Co-funded by the European Union

Erasmus Project: **Le MOON**
2021-1-CZ01-KA220-SCH-000034484

LOVE EARTH

User Guide

for the Environmental Education and Climate Change e-Curriculum

Environmental Education and Climate Change e-Curriculum for Secondary Education Students (referred to as "e-Curriculum" below) is a comprehensive and engaging educational resource designed to support secondary education students in exploring environmental and climate-related topics. This guide will introduce the curriculum structure, help users understand its key features, and offer instruction on effectively usage of the e-curriculum to meet learning objectives.

Table of Contents

1. Introduction

The e-Curriculum addresses the urgent topic of environmental and climate education through an online and modular approach that is accessible and adaptable. Each module is designed to foster critical thinking, systems thinking, and problem-solving skills through a blend of scientific knowledge, technology use, and project-based learning.

2. The path to curriculum design

As the e_curriculum aimed at the direct involvement of end users (= mainly high school students and educators) into its design, the e_curriculum design process was started with focus group discussions and surveys.

Le_Moon partners made focus group discussions with the high school students (the optimal group - scientifically explained-for environmental education) and made surveys with the educators under the directives provided by Manisa Celal Bayar University. The focus group discussions and surveys provided benefitial data about users' background information, their understanding and perception of the topic of climate change and environmental education as

well as their expectations regarding the topic. All the data obtained thorough discussions and surveys were evaluated and reflected into the workshop sessions to determine the content, objectives, teaching-learning processes and assessment tools of the e_curriculum.

Le_Moon partners also studied academic and some non-academic (grey) literature and made intensive desk research on existing environmental and climate change programs to enrich and supply more data within the relevant workshop sessions.

Please find one focus group discussion by the coordinator school, Czechia below to get a deeper insight about the aims of the focus group discussions with the students.

Le_MOON

Love Earth to the Moon and Back : Development of ECurriculum on Climate Change and Environmental Education for Secondary Education Students in Online Learning Platform

2021-1-CZ01-K220-SCH-000034484-E10117458

Manisa Celal Bayar University

Focus Group Consent Form

Purpose: You have been invited to participate in a focus group within the Erasmus+ Project Le_MOON [Love Earth to the Moon and Back : Development of ECurriculum on Climate Change and Environmental Education for Secondary Education Students in Online Learning Platform] under the direction of your school/ organisation. The purpose of this focus group is to comprehend your needs about environmental education and contribute into the selection of the relevant content (themes) of environmental education and climate change. The information learned in this focus group will be used to develop an e-curriculum on environmental education and climate change.

Procedure: As part of this study, you will be placed in a group of 6 – 12 individuals. A moderator will ask you several questions while facilitating the discussion. As approved , this focus group will be audio-recorded and a note-taker will be present.However, your responses will remain confidential, and no names will be included in the final report.You can choose whether or not to participate in the focus group, and you may stop at any time during the course of the study.Please note that there are no right or wrong answers to focus group questions. Your school/ organisation needs the many varying viewpoints. Please refrain from interrupting others. However, feel free to be honest even when your responses counter those of other group members.

Benefits and Risks : Your participation may benefit you as the end-users of the curiculum of environmental education and climate change. That's; you will directly be involved in the development of your own course content. However, no risks are anticipated beyond those experienced during an average conversation.

Confidentiality : Should you choose to participate, you will be asked to respect the privacy of other focus group members by not disclosing any content discussed during the study. Researchers within Manisa Celal Bayar University will analyze the data, but—as stated above—your responses will remain confidential, and no names will be included in any reports.

Contact : If you have any questions or concerns regarding this study, please contact your moderator.

I understand this information and agree to participate fully under the conditions stated above.

Date : **Sign name:** **Print name:**

Focus Group Discussion

Climate Change and Environmental Education

Date : 28.4.2022 (8.00- 10.00) + online discussions in the following days

Focus Group Moderator : Mgr. Lubomír Hájek

Focus Group Note taker: Mgr. Petra Garay

Focus Group Questionnaire (Suggested Questions)

1.What is The Greenhouse Effect?
-Can you discuss the effects of greenhouse gasses?
-What types of illnesses/diseases can be attributed to greenhouse gas emissions?
-Will you hypothesize about how the world's climate could change over the next 100 years if humans do nothing to limit the levels of their greenhouse gas emissions?

2. In your opinion, is global warming an imminent world threat? Why or why not?

3. In your opinion, has human activity caused the world's climate to change over the past 100 years?

-Is human activity bringing about alarming global warming scenarios and related catastrophes?

4. Do you believe that adequate alternative energy sources have been developed and any countries have no longer relied on imported fossil fuels for power/fuel?

5.What actions do you believe should be taken to address the climate change and global warming issue?
6.What is a good environmental action, project or campaign for you on climate change, global warming and related issues?

7.What actions, projects or campaigns would you create to increase awareness on climate change global warming and related issues ?

Some Tips for Focus Group Discussions

Designate one person (not a participant) to be the note-taker at each focus group.

Take verbatim notes and record the conversation using a digital recorder with participants' permission.

Ask for clarification if you do not understand something.

Keep time. End the meeting in a reasonable amount of time

Note down contextual notes about the focus group.

Clean your notes and add or complete reflection notes (use the template in the box below) after the focus group.

