pLatform for INnovation in Natural science onlinE education

Didactic Unit (DU)/Lesson plan

The effect of plastics/microplastics /sewage in food chain

Contract No.:	**2022-1-IT02-KA220-SCH-000088667**
EU-Programme:	**Erasmus+, KA220-SCH - Cooperation partnerships in school education**
Authors	**Gedimino miesto mokykla (LT)**

Co-funded by the European Union

LINNEO project has been funded with the support of the European Commission. The responsibility for the content of this publication is borne solely by the publisher; the Commission is not liable for any further use of the information contained therein.

OVERALL DESCRIPTION

Sections	Description
1. Topic/DU Title	**THE EFFECT OF PLASTICS/MICROPLASTICS /SEWAGE IN FOOD CHAIN.**
2.Brief description of the DU	In this DU, pupils learn about the importance of reducing pollution, as microplastics are found in the bodies of animals (and humans) and cause loss/mutation of animal species and plants. The DU include three phases on the following topics: 1. Plastics microplastics and sewage in water 2. Food chains in water 3. Being a conscious consumer
3. Beneficiaries	age 9 – 11
4. Total hours	4 hours 30 minutes / a week for research
5. Situation problem / reality or authentic task	How can we address the issue of pollution? It is important to educate the young generation as a conscious consumer, because this is where the problem of water pollution comes from. Overconsumption is a big problem. Society does not pay equal attention to sorting and recycling. It is important to educate students from a young age with real examples of why it is important and how it affects nature. Chemicals enter groundwater. Animals and plants feed on this water because it enters water bodies through groundwater. Through the food chain, these substances enter the body of animals (and humans).
6. Aim/s	Make pupil learn about pollution due to plastics and microplastics and possible contrasting actions.
7. Subjects	Science, Math, Technology, Language
8. Expected results	Students will learn how to sort plastic in order to keep it out of the environment and prevent it from hurting aquatic plants and animals.

WORKPLAN

Phase/Title/ Lessons	Brief description	Subjects	Objectives	Knowledge and Competences	Educational strategy	Tools and resources	Setting*	Evaluation and assessment	Duration
Lesson 1. Plastics, microplastics and sewage in water	Teachers present a video (Video 1, 2, 3) about the current situation of water pollution in which pupils find out how plastics, microplastics and pollutants in water come from and find information on how long it takes for certain plastic items to decompose. Afterwards pupils look for statistical information on how much plastic is thrown/produced per year (Websites)	Science, Math	Understand the pollution situation in the world's waters. Find out what activities have a negative impact effect on water contamination. Find, analyse and compare statistical information.	Be able to evaluate the information provided. Be able to ask and answer problematic questions through discussion. Be able to find relevant information on the internet, selecting and understanding data.	Collaboration in groups, pairs, group/class discussion. After watching the video, students will discuss the following questions in small groups: 1. What is the problem you see? 2. What are the causes of this issue? 3. Is it possible to solve this problem? If so, how? Presents their group's ideas frontally. Use computers in pairs to research	Video 1 from LINNEO project The effect of plastic on marine environments Video 2 YouTube video from National Geographic How We Can Keep Plastics Out of Our Ocean Video 3 YouTube video from TED-Ed What really happens to the plastic you throw away Websites	Classroom Tablets or computers, interactive whiteboard or screen.	Answer the questions about the given information using Kahoot or Quizzis created by the teachers.	1 hour 30 minutes

					pollution and plastic product statistics.	Global Plastic Pollution Statistics Plastic waste worldwide - statistics & facts			
Lesson 2. **Food chains in water.**	Teachers present a video (Video 4) about food chains in water. Then make pupils learn to create food chains and make clear how energy is transferred. Worksheet Water food chain Present a video (video 5) about how water pollution affects marine flora and fauna.	Science	Discover how the food chain in water is related to water pollution.	Be able to make simple food chains from the given organisms living in the seas. Be able to describe how energy is transported. Understand the importance of each link in the food chain. Be able to explain what happens to animals and plants in polluted water.	Collaboration in groups, pairs, group/class discussion. Individual work Create food chains in pairs or independently. Pairs exchange chains and verify that they are properly created.	Photos, drawings, diagrams, posters, Video 4 from LINNEO project Food chain and hunting strategies Video 5 from LINNEO project The effect of plastics in marine environment Worksheet Water food chain	Classroom Tablets or computers, interactive whiteboard or screen.	Presentation of the food chain pupils have created.	1 hour 30 minutes

