Short Teaching Sequence Students aged 9 and 10

Where does our food come from and where does it go to?

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TECHNICAL INFORMATION

Topic The food cycle in both Linear and Circular Economies

Summary In this Educational Activity, students will learn more about how the food they eat is grown, produced, distributed, consumed and disposed of. With that information, students will be asked to draw a sketch representing all the different steps. Finally, students should play a card game that will help them come up with ideas to advance a more circular process.

Suggested audience Students aged 9 and 10.

Estimated Durations Three lessons.

Subjects involved Sciences, Arts and Geography.

Materials Blank sheets of paper (A3 or A4), a computer with internet access, a printer, a marker, colored pens, tape, cotton twine, clothespins, large sheets of kraft paper or construction paper.

Learning objectives

Concepts: Biological cycle, technical cycle, and Circular Economy

Steps: Introductory discussion; infographic analysis; internet research and family interviews; group discussion; sketch drawing; card game.

Reinforced behavior: Listening to others and participating in group activities. Individual and group reflection. Awareness on the importance of working in groups. Respect for the opinions and points of view of others.

Key- words Food, production, distribution, consumption, waste, composting.

Related SDGs



SUMMARIZED STEPS

1. Explore

First, elicit students' previous knowledge about where the food they eat comes from and where the waste goes to. Next, students should analyze an infographic titled **"How to eat without gobbling up the Earth: food in circular times"** and discuss what can be done in our everyday lives to put the principles of a Circular Economy into practice.

2. Research

At home, students should choose a food product and learn more about it with the help of other members of the family. They should investigate the whole life cycle of that product: how it is produced, how it gets to their house, how it is prepared, what waste is generated and where this waste goes to (leftovers and packaging, for example). The family should also help the student to draw a sketch of this cycle to be taken to class.

3. Solve

This step requires two lessons: In the first lesson, each student presents the sketch they drew with their families, showing the origin and destination of the food product they investigated. In the second lesson, students create and play a card game to respond to the following challenge: How can we reduce the amount of waste that we generate after eating our meals?

4. Share

The students should take their card game home to play with their families. The school may also organize a special day to invite the families to come to school and see the students' work: both the sketch and the card game.

STEP BY STEP

Intro

One of the principles of a Circular Economy involves separating materials between two distinct cycles: the technical cycle and the biological cycle. Materials that integrate the technical cycle should be sent back to the production chain and be reused as raw material instead of being dumped onto natural environments, whereas materials that are part of the biological cycle do not contaminate natural environments. To the contrary, these materials may even help regenerate the environment.

Composting is a great example of a successful biological cycle. Organic residues may be composted to be later used as nutrients for the soil.

Any organic residue that results from what we eat should be put into a biological cycle. However, when packing and transporting the food we eat we often need to use materials from the technical cycle. To be able to compost the materials from the biological cycle and reuse or recycle those of the technical cycle, these two groups of materials should never be disposed of together.

This Teaching Sequence invites students and teachers to investigate the cycle of some of the food products they eat, to learn more about their journey in a Linear Economy and to devise solutions to turn it into a more circular process.

Recommendations:

Introductory activity on Circular Economies

Before using this Teaching Sequence with participants, we recommend first conducting <u>the intro activity on Circular Economies</u> with them. This is an important step to introduce the main concepts needed for this discussion.

1. Explore

LESSON 1

Set up

Before going to the classroom, print the questions that will be given to students at the end of the lesson. Before the lesson starts, write two questions on the board, one on each side: "Where does it come from?" and "Where does it go to?"

Discussion on the origin and destination of food

products | 30 minutes

This lesson should start with a group discussion on the origin and destination of the food we eat at home. As students to close their eyes and recall what they had for breakfast. Next, tell them to open their eyes and ask one student to share one of the things he/she ate that morning. Write it down on the board. Next, ask all the students whether they know where this product comes from.

Where does (food name) come from? How is it produced? How does it get to our house?

Let them share their opinions freely and take notes of their answers on the board below the question "Where does it come from?"

