

Long Teaching Sequence
Students aged 9 and 10

Can we eat without generating waste?

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TECHNICAL SHEET

Topic Food packaging in the Circular Economy.

Summary This Teaching Sequence begins with a reflection on the importance of packaging to transport, store and preserve food. Then there is some field research on different types of packaging. Finally, we propose possibilities of product packaging and transportation according to the logic of Circular Economy to prevent losses and waste generation in the process.

Suggested audience Students aged 9 and 10.

Estimated length Six classes.

Curricular components Sciences, Geography and Arts.

Materials White paper (A3 and A4 sizes), computers with internet access, printer, ballpoint pens, markers, masking tape, scissors, brown paper (kraft) and cardboard. For the prototypes: materials like scrap and magazines.

Learning objectives

Concepts: Biological cycle, technical cycle and Circular Economy.

Procedures: Round-table talks; online and field research; proposition of solutions; use of different types of language.

Attitudes: Recognize the importance of group work. Value the search for more sustainable societies. Recognize and value the search for paths and instances of collaboration and participation.

Keywords Food, packaging, waste, garbage, transportation, storage.

Related SDGs



SUMMARY OF STEPS

1. Exploring

To start, we will survey students' prior knowledge of the different types of packaging and their importance in our everyday life. Reading of the infographic section on **“How to eat without devouring the land: food in the circular era,”** which addresses the marketing and consumption of food packaging in the Circular Economy.

2. Investigating

At this stage, we will launch the challenge that will guide the following steps: **what types of packaging would enable food to be transported and preserved so that there is no waste or garbage in the process?** Each group will choose and study a type of food and its packaging. Afterward, students will do some fieldwork in a grocery store or supermarket to investigate the most commonly used types of packaging.

3. Finding a solution

Students will continue to work in groups to research, discuss and propose waste-free ways to transport, pack and dispose of food. They should meet the challenge by building a prototype. Each group will be responsible for the analysis of a type of food, and the solution will be to propose a type of package that does not generate waste or garbage when disposed of.

4. Sharing

The students will present their prototypes and walk the class through their creative process, justifying how their idea could contribute to the non-generation of waste throughout the production and consumption chain.

STEP BY STEP

Introduction

Every day, different types of food can be found at our homes and schools. As we know, the vast majority need some type of packaging to be transported and preserved for a longer time.

After consumption, these packages usually generate an enormous amount of waste, which most often ends up in dumps or landfills. It is a waste of material, since the generated waste could be used to produce new resources. According to the concept of Circular Economy, this can be achieved in two ways: waste can go back to the biological cycle or go to the technical cycle.

Materials that can decompose and return to natural systems in the form of nutrients go to the biological cycle. This is the case of food scraps, also called organic waste, for example.

On the other hand, materials that cannot be easily reintegrated into the natural system should be reused by the production system as raw materials in the production of new objects and products, in the so-called technical cycle.

In this Teaching Sequence we will evaluate some options for reducing the use of packaging, as well as the use of packaging that, after disposal, can return as a raw material to the biological or technical cycle.

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

Reflection on the use of packaging | 20 minutes

To start, ask challenging questions to spark the conversation about the use of packages, like:

- What is the importance of food packaging?
- What types of packaging are the most common?
- What material are they made of?
- What do we do with the packaging after we consume the products?

The idea is to enable the reflection on how and how much packaging is present in our daily lives, its importance and the problems associated with inappropriate disposal.

Infographic analysis | 30 minutes

Present the infographic on "**How to eat without devouring the land: food in the circular era**", and read with your students the section on "Reinvention of the market," where there is a woman shopping.

In the first scene, the woman is depositing packages in material collection containers. There are different types of packaging, like biodegradable, returnable and recyclable. Talk to your students about these possibilities. Then, continue with the analysis, scene by scene.

Ask your students what types of food could be sold without packaging, and which ones could use (or already use) biodegradable, returnable or recyclable packaging.

Try to bring these questions into your students' daily lives. It is worth encouraging them to pay attention to the groceries they use at home, for example.

2. Investigating

CLASS 2

The challenge of food without waste | 20 minutes

After this collective reflection, launch the challenge that will be investigated and met in the following steps:

What types of packaging would enable food to be transported and preserved to prevent waste or garbage in the process?

Students should choose some types of food to research and think about solutions to pack, transport, sell/buy and dispose of them in a way that prevents their waste from becoming garbage.

Recommendation: It is important to emphasize that food preservation should be considered to avoid waste.

Then, divide the room into groups and give each group a few minutes to choose a food to investigate. Instruct them to select products that are marketed in packages and that can be found in most supermarkets.

Fieldwork preparation | 30 minutes

Fieldwork in a supermarket will be done to investigate the most commonly used types of packaging.

Important tip:

If fieldwork is not possible, you can ask your students to bring products from home and do the group work with them.

To prepare for this project, talk to your students about the steps they should take before the fieldwork: what information they have to collect during their visit and how they can organize themselves. Divide the class into groups of 3 or 4 members and have them start planning how their team will work.

To orient their fieldwork, recap the challenge. You can do this on the blackboard or using slides with the following question:

What types of packaging would enable food to be transported and preserved to prevent waste or garbage in the process?

It is important to make it clear that the objective of the fieldwork is to investigate the packaging used for food distribution. With that, groups can think of strategies to collect information, either through photos of the packages, by reading the labels or through interviews with merchants and consumers.