Question 1 Greenhouse effect/ global warming (GW)

Notes : recorded and analyzed

Common Responses : students discussed:

- the icebergs melting is increasing rapidly (in 10 years the pace of melting doubled), sea level rising covering the land slowly, sea water is being diluted, oceans are getting warmer- this is also killing the corrals, deforrestation (paper wasting), ozone layer

-what can happen in near future: extreme weather change, food shortage, animal extinction

- illnesses related to GW (pollution, change of weather): allergies, asthma, intolerance to E-numbers, cancer,

Noteworthy Individual Responses and Ideas :

- pass interesting but **strong message** at schools- What animals our children will not be be able to see in few years. Different approach, rather than general statistics, specific information, specific animals: Do you know tiger? Well, tiger will be extinct in....

- educate on various additives, which are illegal, how the companies go around the rules, what are the health risks.

Question 2 Global warming – imminent threat?

Notes : recorded and analyzed

Common Responses : students discussed:

-it affects people, animals, plants, **it is a problem of us all**

-**people are the biggest threat** to Earth, growing population, mass consumerism, the overuse of paper, drinking water- the flush toliet systems which use drinking water, pollution by companies (the laws should be changed, punishment more severe) -extreme weather changes, the time clock of animals

and plants, they are not able to adapt, because of the weather changes - bees/vosps/insects are really struggling, they start moving in warm weather but sudden cool weather is killing them, insect is also disappearing, the disturbance of natural cycle

Noteworthy Individual Responses and Ideas :

-follow and pass the message by Sir David Attenborough, 4 things to change immediately to help our planet: **https://www.youtube.com/watch?v=0Puv0Pss33M**
- compulsory curriculum at schools

Question 3 Climate change- human activity in 100 years?

Notes : recorded and analyzed

Common Responses : students discussed:

- the very many **destructive outcomes of wars** – destroyed land, land/air/water polluted by chemical weapons, nuclear weapons (Cernobyl), the possibility of too fast technological development based on the fact that there were no major wars.

- overpopulation, building more houses (more electricity), taken up the space which belongs to the animals, taking the land for agricultural purposes

- the weather is warmer but are we really saving up the electricity if we must cool everything down in summer (refridgerators, freezers, ventilation)

-can we really predict anything? We thought Covid would change the structure of population-it did not really happen.

-hormones and antibiotics in water

- genetic engineering: making against the nature choices: choose the sex of the baby, eye colour, etc.

Noteworthy Individual Responses and Ideas :

-change our habits in households, teach the children who can teach their parents at home, e.g. our students are teaching mums/aunts which **cosmetics not to buy**

- teach everybody to be interested in the **origin of the product**, read the labels (understand the labels)

-community cleaning, adults live very fast lives, they do not have time to stop and think about these problems=find ways to get their attention (at work, at home, via on topic educated children)

Question 4 Adequate alternative energy sources

Notes : recorded and analyzed

Common Responses : students discussed:

- our adiction to easier way of living, so we do not make the most appropriate choices, **the expensive replacement of solar panels**, saving of the electricity at home, the use of nuclear power plants (advantages of thorium over uranium)

-efficient use of rainwater, government support, local support by city governers, map out the local companies using alternative sources and promote the work of such companies,

Noteworthy Individual Responses and Ideas :

-organize even locally **Earth hour (black hour),** to save the energy/electricity
https://www.sciencedirect.com/science/article/abs/pii/S2214629614000474

Question 5 Appropriate actions to be taken

Notes : recorded and analyzed

Common Responses : students discussed:

- we must spread the information, some people are truly not aware of the threats and also of the possible solutions, options of practical workshops, databank of good apps- switching clothes and other things

- these solutions: city parks on buildings, rain water utilization, increase in mass transport, eat less red meat, dicreasing the methan production (due to cattle), the dangers of CO2 versus the dangers of methane, safer water pipe systems in places, where people buy bottled water (big cities: NY), buy useful and practical things only, developing system of bringing more greens into the offices, roof tops, reduce emissions, the amount of cars, hybrid buses in the cities, we repair what we are able to repair (shoes, clothes, etc.), palm oil, recycling, second-hand shops, package free shops

-possibility of more electric trolley buses, discussed for example in Germany:
https://www.dw.com/en/electric-trolley-trucks-charge-ahead-in-germany/a-16038775

-agricultural issues: How realistic it is to stop producing milk, eating so much meat etc. in terms of agriculture?Can we stop breeding cattle?

-water issues: water is our most important treasure, not available to everybody, should not be taken for granted (https://www.youtube.com/watch?v=bdBG5VO01e0), use of rain water, tap water X bottled water, the amount of plastic bottles in nature, the advantages/disadvantages of filtered water, shungite stone

Noteworthy Individual Responses and Ideas :

- students recommend **Vermicomposter**, which is a small box with clay and eartworms, poeple living in flats can throw the leftovers there (vegetable/fruit peels etc.) The earthwomrs eat it and produce organic feltilizer and the compost can be used to manure the flowers/vegetables growing on the balcony

http://www.urbalive.cz/vermikomposter

- setting up of **practical workshops**, where people can learn e.g. how not to waste food (eat less meat, how to have a good diet without meat, cook with pulses), how to save water- workshops must be available for all age categories! Education targeting employees in big companies- the employer should provide the necessary education. Educate about the quality of food, the improtance of basic good quality ingredients, the good quality chocolate for example, the appropriate amount of cocoa etc. Cheaper is not always a good choice.