Next, ask them whether they know what happens to the food scraps and leftovers (or the packaging, if it applies).

Where do leftovers go to after we eat?

Write students' answers under the question "Where does it go to?"

Repeat this exercise with at least three different food products.

Pro tip!

When asking students whether they know where their food comes from, we suggest going back all the way to the raw food grown in farms. For example, if students mention eating bread for breakfast, ask them where the bread was baked (at home, in a bakery, in a factory, etc.) and what ingredients were used in its recipe (wheat flour, milk, eggs, etc.).

Choose one of these ingredients and ask where it comes from. For example: wheat flour comes from wheat farms. In Brazil, most of the wheat in the market in imported from Argentina, whereas most of the wheat grown nationally comes from the state of Paraná. Ask students, then, how did the wheat leave the farm and get to the student house, to the bakery or to the factory.

Next, to talk about what happens after we eat, start by asking: "After you have finished eating that bread, was there anything left (breadcrumbs or packaging)?" If they say yes, ask them: "What happens to the organic residue (breadcrumbs)? And what happens to the packaging (paper, plastic, etc.)? Where does it all go to?"

It might be interesting to draw a sketch of that journey on the board, so that students can visualize everything that happens to that product from being grown in a farm, to being served at their houses.

Read and discuss the infographic | 10 minutes

Tell students to work in groups. They should access the infographic titled **"How to eat without gobbling up the Earth: food in circular times"** on the platform. One member of each group should read the information out loud while others listen.

Next, talk to them about the examples they have read. Ask them which examples seem feasible to them. Ask them why they think the others cannot be put into practice.

Which examples **can we** put in practice in our everyday lives? How so?

Which examples **can't we** put in practice, in your opinion? Why not?

Assessment

We recommend taking notes of students' opinion throughout this step. Write down what students knew about the topic prior to the lesson and take notes of how well they grasped new concepts. This analysis should not be used to assess students individually, but rather to decide how deep a discussion can be initiated in future lessons.

Instructions for the research | 10 minutes

At the end of the lesson, tell students they will have to search for more information at home to find out where one of the products they eat at home with their family comes from and where it goes to after their meals. They will have to draw a sketch showing its full journey. A sketch showing where the food is grown, how it is transported, how it is sold, how the family eats it, and where the waste is sent to.

Tell students they should ask their families to help, and that their families should take part in choosing the product they will investigate. Show them the questions that should guide their research and see if students have additional suggestions.

Questions:

1. What food product are we going to search about?

- 2. Where does it come from? Where was it grown or produced (city, state, country)?
- 3. What are all the cities and places it had to go to before getting to our house?
- 4. Where was it bought or harvested (supermarket, bakery, farmers' market, orchard, vegetable garden, etc.)?
- 5. How was it eaten (raw, peeled, chopped, processed, fried, boiled, baked, etc.)?
- 6. Did we eat all of it or was there any waste (food scraps or leftovers)?
- 7. What waste was generated during preparation (peels, stems, seeds packaging, etc.)?
- 8. What did we do with the organic residues (peels, stems, seeds, leftovers, etc.)?
- 9. What did we do with the non-organic residues (packaging, box, label, etc.)?

If possible, print copies of these questions and give each student one to take home. If impossible, then write the questions on the board or project them on the wall from a computer and ask students to copy them on their notebooks. These questions should be taken home and shared with the rest of the family as homework.

Tell students to also watch with their family the video explaining what a Circular Economy is before starting their research. Tell them to copy the link to the video and give instructions on how to access it.

 <u>Circular Economies: rethinking progress</u>. (03:48 minutes) <u>encurtador.com.br/IGR02</u>

Pro tip!

Explain the difference between "waste" and "residue" in case students are not aware of this difference.

Waste: any material that cannot be reused or recycled.

Residue: any material that can be reused or recycled to extend its lifecycle.

2. Research

AT HOME

After having watched the video with their families, students should choose one everyday food product to study.