In this class, the groups should meet to prepare the research agenda for the fieldwork, determine how the data will be collected and assign a person to be responsible for each task. The agenda should be turned in on a sheet of paper at the end of the class for the Teacher's analysis.

Important tip:

Explain the difference between "garbage" and "waste" to students if they are not familiar with it.

Garbage: any type of material that can no longer be reused, repurposed or recycled.

Waste: materials that can still be reused, repurposed or recycled to expand their life cycle.

Note: There is also the idea of **tailings**, which are materials whose possibilities of reuse or recycling have been exhausted.

Evaluation

The agenda to be turned in by the groups should be evaluated to verify the strategies that each group proposes for data collection and, based on that, to suggest occasional adjustments. The evaluated agenda should be given back to the group before the fieldwork starts.

CLASS 3

Supermarket investigation | 35 minutes

This class will be used for fieldwork in a grocery store or supermarket.

On arrival, each group should look for the chosen product and gather as much information about it as possible, following the agenda prepared in the previous class and noting down information that was not foreseen in the agenda.

Important tip:

If any group does not find their chosen product, they can look for another one with similar packaging.

Recommendation: It is very important that the Teacher is not alone in the field with the students, since the groups may be dispersed. We suggest that each group be accompanied by an adult. Therefore, invite other Teachers, school staff and/or parents to accompany fieldwork, if possible.

Conversation about fieldwork | 15 minutes

Use the final minutes of this activity for the groups to exchange views on what they learned during the fieldwork and the data they collected.

3. Finding a solution

CLASS 4

Packaging investigation | 50 minutes

Have the class do an internet search for possible solutions to pack, transport and market the investigated food in a way that prevents its waste from becoming garbage.

This research can be done in groups or be centered on the Teacher, depending on the availability of computers or tablets.

Recommendation: Remember that the solutions can be biodegradable, returnable or recyclable, but that they can also simply eliminate the use of packaging in some cases.

CLASS 5

Preparation

The search for waste-free packaging will include a prototyping project. For this, before the class, make sure you have the necessary materials for the groups' creative activity.

Solution prototyping | 50 minutes

Recap the challenge before starting prototyping:

What types of packaging would enable food to be transported and preserved to prevent waste or garbage in the process?

Encourage the class to create prototypes (remember to explain what a prototype is) of proposals on how the chosen product could be consumed without generating garbage during transportation, sale, purchase and waste disposal.

Keep in mind the following possibilities to enrich the work of the groups:

- Food can be purchased directly by the consumers or produced locally, in a vegetable garden or orchard, without the need for packaging.
- Consumers can use their own bags when shopping for food, as in bulk sales, where consumers bring their own containers to carry the food.
- Packaging can be used more than once for the same food, as is the case of returnable beverage bottles.
- Packaging for food transportation can be standardized and thus used by different food products in different means of transportation.
- Packaging can only be made of material that can be reused, recyclable or compostable. Raw materials come from recyclable sources.
- Packaging can be of the refill type, in which consumers buy only the content to refill another package at home.
- Packaging can be produced with materials that can be disposed of in domestic compost containers, favoring the cycling of nutrients at home.
- If none of the above options are possible, note whether or not all parts of the package can be recycled.

Recommendation: Explain that, in order to set up a prototype, the groups should find a way to create a fictitious miniature of the thought solution and that, when presenting the result, they will need to explain how the prototype was conceived, how it should be used and why that solution would solve the challenge.

The solution should involve all stages: transportation, sale, purchase and disposal of waste. Students should consider the containers that will be used to take the products from manufacturers to the market, how these products will be marketed individually, and finally what will be done with the waste.

Explain that, in the next class, they will use this prototype to simulate how products move across the different stages.

To prepare the dynamics for the next class, they should identify and note down the players involved in the process of transporting, selling, buying and disposing of their product waste.

Important tip:

Allow students to circulate among the creative groups. The idea is that the experience promotes the exchange of ideas and collaboration.

4. Sharing

CLASS 6

Experiencing the prototypes | 30 minutes

In the last class, the groups will be able to present their prototypes to each other and talk about their creative process.

This activity will be done as follows:

1. Each group will choose a representative to show the result of their work to the other groups.
2. Then, the assigned student from each group remains in place, while the rest of the group goes on to meet the representative from another group.
3. Then, the representative proposes a role-play in which each member of the other group will be a stakeholder: one will be the carrier, one will be the merchant, someone will be the consumer, among other players. If any student does not have a role, he/she will be an observer.
4. Then the prototype (or prototypes) will circulate among these players, simulating what would happen if the group's solution were put into practice.

This dynamic can be done only once or until the students circulate and get to know the work of all the other groups. At the end of the process, and if the Teacher deems it appropriate, there may be a vote to choose the best prototype.

Final reflection | 20 minutes

Finally, have them sit in a circle and comment on the solutions that came up, whether they solved the challenge, whether they are feasible, among other reflections.

Evaluation

Observe the participation of students in the different stages: whether they collaborated in the research stage, in the fieldwork, in the design of the solution and in the presentation of the work.

The prototyping process is an evaluation tool, since the ideas presented by the groups should reflect their understanding of the topic and the knowledge acquired throughout the Teaching Sequence.



Access
interactive
content



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