-creating **an application** for sharing cars/travel to work/school, possibly the application for the overview of the workshops. Networks of people travelling alone to match with people needing the lift.

-we must **start at home**! Train students/volunteers to help demonstrate at home what to do, the same was there are financial advisors there would be **ecological advisors.**

Question 6 Current actions, projects, campaigns

Notes : recorded and analyzed

Common Responses : students discussed:

- local efforts: no package shops in our town, trips to nature in order to clean the area, new waste containers for recycling, hybrid buses (Kroměříž has got two at the moment)

-students are getting together once in a half year but it would be better to get together more often

-students looked up the current campaigns: https://www.greenhouse.agency/blog/our-top-12-environmental-campaigns-of-2020/

- involving more young people who can **influence their peers** (throwing things on the ground is not cool,

- the neccessity of managing correctly the **food leftovers at schools**

Noteworthy Individual Responses and Ideas :

-to support and spread the idea of paying extra money for plastic bottles, so people would be forced to return the plastic bottles back to the shops (this system is working already in more than 40 countries - https://www.zalohujme.cz/)

-generally to reconnect with nature, appreciate the beauty of it, remind the students daily that there are animals in imminent danger of extinction, respect the natural cycles, respect the natural beauty of people (photography)

- choose a **date for our projects (Le-MOON Day)** and celebrate it with some worthy ecological activity at schools and all the institutions- not only throughout the project but also once the project is finalized

Interesting sources:
https://www.4ocean.com/
https://www.greenpeace.org/czech/
https://hbr.org/2021/06/the-dark-side-of-solar-power?fbclid=IwAR1O8ep5vTbkm2lfaejqbePOJOibJj_iASJKU4Hp8lv-VoCXnh6OMAQsKiw
https://www.nature.com/articles/d41586-021-02459-w
Question 7 Ideas for actions, projects, campaings

Notes : recorded and analyzed

Common Responses : students discussed:

- the cost of consumerism, the importance of recycling things we had already bought, the advantages of minimalism

-the possible connection of art and ecology campaings based on our workshop with Tatjana Christelbauer (talented students can design posters)

-campaings to prevent business damaging our nature (unnecessary export of wood to foreign countries), bring these activities to attention of public

Noteworthy Individual Responses and Ideas :

- support project work: people get together and get positive vibes and energy from one another
-concetrate on projects promoting cycling, walking, **physical activity** etc.
-**workshops** to raise awarness as mentioned above, make people aware of the cost of exporting the low quality product (fuel, cheap labour, packaging etc.)**Do I really need to buy this?**
-promote healthy lifestyle also **during these workshops=lead by an example** (not bottled water but tap water, not plastic cups/cutlery etc.)
- practical examples on how to **save paper at schools**
-practical examples on how to create e.g. **insert water dish**

https://blog.cwf-fcf.org/index.php/en/beneficial-insect-water-dish/
https://www.pleva.cz/a/jak-vyrobit-pitka-pro-vcely-a-hmyz

- workshop about **How to do projects and campaigns (how to start, what to do)**
-make children at schools know about the effects of fashion indistry of the environment, perhaps with analyzing and discussing the documentaries such as: https://www.imdb.com/title/tt3162938/
- create a **databank of documentaries** suitable for school education and **create worksheets** to go with it, so teachers can use them in classes
- **support the local farming,** support shops with sections of oragnic food or no-palmoil foods
-perhaps **try the reversed approach:** this means not trying to educate more and more but for the start try to break down the wrong common beliefs:
-recycling does not matter because at the end the waste is put together
-eco-friendly products are definitely better for the environment
- living healthily is much more expensive
- paper bags are so much better than plastic bags, etc.
(https://tigerprints.clemson.edu/cgi/viewcontent.cgi?article=1006&context=cudp_environment)
-at schools, give students the opportunity to come up with topics that need addressing, less controlled, **informal meetings**

Please find one survey by the coordinator school, Czechia below to get a deeper insight about the aims of the surveys with the teachers.

Le_MOON

Love Earth to the Moon and Back : Development of ECurriculum on Climate Change and Environmental Education for Secondary Education Students in Online Learning Platform

2021-1-CZ01-K220-SCH-000034484-E10117458

Manisa Celal Bayar University

THE SURVEY OF "I TRACE CLIMATE CHANGE AND ENVIRONMENTAL EDUCATION IN MY COURSE" for TEACHERS

Purpose: You have been invited to participate in that survey within the Erasmus+ Project Le_MOON [Love Earth to the Moon and Back: Development of ECurriculum on Climate Change and Environmental Education for Secondary Education Students in Online Learning Platform] under the direction of your school/ organisation. The purpose of this survey is to comprehend your needs about environmental education and contribute into the selection of the relevant content (themes), learning outcomes, methods- techniques and materials for environmental education and climate change. The information learned will be used to develop an interdisciplinary e-curriculum on environmental education and climate change.

Procedure: As part of this study, you will be asked 4 questions. You are kindly invited to answer those questions and provide adequate details. Your responses will remain confidential, and no names will be included in the final report. Please note that there are no right or wrong answers to the questions. Your school/ organisation needs the many varying viewpoints.

Benefits and Risks : Your participation may benefit you as the end-users of the curiculum of environmental education and climate change. That's; you will directly be involved in the development of your own course content. However, no risks are anticipated.

