MODULE I

Lesson Plan 1

Summary

Lesson title

Calculation of the ecological footprint

Duration	90 minutes
Proposed student's age range	10-14

Lesson summary

In this session, students will learn about ecological footprints and how their daily actions impact the environment. In this activity, students will use an online tool to estimate their ecological footprint and then create posters or murals showing different actions and practical ways to reduce it. This activity combines digital learning with manual creativity, encouraging critical reflection and teamwork, as the activity is designed to be carried out in small groups of students.

Learning outcomes

Purpose/Learning Objective

- Know and understand what the concept of ecological footprint refers to, how it is calculated, and its importance in the current climate emergency.
- Identify the different components that contribute to the ecological footprint.
- Use online tools to estimate your ecological footprint.
- Be able to analyse and discuss the results obtained in a collaborative environment.
- Know and identify the main actions that can be taken to reduce the ecological footprint not only at the individual level but also as a society.
- Develop communication skills through the elaboration and presentation of a poster.

Intersecting objectives

- Encourage collaboration and teamwork.
- Promote environmental awareness and social responsibility.
- Improved use of Information and Communication Technologies (ICT).
- Improved ability to communicate ideas clearly and effectively, both in writing and speaking.

Connection to SDGs

This theme is aligned with the following SDGs:
SDG 12 "Ensure sustainable consumption and production patterns": Target 12.2 By 2030, achieve sustainable management and efficient use of natural resources. Target 12.5 By 2030, significantly reduce waste generation through prevention, reduction, recycling, and reuse.

SDG 13: "Climate Action"- Target 13.3. Improve education, awareness, and human and institutional capacity for climate change mitigation, adaptation, impact reduction, and early warning.

Implementation

Facilitation

- It is recommended that students be grouped into teams of 3-4 to carry out this activity. The total number of students per group will depend on the number of computers available.
- Make sure that all computers have internet access.
- Make sure that the online tool you use to enable learners to calculate their ecological footprint is working properly.
- Make sure that all the materials to make the murals are available.
- When students are making their murals, be sure to supervise the use of tools such as scissors.
- Use recyclable or recycled materials whenever possible.
- Double the total material needed to avoid stock-outs.
- Provide clear examples and guidelines for each step carried out in the activity.
- Encourage active participation and creativity in the elaboration of the posters.

Resources required

- Projector or screen.
- Computers or tablets with internet access.
- A3/A2 cardboard (recycled paper if possible).
- Markers or coloured pencils.
- Brushes.
- Paints.
- Scissors.
- Glue.
- Ruler.

Ideas for follow-up

- Implement the actions proposed in the murals to reduce their carbon footprint.
- Evaluate whether the actions that have been provided are being put into practice by the students.

Source / Materials & class preparation

- Video on what the ecological footprint is: https://www.youtube.com/watch?v=g_aguo7V0Q4
- Websites on the ecological footprint and how it is calculated: https://climate.selectra.com/en/environment/ecological-footprint

  https://www.footprintnetwork.org/our-work/ecological-footprint/

https://www.treehugger.com/what-is-ecological-footprint-4580244

- Ecological footprint calculator: https://www.footprintcalculator.org/home/en
- How to use the ecological footprint calculator: https://www.youtube.com/watch?v=UXKkpLFWNd0

Lesson Outline

Timing	Instructions step-by-step
10 min.	Introduction to the concept of the Ecological Footprint and its importance in the context of climate change and sustainability.
5 min.	Explanation of how the Ecological Footprint is measured and calculated.
5 min.	Explanation of how to use the selected Ecological Footprint calculator.
10 min.	Divide the students into groups according to the number of computers available. Each group should access the Ecological Footprint calculation tool (https://www.footprintcalculator.org/home/en) and enter the personal data of a single group member to obtain results.
15 min.	Compare results between the different groups based on the calculation obtained by the online tool. Generate a small discussion among the students to analyse the results obtained and to try to identify those common areas where the ecological footprint can be reduced. The teacher is recommended to guide the students in this analysis and discussion so that they can correctly identify the actions they can take to reduce their ecological footprint.
25 min.	Based on the results obtained and their subsequent analysis, each group should draw up a small mural schematically showing the main actions that can be taken to reduce the ecological footprint. To do so, the teacher will show them some examples of posters, which are shown in the Annexes section (Figure 1.1.1, Figure 1.1.2, and Figure 1.1.3).
15 min.	Finally, each group should present their poster to the rest of the class. After the presentation, the rest of the students and the teacher will be able to ask questions and make comments to each group about their poster.
5 min.	Students should individually write a short reflection on what they have learned in the activity and the main actions they plan to implement in their daily lives to reduce their ecological footprint.

