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| **Project ID: 2021-1-CZ01-KA220-SCH-000034484****COURSE FOR ENVIRONMENTAL EDUCATION***e-Modules: Teaching Learning activities and their technology enhanced material set to develop****DISCLAIMER****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.***COURSE AUTHORS**

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| **MODULE 6** | **SUSTAINABLE DEVELOPMENT AND SOLUTIONS TO ENVIRONMENTAL PROBLEMS AND CLIMATE CHANGE**  |
| **PART 4** | **Renewable energy sources - green technologies** |
| **Lesson 1** | **Technologies for sustainable development and the role of innovation in addressing environmental issues and climate change** |

**SUMMARY**

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**1. COURSE TIME, TARGET AND TOPIC**

* **Age of target students:** 15+
* **Teaching time:** 2 hours + a multi-week project
* **Disciplines:** Environmental Science, Technology
* **Title:** Technologies for sustainable development and the role of innovation in addressing environmental issues and climate change.

**2. COURSE OBJECTIVES**

**Competences promoted in this lesson:**

* Communication in foreign languages competency
* Digital competency
* Learning to learn competency
* Social and citizenship-related competencies

**Lesson objectives:**

* Students define sustainable development and explain its significance.
* Students identify key technologies that contribute to sustainable development.
* Students understand the role of innovation in addressing environmental issues and climate change.
* Students analyse real-world examples of how technology and innovation are being used to promote sustainability.

**3. LEARNING – TEACHING PROCESSES**

There are 4 activities in this lesson:

1. **ENGAGE:** Introduction to the topic: the concept of sustainable development.
2. **EXPLORE:** Preparation ofpresentations ontechnologies contributing to sustainable development
3. **EXPLAIN:** Reflections on recent innovation in sustainability (examples, discussion)
4. **EXTEND:** Discussing the role we can play in promoting sustainable development and ways of applying innovation and creativity to address environmental issues in our community.

**4. EVALUATION**

The teacher may challenge their students to design their own sustainable technology or innovation. They could create prototypes, digital models, or detailed plans, which they present at the end of a multi-week project. They should explore its impact on the environment and how it could be possibly improved through innovation.

**5. DOCUMENTS**

**ENGAGE**

*What does sustainability mean to you?*

1. The teachet asks their students what sustainability means to them. They write their answers on post-it notes or index cards. The teacher collects and displays their responses on the board. They briefly discuss the concept of **sustainability**, emphasizing the balance between environmental, economic, and social factors.
2. Later the teacher makes sure that everyone understands the concept of **sustainable development.**

They read/display t he United Nations' definition:

*Development that meets the needs of the present without compromising the ability of future generations to meet their own needs.*

1. The class discusses the importance of sustainable development in the context of global challenges like climate change, resource depletion, and social inequality.

Questions to consider:

Why is it important to think about the future when we develop technologies and policies?

How does sustainable development relate to your own lives and future careers?

**EXPLORE**

*Technologies for Sustainable Development*

1. Students are divided into small groups and the teacher assigns each group a specific area of sustainable technology (e.g., renewable energy, waste management, sustainable agriculture, green building technologies, or water conservation).

Each group is provided with a brief handout or online resources about their assigned technology.

They research and prepare a 5-minute presentation on how their technology contributes to sustainable development. They should include:

* An overview of the technology
* How it addresses environmental or climate challenges
* Real-world examples or case studies
* Future potential or challenges

2. Each group presents their findings to the class.

The teacher encourages questions and peer feedback after each presentation.

**EXPLAIN**

*Innovation and Environmental Issues*

1. The whole class discusses the role of innovation in solving environmental issues and combating climate change. The teacher may help the students when necessary so that they use examples like electric vehicles, carbon capture technology, and smart cities to illustrate how innovation drives sustainable development.

2. The teacher emphasizes the importance of creativity and problem-solving in developing new technologies.

They present a short video or case study on a recent innovation in sustainability (e.g., Tesla’s battery technology, vertical farming, or biodegradable plastics).

 After watching students analyse the case study, focusing on:

* the problem the innovation addresses.
* the potential impact on sustainability.
* any drawbacks or challenges associated with the innovation.

**EXTEND**

*Reflection and discussion time*

1. Students are asked to reflect on the following questions in pairs :

What role do you think you can play in promoting sustainable development?

How can you apply innovation and creativity to address environmental issues in your community?

1. Then a class discussion follows. Students share their reflections. The teacher encourages them to think about careers or hobbies that align with sustainable development goals.

**EVALUATE**

1. The teacher may challenge their students to design their own sustainable technology or innovation. They could create prototypes, digital models, or detailed plans, which they present at the end of a multi-week project. They should explore its impact on the environment and how it could be possibly improved through innovation.