Confidentiality : Researchers within Manisa Celal Bayar University will analyze the data, but—as stated above—your responses will remain confidential, and no names will be included in any reports.

Contact : If you have any questions or concerns regarding this study, please contact the project coordinator.

I understand this information and agree to participate fully and answer the questions in the survey under the conditions stated above.

Date : 8.5. 2022

Sign name:

Print name: XXX

What do you teach ? Biology and Chemistry

How long have you been teaching that course / those courses ? 2 years

The Survey Of

"I TRACE CLIMATE CHANGE AND ENVIRONMENTAL EDUCATION IN MY COURSE"

Survey Questions :

1. Can you trace environmental education and climate change in your course ?

- Is climate change and environmental education included in any themes of your course (Name the theme /unit, teaching material including the climate change and / or environmental education ; Tell about the learning outcomes, teaching methods and assessment tools ..etc)

  I often talk about climate change and environment in many themes in chemistry and also in biology. We discuss global warming any time I talk about CO_2 (carbon dioxide) or CH_4 (methane) which is even worse gas for the global warming than CO_2. For example in chemistry the themes which include this topic are: saturated hydrocarbons, oil, coal, aromatic hydrocarbons. We also discuss the ozone layer and it´s destruction by freons (chlorofluorocarbons) in the theme halocarbons.

  I also teach my students about plastic products and how they affect the environment (how long are they staying in nature). We talk about microplastics in the sea and about their removement (which is really hard).
  I reccomende this film Deepwater Horizon and let my student think about the consequences of this dissasters.
  Anyway we aslo recycle our trash. We have special trash cans in my clasroom for plastics and paper.

  In biology we talk about endangered plant (also animal) species and endemits in our country.

  In biochemistry we talk about food and waste.

  I don´t have any special teaching materials for this topics yet.

2. Can you build relationships between your course contents and environmental education?

- Which themes of your course can include more environmental references - knowledge, skills and values -?

Yes I can. These topics (climate changeand and the environement) can be used in many themes in my courses (Biology and Chemistry), but our students also have special course Ecology where they make projects and present them. They have enough time to deeply discuss these problems.

We let our students to think and create their own opinions at our school.

3. If you were to design your course would it be possible for you to include more environmental education and climate change?
- Would you add some new themes within climate change and environmental education? If yes give some examples including possible learning outcomes, teaching methods and assessment tools ..etc

I try to talk about climate change and the environemnet as many times as possible. I think it´s not effective to teach these topics separated but include them whenever is possible.

Maybe in theme: Animals we could talk more about endemits and about the evolution of species. Then discuss how human affects timing of evolution and why are some species endengered. We would see some documentary videos.

4. What actions do you believe should be taken to address the climate change and global warming issue?

- What is a good environmental action, project or campaign for you on climate change, global warming and related issues?

We have already done some actions or paticipate in some projects and campaigns.

Well we celebrated Earth Day (22. 4.) and make some projects about actual environmental themes. We cleaned area in nature close to our school called Barbořina last month. Students collected garbage because they love this place and they want it to be clean and peacefull.

We also participate in action Ukliďme Česko (https://www.uklidmecesko.cz/?gclid=CjwKCAjw9-KTBhBcEiwAr19igzn9zyE1NooqyqNoFGFS-Xfab65o66-sN154b2An8bhhqzbMIrt85hoCSOkQAvD_BwE). People from all the Czech Republic clean nature or their town, they can receive some cleaning equipment if they ask. (plastic gloves, plastig bags etc.)

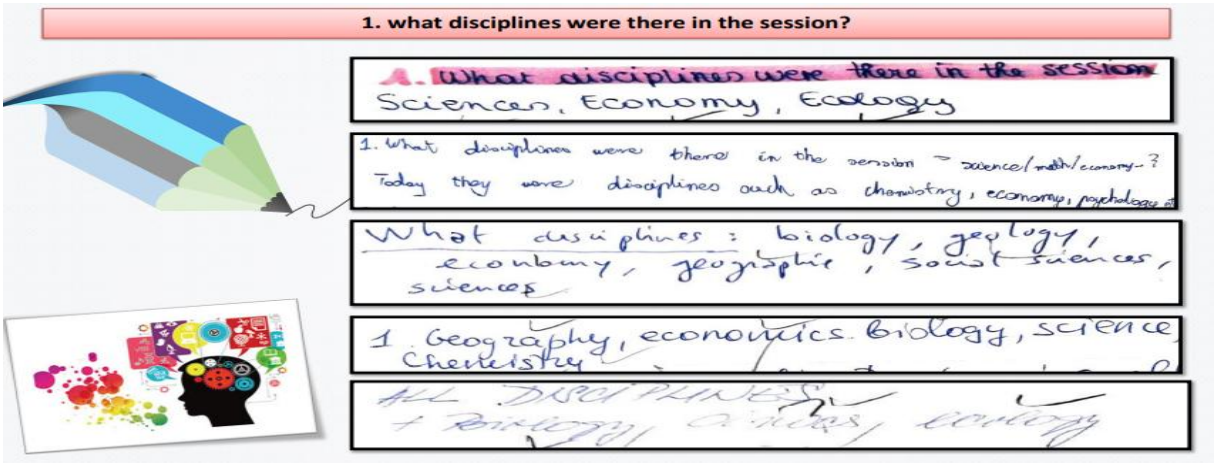
I think it will be great if some specialists visit our school and talk about these problems with students (some lectures).