Formative assessment

- Participation and collaboration in the groups will be assessed.
- The quality of the discussions and the depth of the analysis of the results obtained will be evaluated.
- The creativity and clarity of the posters, as well as their oral presentation, should also be assessed.

- The following rubric is proposed to assess all these aspects:

Criterion	Level 1 (1 point)	Level 2 (2 points)	Level 3 (3 points)	Level 4 (4 points)	Score
Content	The poster has little or no information on the carbon footprint.	The poster includes basic information on the carbon footprint but lacks clarity or depth.	The poster clearly explains the carbon footprint and includes some ways to reduce it.	The poster presents a detailed and creative explanation of the carbon footprint, including many practical ways to reduce it.	/4
Creativity and Presentation	The poster has a cluttered and visually unappealing design.	The poster is visually basic and needs more creative elements.	The poster is attractive and shows a creative use of colours, images, and text.	The poster is highly creative, aesthetically pleasing in design, and effective in visual communication.	/4
Group Collaboration	There was little or no collaboration between group members.	Some members of the group participated, but there was no real collaboration.	Most members of the group participated actively and collaborated effectively.	All members of the group worked together harmoniously, and each contributed significantly.	/4
Class Participation	The student did not participate in class discussions and group activities.	The student participated minimally in group discussions and activities.	The student participated regularly in discussions and activities.	The student was very participative, contributing valuable ideas and actively participating in all activities.	/4

- In addition, it is also proposed that students answer the following questions:

Evaluation Questionnaire

1. What is the carbon footprint and why is it important to reduce it?
2. Name three daily actions you can take to reduce your carbon footprint.
3. How does energy use affect the carbon footprint?
4. How do you think your community can work together to reduce its carbon footprint?

Feedback

Net Promoter Score (NPS) is a widely used metric to gauge the loyalty and satisfaction of customers or, in an educational context, students. It measures the likelihood of the students recommending the lesson or course to others. Here is how you can describe and implement NPS:

Develop the NPS Question:

- Primary Question: "On a scale of 0 to 10, how likely are you to recommend this lesson to other students?"
- Follow-up Questions: "Why did you choose that score?" and "How can we improve this lesson?"

Collecting Responses:

A template for collecting feedback using paper surveys is shown in the Annexes.

- Digital Surveys: Use online tools like Google Forms, SurveyMonkey, or Typeform to distribute the NPS questions to students.
- Paper Surveys: Hand out paper questionnaires at the end of the lesson for students to fill out.
- Interactive Applications: Utilize interactive apps like Quizziz, Mentimeter, or Kahoot! to gather real-time responses.

Classifying Responses:

- Promoters (Score 9-10): Students who are highly satisfied and likely to recommend the lesson.
- Passives (Score 7-8): Students who are satisfied but not enthusiastic can switch their opinions easily.
- Detractors (Score 0-6): Students who are dissatisfied and unlikely to recommend the lesson; may provide constructive criticism.

Calculating the NPS:

- Formula: NPS = % of Promoters - % of Detractors.
- Interpreting the Score: NPS ranges from -100 to +100. A positive score (above 0) is generally good, and a score above 50 is excellent.

Analysing and Using Feedback:

- Review additional comments to understand the reasons behind the scores.
- Identify patterns and specific areas for improvement from detractors and passives.
- Use positive feedback from promoters to reinforce successful aspects of the lesson.

