slides 5-7]

Issue

Ask questions and let the students perform the movements mentioned under the question if they can answer it with a 'yes'.

Questions:

Who receives pocket money?

Who is saving up for a big purchase?

Who goes grocery shopping for their parents?

Who likes to go shopping?

Who goes to the hairdresser/cinema/amusement park?

Tell the students that all these questions have to do with the economy. *Economy is everything that has to do with making products, buying products (and services) and using products.*

Complete exercise 1 and discuss it with your students. Also take a look at the pictures that don't have anything to do with the economy. About the picture with the umbrella in the rain you could say: *But what if this is a picture in an advertisement for umbrellas?* And the picture with the squirrel: *What if this picture is taken for promoting a zoo? Then it is also part of the economy.*

[Slides 8-9]

Explain that the economy is about how and why products are produced and also how and why people buy these. *Businesses and people make choices and these choices have consequences, also for the environment.* Can the students name examples of where the economy and the environment interact with each other?

For Example: *Think about trucks bringing products from one place to another. Or a factory that produces products and emits bad substances in the process. Or about all the waste of packages and products no longer being used.*

[Slides 10-11]

Explain: *The way our economy works now is linear. This means 'in a straight line': buy, use, dispose.* In exercise 2 on the interactive whiteboard you can see what a linear economy looks like. Complete exercise 2.



[Slides 12-13]

We buy goods, we use the goods and we dispose of them (or store them somewhere). Before we buy goods, they have to be made.

Complete exercise 3.

[Slides 14-16]

Explain: A linear economy starts with the raw materials and energy that are necessary to make/build things. The end of a linear economy is one big garbage bin. So you need a lot to make things and at the end of the line, the product ends up in the garbage bin.

Complete exercise 4.

Explain that a linear economy is bad for the Earth and the environment. Note: it's bad because we don't have a planet B...*When we keep making things this way, then use them and dispose of them, problems arise.* Look at the four arrows and discuss with your students where the problems are.

[Slides 17-19]

The first problem is the raw material needed to make things. Often fossil fuels like coal, gas and oil are used. There will be a day when all these fossil fuels will be gone. Also raw materials like copper, iron, aluminium and silver - often coming from other countries - are running out.

The second problem is in the making of all the things we use. Energy is needed for the process of making goods. To retrieve energy from fuels, the fossil fuels are burned. Burning these fuels leads to carbon dioxide emissions which are too high, causing global warming. And also these fossil fuels are running out.

Finally there is another problem at the end of the linear economy: waste. There is too much waste. Waste accumulates (more input than output). Burning all this waste leads to polluted air. Next to that, there is also a big part of that waste that ends up in the streets (litter) and from there moves on into the environment and the sea (plastic soup).

A solution

[Slides 20-23]

Complete exercise 5. Stopping waste is best, but is it realistic? Ask the students.

Complete exercise 6.

Watch the video about the 3 R's (reduce, reuse and recycle) and complete exercise 7.

[Slides 24-27]

Then view the video on what happens to empty plastic bottles and complete exercises 8 and 9. Discuss the exercise with your students. Are they familiar with deposit returns? Do they think a deposit return scheme could work? (Tip: If your country does not have a deposit return scheme, have students come up with how much deposit should be added to the beverage containers shown in exercise 9.)

An economy with recycling is called a recycling economy. Literally, it means 'reuse'. Still, even in a recycling economy, there is waste and its solutions are not enough to solve the problems coming from a linear economy. We need more for that.



[Slide 28-30]

Watch the video. Explain what 'cradle' is. Complete exercise 10.

Explain that there is a name for this idea: *It is called a circular economy. In the word 'circular', you recognize the word 'circle' and that is what it is: a circle that keeps going round and round. Another word you might encounter when talking about a circular economy is 'cycle'.*

[Slides 31-36]

Discuss the advantages of a circular economy.

The advantages of a circular economy are:

- raw materials are not running out.*
- natural energy sources are used mostly.*
- there is no more waste.*

Afterwards, complete exercises 11 and 12.

Ask your students in exercise 12: *Where is no waste? Where is a circle?* (it goes from one person to the other).

Complete exercise 13.

Explain that people strive to make all businesses circular by 2050 (sustainable).

This also means that one does not automatically own something. You can borrow things for a certain amount of money each month.

For example, a washing machine. When the washing machine breaks down, or if you don't want it anymore, it will go back to the factory that made it. They will repair it or reuse spare parts.

What do the students think of this?

What can you do?

[Slides 37-40]

Discuss the linear economy (buy - use - dispose), which is still the most current way of doing things. Discuss the buying. Ask the students to give an example of something they would like to buy.

What is a good question to ask yourselves before you buy it?

- Can I buy it secondhand?*
- Have I already got enough?*
- Do I really need it?*
- Can I borrow it (from someone else).*

Discuss the disposal. Ask the students if they have anything now that they don't use anymore and ask what this is. Ask what you can do with it. Discuss the different options.

- Can I make someone else happy with it?*
- Can I hand it in in a special place (separating waste)?*
- Can I reuse spare parts?*

After this, discuss what happens at school and what could happen, completing exercise 14. Discuss each bullet point separately why it fits in a circular economy. Complete exercise 15 and discuss it with the students.



Suggested related themes

Theme 2 about energy is related to the problems regarding fossil fuels and the solutions developed for this problem, like the use of natural energy sources.

Theme 3 about waste is related to the big pile of waste caused by a linear economy.

Worksheet

[Slide 41]

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. Exercise 5 is about consumer behaviour. Because people always want more, they keep polluting the environment. How does this happen and do the students agree? Discuss your own actions in exercise 6. Is there also something in the classroom that can be changed?

Practical Assignment

[Slide 42]

Draw a cycle: Choose a product and draw the cycle it goes through. Investigate how the product can be made within a circular economy. You can look for information on the internet. Also look at examples of cycles. Hang your drawing in the classroom or a good spot in the school.

Closing

[Slide 43]

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

Outdoor Experience

[Slide 44]

Plan a visit to (or an online meeting with) an organisation that works in a sustainable way according to the circular economy. When you can't visit an organisation, you could also consider a library, recycle shop, jumble sale or kitchen garden. Let the students gather information about the organisation you are going to visit beforehand and let them prepare questions they want to ask. The main goal is that the students will be able to identify 'the circle' within the process.

Extras

[Slides 45-49]

Game: Hangman



Exercise:

Let all the students bring things/products from home that are not needed anymore and organise a swap meet. Make good appointments about trading beforehand. Explain that it is not important if something has the same value or not. The only thing that matters is that you are happy with it. It is fun to make someone else happy with something you do not need anymore.

Energizer: Charades

Energizer: I'm going on vacation and I'm **not** taking...

Materials Required

For the introductory exercise: a product.

For the poster on circular economy: poster paper and pencils, pens, and/or markers.

Theme 4. Circular economy

Answer Key - Ages 8-10

Exercise 1

a. Which words are related to a linear economy (in a straight line). Underline these words.

Natural energy - recycling - **too much waste** - **running out of fuels** - no waste - **running out of fossil fuels** - borrow - secondhand - little waste

Exercise 2

Example: a disadvantage of a linear economy is it's bad for the environment (waste, greenhouse gas emission, raw materials running out.)

Example: in a recycling economy you reuse things, but there is still waste.

Example: in a circular economy there will be no more waste (reuse and reuse)

Exercise 4

a. What does the word "secondhand" mean?

It means the product was already owned by someone else first.

b. Why does this fit into a circular economy?

Secondhand products can fit into a circular economy because in a circular economy there is no waste and products are being reused/recycled.