Please do write your any ideas and suggestions or any questions here:

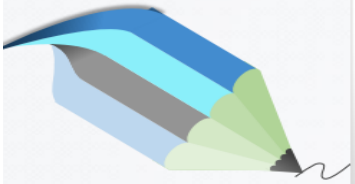
It is really important to me give our students some information but ALSO teach them which information on the Internet is reliable and true (recognise missinformation). Teach them don´t panic and see objective picture of our situation. Let them think about concequences of human behaving and try to find some new ways how to protect our planet.

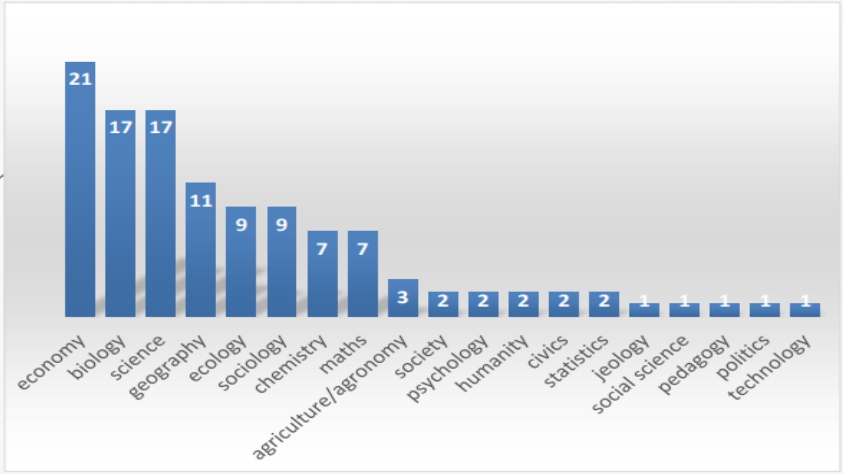
After the studies, the partners held an international class workshop in Czechia where several teaching sessions were organised to check and give learners' environmental knowledge, skills and values and to get feedback.

Please see below some of the questions asked to get feedback and some answers given by the students at the end of the teaching sessions.

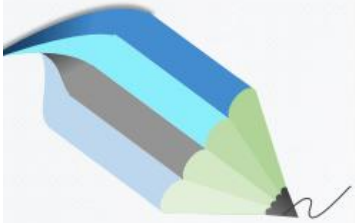


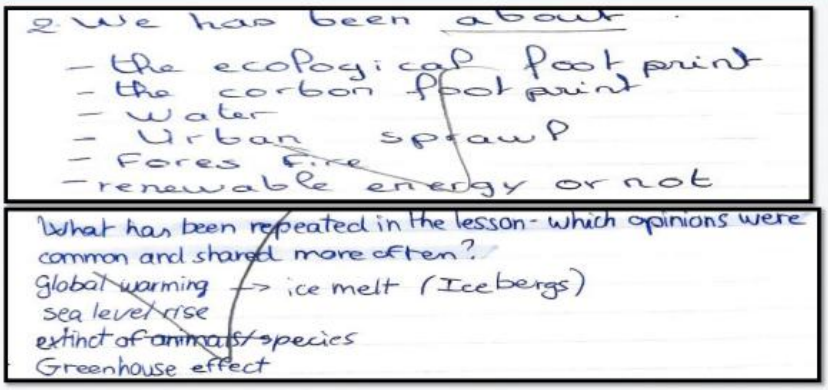
1. what disciplines were there in the session?

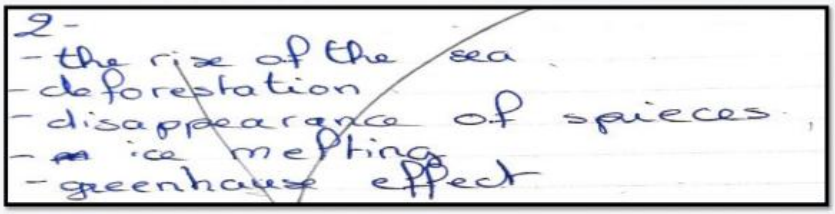




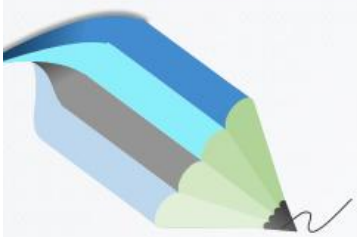
2.What has been repeated in the lesson which concepts and opinions were common and shared more often?

