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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 4** | **THE IMPACTS OF THE ENVIRONMENTAL PROBLEMS AND CLIMATE CHANGE** |
| **PART 3** | **Terrestial ecosystems** |
| **Lesson 2** | **Terrestial ecosystems, their characteristics and human impact.** |

**SUMMARY**

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

* **Age of target students:** 15+
* **Teaching time:** 2 hours
* **Disciplines:** Biology, Geography, Ecology
* **Title:** Terrestial ecosystems, their characteristics and human impact.

**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 terrestrial ecosystems
* Students identify the major types of terrestrial ecosystems (e.g., forests, grasslands, deserts, tundras) and describe their key characteristics (**the biodiversity** andimportance for ecosystem stability)
* Students analyse the role of biotic and abiotic factors in shaping terrestrial ecosystems.
* Students discuss climate change effect and the impact of human activities (e.g., deforestation, agriculture, urbanization, pollution) on terrestrial ecosystems.
* Students explore conservation strategies and sustainable practices that can help protect and restore terrestrial ecosystems.

**3. LEARNING – TEACHING PROCESSES**

There are 4 activities in this lesson:

1. **ENGAGE:** Introduction to the topic: a definition of a terrestrial ecosystem.
2. **EXPLORE:** Characteristics of particular terrestrial ecosystems (groupwork)
3. **EXPLAIN:** Class presentations / peer-teaching (sharing knowledge got on particular terrestrial ecosystems)
4. **EXTEND:** Students’ reflections on the key issues of the lesson.

**4. EVALUATION**

During the next class students take part in a quiz composed of the questions they prepared last time.

**5. DOCUMENTS**

**ENGAGE**

*Terrestial ecosystem- definition*

1. The teacher informs their students that they are to discuss terrestial ecosystems. They give some ideas of associations they have and may create a mind map on the board. Finally, students fill in the definition of a terrestial ecosystem with the words listed.

*precipitation, dependent, land, abiotic, forests,*

A terrestrial ecosystem is a 1.…………….-based community of organisms and the interactions of biotic and 2……………. components in a given area. Examples of terrestrial ecosystems include the tundra, taigas, temperate deciduous 3………………., tropical rainforests, grasslands, and deserts. The type of terrestrial ecosystem found in a particular place is 4……………….on the temperature range, the average amount of 5……………….received, the soil type, and amount of light it receives.

Source: https://education.nationalgeographic.org/resource/resource-library-terrestrial-ecosystem/

Answers :

1. land
2. abiotic 
3. forests
4. dependent
5. precipitation

**EXPLORE**

*Terrestial ecosystems- exploration*

1. Students are divided into groups so as to explore and work on particular terrestial ecosystems. There should be 6 groups created.

Group 1- tundra (<https://education.nationalgeographic.org/resource/tundra-biome/> )

Group 2- taigas (<https://education.nationalgeographic.org/resource/taiga/> )

Group 3- temperate deciduous forests (<https://www.britannica.com/science/reforestation> )

Group 4- tropical rainforests (<https://education.nationalgeographic.org/resource/rain-forest/> )

Group 5- grasslands (<https://education.nationalgeographic.org/resource/prairie/> , <https://education.nationalgeographic.org/resource/steppe/> )

Group 6- deserts (<https://education.nationalgeographic.org/resource/desert/> )

1. They are given materials about a terrestial ecosystem they are responsible for. They are supposed to read for information covering :
* Location
* Biodiversity
* Human impact

They take notes, prepare a glossary with new words and phrases. The teacher may prepare a table where students place the information they collect in their groupwork time.

**EXPLAIN**

*Our findings*

1. Students present their findings and share knowledge with the other students. If possible they mix in a way that new groups contain 6 members representing different terrestial ecosystems. Students listen to their colleague talking about a certain ecosystem and take notes. They basically teach each other about their ecosystems one by one. The teacher moves around and assists the pupils.

Students within their originally created groups may also prepare posters, etc. as a form of presentation of their ecosystems. Nevertheless, it’s crucial to present their findings orally to the rest of the class.

**EXTEND**

*Summary*

1. Students exchange their impressions with the teacher. They try to summarise the lesson, present facts they find particularly worth memorising or surprising.

**EVALUATE**

*Conclusion time*

1. During this stage students draw conclusions. The teacher is to stress how fragile the ecosystems are and collect ideas on how we should manage terrestial ecosystems in a reasonable way.