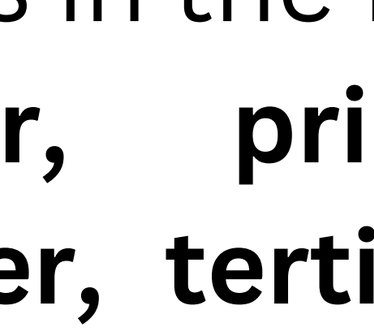
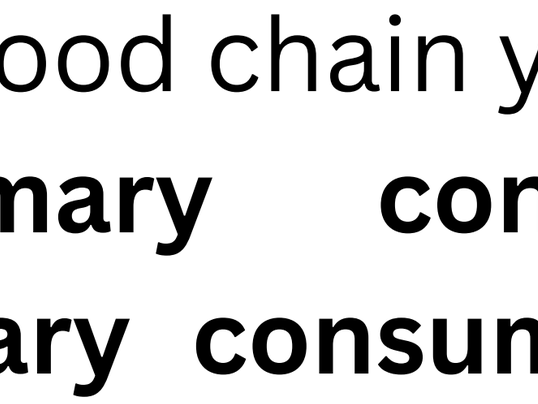
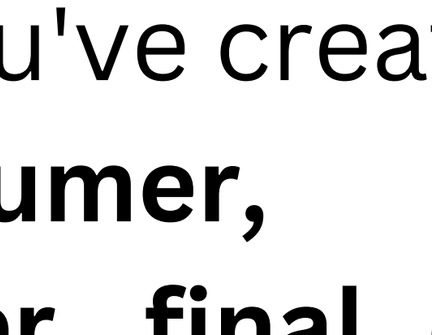
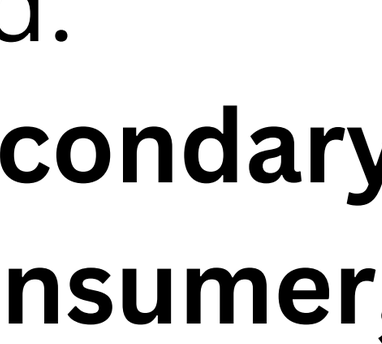
Lesson 3. **I'm a conscious consumer.**	Pupils supported by teacher analyse the ways in which (they) can reduce pollution - discuss the ways in which waste can be sorted and prepare a presentation. Then students find out how much plastic is thrown away per week in the classroom community /and/ or at home and create a diagram. Finally, pupils are asked to select old clothes that they don't wear anymore to make double-duty shopping bags.	Technology, language, Science	Find out how "Me" can participate in the reduction of pollution and conservation of water. Will evaluate and discuss whether waste is properly sorted at school/classroom /home. Collect, analyse and summarise data. Select their own clothing, recycling the unwearable items to make reusable shopping bags.	Be able to explain and/or present ways and actions we can take to conserve water and reduce pollution. Be able to collect, analyze data and present conclusions. Be able to renew clothes that no longer needed for a second life.	Collaboration in groups, pairs, group/class discussion. Frontally discussing what I can do to reduce pollution. Prepare a poster in groups about strategies to reduce pollution.	Software for presentations Weighing of plastics Selection and recycling/sewing of unwanted clothing.	Classroom Computers Classroom/ Home	Evaluation of poster/slide design and present Making and presenting diagrams Authentic assessment: Drawing/modelling, fabric cutting, and sewing of the reusable bag pattern.	1 hour 30 minutes All week.

*Setting: organisation of classroom space (physical and virtual) functional to the activity, provision of resources (technological and others), management of resources.

Water food chain

1. Create a food chain. Cut and paste the animals in the correct food chain order.

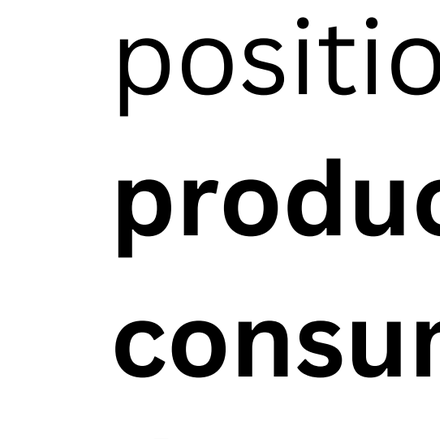
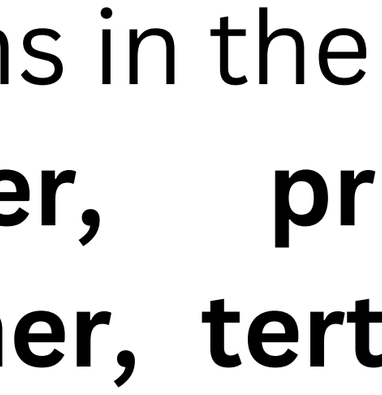
2. Write the following phrases in the relevant positions in the food chain you've created:
producer, primary consumer, secondary consumer, tertiary consumer, final consumer, decomposer.

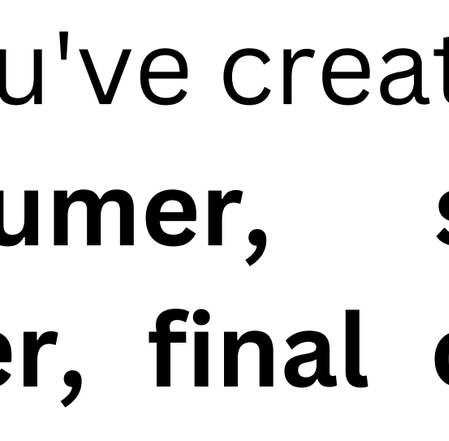
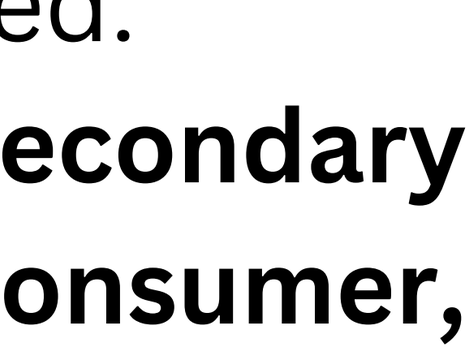






Water food chain

1. Create a food chain. Cut and paste the animals in the correct food chain order.

2. Write the following phrases in the relevant positions in the food chain you've created:
producer, primary consumer, secondary consumer, tertiary consumer, final consumer, decomposer.

Water food chain

1. Create a food chain. Cut and paste the animals in the correct food chain order.

2. Write the following phrases in the relevant positions in the food chain you've created: **producer, primary consumer, secondary consumer, tertiary consumer, final consumer, decomposer.**