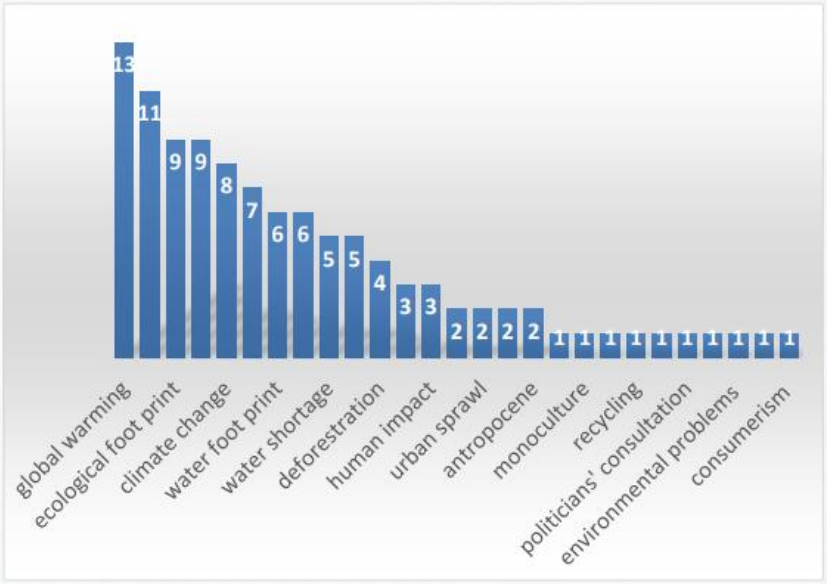




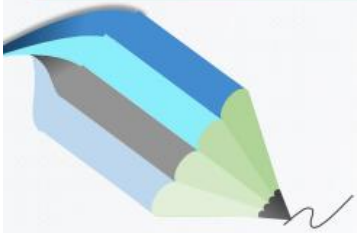


2.What has been repeated in the lesson which concepts and opinions were common and shared more often?





3.What was your favourite part about today's lesson?



I liked quiz, presentation and video.

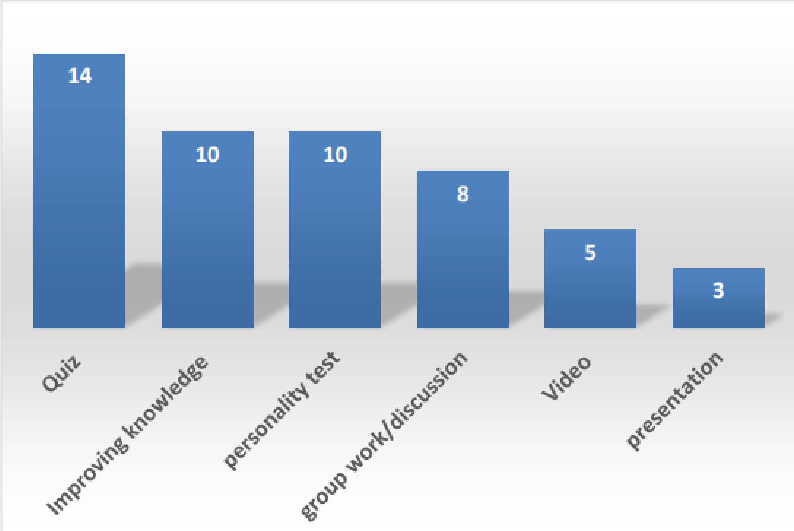
3. We could meet each other better when we were separated in smaller groups and get ideas together. The presentation was really nice and the personality test we took.

8.3. The favourite part was the quiz after the presentation, that help me remember again all the important definitions. Also the video was really pleasant to watch.

- quiz about "which flower am I?"
- answering the questions in groups

(3) · really liked the video

3.What was your favourite part about today's lesson?



4.What part of the lesson help you learn more about climate change?

4) The group project, presentations

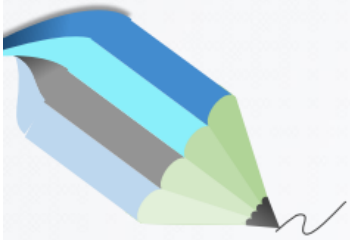
4) i learned many new things trough the quiz

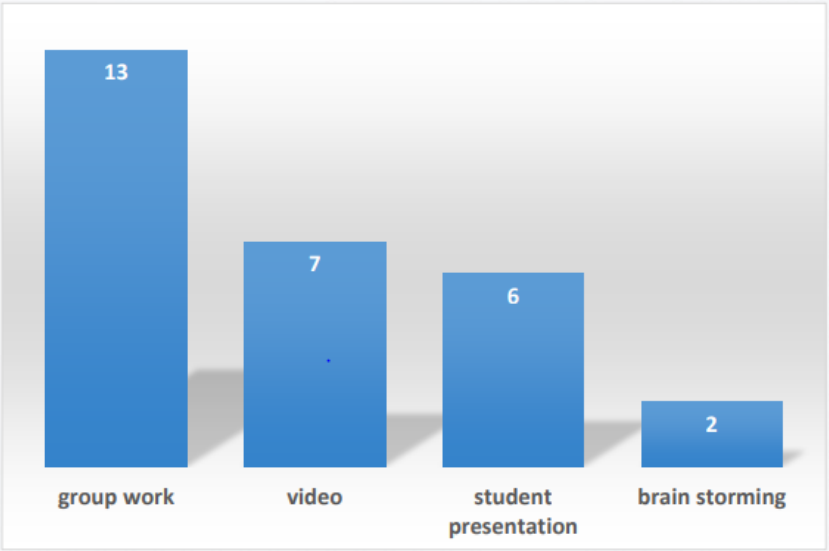
4. ~~What part~~ The part when we a talk how we need to reduce the carbon, ecological and water footprints.

• the movie, (students present.)
• [illegible], Quizz

4. The last part, that was about the impact of global warming on the future.

4.What part of the lesson help you learn more about climate change?