Most of the information they need can be found on the internet, in books or by talking to other people. However, in some cases it might be necessary to go to a supermarket, grocery store or farmers' market to talk to the people who work there. Products that come in packages often have important information on their labels. When investigating waste disposal, it might be interesting for students to talk to the refuse and recyclable material collectors who work on the street where they live in.

After collecting all the information they need, students should draw a sketch of this product's journey and take it with them to school. See the following examples:

Sketches

The lifecycle of milk:



The lifecycle of bread:



3. Solve

LESSON 2

Sketch presentation | 50 minutes

Ask each student to show the sketch they drew with their family. During the presentation, students should share what they learned about that product's journey, from beginning to end. There is no problem if they do not cover all the steps in their sketch, as long as the student put effort into the research. The fact that it is sometimes difficult to find accurate information is, in itself, a good topic for discussion.

After the presentation, the sketches should be either taped to the classroom walls or hung using a cotton twine and clothespins.

Ask students to form a circle and talk about what they have learned and whether they had any problems during their research.

LESSON 3

In this lesson, students should create and play a card game. The main objective is to make students reflect on the lifecycle of food in a Linear Economy and how we can make it more circular.

Creating the card game | 30 minutes

Organize students into groups to create the cards and arrows.

This game uses two sets of cards with the same steps: production, distribution, consumption, and disposal. One set of cards will be used to represent the product in a Linear Economy, the other, on a Circular Economy. The game also uses a set of arrows for the Linear Economy, and a second set for the Circular Economy. Each group should either receive or create a full set.

Set of cards for a Linear Economy:



Set of cards for a Circular Economy:



Card game | 20 minutes

Tell students to sit in groups, choose one of the food products they talked about in the previous class (different groups can choose the same product if they want to, it will be interesting the compare the way each group discusses it) and play the card game.

The group should look at the sketch drawn for that product and, first, simply recreate the steps shown in the sketch using the cards.



The teacher should allow students enough time to complete the full product lifecycle. When time is up, give students a new challenge:

How can we reduce the amount of waste that we generate after eating our meals?

Tell students to come up with possible solutions for the product they are working with. Tell them to take their real lives into consideration, trying to think of what could be actually done to change its lifecycle. The goal of the game is to try and organize the cards in a circular fashion.

Recommendations: Teachers should act as a mediator, encouraging students to share their opinions and ideas but to also listen carefully to what others have to say as. Prepare questions that may guide students into coming up with ideas of their own.



Encourage students to think of solutions for all the four steps. For example, in the production step, people could consider buying from local producers, choose different types of packaging or even grow food in their own houses or neighborhoods. In the distribution step, companies could use less-polluting means of transportation, sell products in bulk or take the products from farms straight to the consumer. In the consumption step, students may suggest ideas to reduce waste either when buying or preparing food. Finally, in the disposal step, some ideas involve having a composter at home or in your building and finding ways to reuse and recycle the packaging mentioned in the production step. These are just a few ideas, but there are countless more for students to explore.

Assessment

Teachers can assess the way each student presented his/her sketch, analyzing whether the student put real effort into this activity with his/her family and whether the student really learned something new from this activity. When students play the card game, it becomes easier for teachers to assess how much each student has learned and incorporated this new knowledge. Teacher may also observe students' skills when presenting their arguments.

4. Share

AT HOME

Ask students to take turns in taking the card game back home with them and playing with their families. Alternatively, the teacher could send them pictures of each card for students to access from home. Encourage students to play the game with their families using the product they searched for together.

If possible, reserve some time in the next class for students to comment briefly on their experience playing with their families.

The school may also organize a special day to invite the families to come to school and see the students' work: both the sketch and the card game. This option gives students the opportunity to show to the community what they have learned.

Assessment

Teachers may conduct and observational assessment throughout all activities, assessing how involved students were in the research, sketch, group discussion and card game.

It is important for teachers to take notes in all steps be able to better assess how students developed their knowledge throughout this Teaching Sequence and what they learned at the end of all activities.



REFERENCES

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Meet the people rethinking ownership

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Global Footprint Network calculates mankind's Ecological Footprint

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

Meet the people rethinking ownership

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The Circular Design Guide

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