Annexes

Examples of posters:

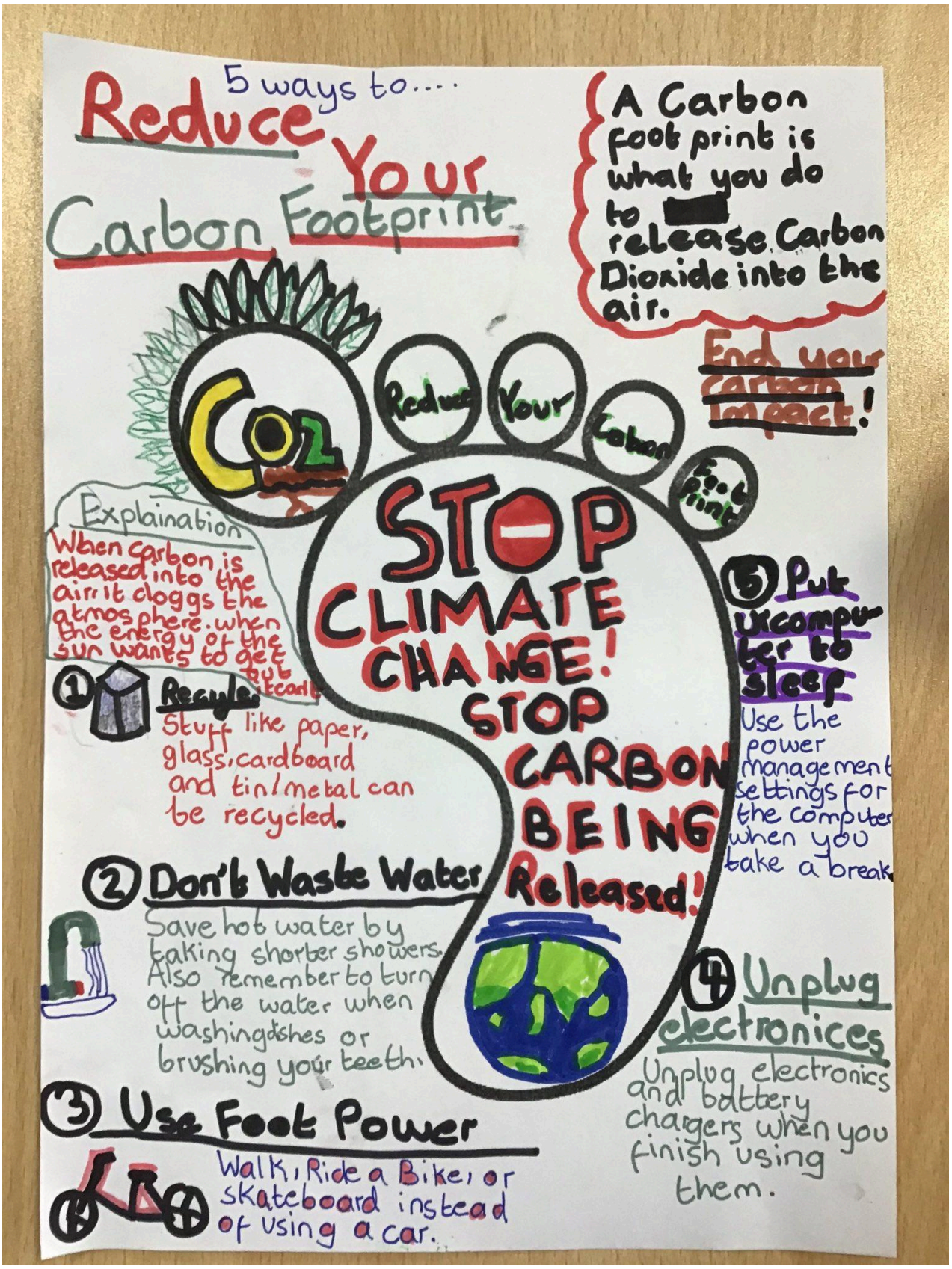


Figure 1.1.1 Example 1 of a poster about the ecological footprint. Source: @SmithdownPrimY5. X. Link: https://x.com/SmithdownPrimY5/status/1385189812106371073



Figure 1.1.2 Example 2 of a poster on the ecological footprint. Source: Freepik.com. Link: https://www.freepik.com/premium-vector/hand-drawn-footprint-infographics_10066945.htm



Figure 1.1.3 Example 3 of a poster on the ecological footprint. Source: Adobe Stock. Link: https://stock.adobe.com/es/images/ways-to-reduce-your-carbon-footprint-labdscape-vector-poster/501608054

QUESTIONNAIRE TO COLLECT FEEDBACK ON THE LESSON

On a scale of 0 to 10, how likely are you to recommend this lesson to other students?

0	1	2	3	4	5	6	7	8	9	10

Not likely at all Extremely likely

Why did you choose that score?

How can we improve this lesson?