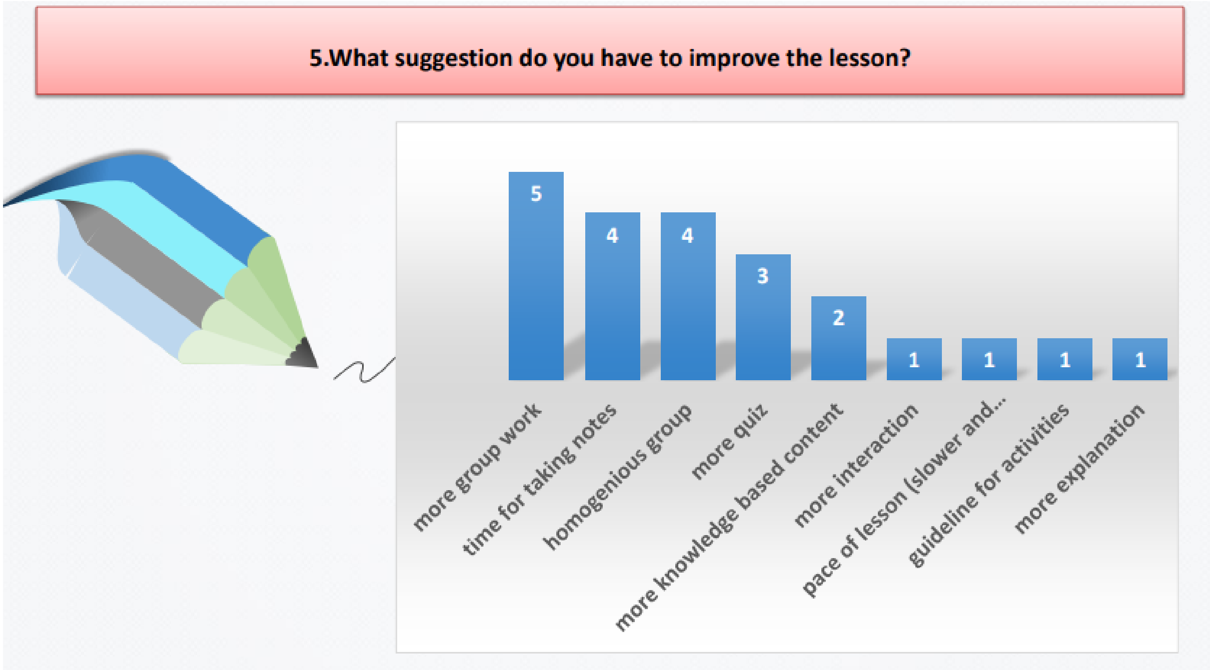
5.What suggestion do you have to improve the lesson?

Balance the groups ?

5. / nothing, just time to pause for take note, because I don't have the time during the vidio, bat It's okay before the quizz.

Balance the groups to make them fair

I would speed the pace of the lesson a bit I would like to look at the slides of the presentation more closely so that I could reflect on them and understand the contents more.



The results of literature reviews, study visits, further desk researches, focus group discussions, surveys and workshop (= teaching and feedback sessions) were reflected into the e_curriculum design and the first version of the e_curriculum was released. It was utilized to create e_modules of teaching, learning and counselling materials. The piloting studies of the e_modules developed on the basis of the e_curriculum enabled to improve the e_curriculum as well. There has also been a study group of learners evaluating the e_curriculum. That study group formed a quality scale – a template – created according to Bloom's Curriculum Evaluation Model. As Bloom's model suggests evaluating the curriculum according to the curriculum components – objectives; contents; teaching-learning processes; assessment and evaluation- which also effectuate that e_curriculum, that model was chosen as the most appropriate model for curriculum evaluation. The study group came together in several sessions, gave feedback and suggested changes in the content and themes of a few modules and also suggested some adds into the evaluation and teaching learning processes. Accordingly the e_currriculum was revised several times and feedback and suggestions supplied were included into the next versions of the e_curriculum.

As mentioned the e_curriculum design has been a dynamic process with the involvement of all interested stakeholders. After the final edition, the e_curriculum was translated into partner

countries' languages. It was also completed with the tested e_modules and e_learning platform. The translations and the recommendations regarding localization studies have been made accessible thorough e_learning platform.

Please check them under the question of 'How can we use it in our own country?' :

https://teacamp.vdu.lt/course/view.php?id=126

3. Platform Accessibility

The e-Curriculum platform Home | TeaCamp (vdu.lt) is designed for ease of use:

- **Platform Access**: The end-users can access the e_platform displaying assigned modules within **dashboard and my courses**.

- **Content Organization**: Modules are grouped by themes with easy-to-navigate links. Each part within a module is accessible individually.
- **Accessibility Features**: The platform has access in partner languages. It offer adjustable text size, and high-contrast options to ensure inclusivity of the visually impaired learners.

4. Curriculum Structure and Methodology

The e-Curriculum uses a **modular approach**, allowing educators to integrate each topic sequentially or select specific modules based on curriculum needs. Each module contains:

- **Key Concepts** and **Topics**: They highlight core areas to be covered.
- **Learning Outcomes**: They are the specific objectives for student learning and understanding.
- **Interactive Activities**: They engage students through discussions, project work, and digital tools.
- **Self-Assessment**: Module lessons include short quizzes and reflection questions for students to gauge their understanding.

5. e-Curriculum Objectives and Key Competencies

The e-Curriculum promotes seven core competencies:

- **Communication in Foreign Languages**: The e_curriculum uses CLIL (Content and Language Integrated Learning) for foreign language engagement, especially useful for students learning environmental science in a second language.
- **Mathematical, Scientific, and Technological Competency**: The e_curriculum emphasizes a STEAM approach for exploring scientific inquiry and technology's role in understanding environmental systems.
- **Digital Competency**: The e_curriculum encourages safe and critical use of digital resources for research and presentations.
- **Learning to Learn**: The e_curriculum focuses on developing self-directed learning skills.
- **Social and Civic Competencies**: The e_curriculum develops awareness of environmental issues in both local and global contexts.
- **Initiative and Entrepreneurship**: The e_curriculum inspires students to create solutions for environmental sustainability.
- **Cultural Awareness and Expression**: The e_curriculum encourages students to express understanding through various media and cultural perspectives.

6. Overview of Modules and Learning Outcomes

Each module is tailored to achieve specific goals and learning outcomes. Below is a summary:

Module 1: Human and Nature

- Observes nature, examines human-nature interactions, and develops projects to maintain natural balance.
- **Duration**: 12 hours

Module 2: Cyclical Nature

- Examines natural resources, matter cycles, energy flow, and effects of resource exploitation.
- **Duration**: 12 hours

Module 3: Nature and Climate Change

- Introduces climate change, greenhouse gases, and ecological footprint concepts.
- **Duration**: 12 hours

Module 4: Impacts of Environmental Problems and Climate Change (Part 1 – Ecosystems)

- Studies ecosystem dynamics, marine, freshwater, and terrestrial ecosystems, and human impact.
- **Duration**: 12 hours

Module 5: Impacts of Environmental Problems and Climate Change (Part 2 – Climatic and Environmental Challenges)

- Discusses economic, social, and health-related impacts of climate change.
- **Duration**: 12 hours

Module 6: Sustainable Development and Solutions to Environmental Problems

- Explores sustainable development, green technology, lifestyle choices, and policy impacts.
- **Duration**: 12 hours

7. Assessment and Evaluation

Each module includes **formative assessments** (short quizzes, reflection questions) and **summative assessments** (final projects or presentations). Teachers can use them to gauge understanding and foster self-assessment skills among students.

- **Skill Proficiency** is evaluated based on students' ability to meet specific learning outcomes.
- **Project Quality** is evaluated based on group or individual projects, particularly in modules emphasizing social awareness or project creation.
- **Self-Reflection** is evaluated based on personal reflections which promotes self-awareness and learning progress.

8. Best Practices for Educators

1. **Contextualize Learning**: The e_curriculum relates module topics to local environmental issues to make learning relevant.
2. **Critical Thinking**: The e_curriculum uses case studies and discussions on ethical dilemmas to deepen understanding.
3. **Collaboration**: The e_curriculum encourages group work and projects for parts that emphasize social and citizenship-related competencies.
4. **Digital Tools**: The e_curriculum uses available digital tools for research and presentations.
5. **Integration with Other Subjects**: The e_curriculum leverages the CLIL and STEAM approaches to connect several subjects with environmental science concepts.

9. Supporting Resources and Supplementary Materials

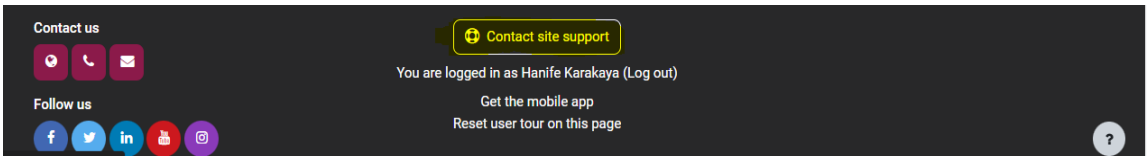
The e-Curriculum includes:

- **Glossary of Terms**: A list of key terminology for each module.
- **Multimedia Resources**: The e_curriculum has e_modules including lesson plans supported by videos, infographics, and presentations accessible via online learning platform to enhance understanding.
- **Research Links**: Curated links for further reading and exploration.

10. Technical Support

For issues related to accessing the platform or technical troubleshooting:

- **Technical Support**: Users are suggested to contact the e-Curriculum technical support team which is Lithuanian university via the **contact site support** at the bottom of the page.



By following this guide, educators can maximize the educational impact of the Environmental Education and Climate Change e-Curriculum.

Le_Moon partners hope that through this e_curriculum, its e_modules and e_learning platform, students will be equipped not only with environmental knowledge and skills but also with the values to actively participate in solutions for sustainability and climate resilience.

Studied By : Hanife Karakaya, Manisa Celal Bayar University – TÜRKİYE

Contributors : Gülenaz Selçuk, Selhan Özbey, Yurdanur Akyol, Erkan Hasan Atalmış- Manisa Celal Bayar Üniversitesi, Türkiye

This project with eight partners, which created an e_curriculum, e_modules and e_learning platform for secondary education addressing the Climate Crisis and Environmental Education, was funded by the European Union.

Funded by the European Union. Views and opinions expressed are however those of the author(s) only and do not necessarily reflect those of the European Union or the European Education and Culture Executive Agency (EACEA). Neither the European Union nor EACEA can be held responsible for them.