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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***  Obsah obrázku symbol, Písmo, logo, Grafika  Popis byl vytvořen automaticky*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**   |  |  | | --- | --- | |  | Lubomír Hájek, Petra Garay |   **COURSE SHARING LICENSE**   |  |  | | --- | --- | | Une image contenant symbole, cercle, capture d’écran, Graphique  Description générée automatiquement | You are free to:   * Share — copy and redistribute the material in any medium or format for any purpose, even commercially. * Adapt — remix, transform, and build upon the material for any purpose, even commercially. | |
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| **MODULE 1** | **HUMAN AND NATURE** |
| **PART 3** | **The positive and negative effects of nature on human beings; The natural and artificial environment** |
| **Lesson 1** | **The positive and negative effects of nature on human being - Atmosphere** |

**SUMMARY**

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# 1. COURSE TIME, TARGET AND TOPIC

* **Age of target students:** 15+
* **Teaching time:** 2 hours
* **Disciplines:** Biology, Human sciences, Chemistry
* **Title:** The positive and negative effects of nature on human being,part 2 - Atmosphere

# 2. COURSE OBJECTIVES

## Competences promoted in this lesson:

* Communication in foreign languages competency
* CLIL
* Digital competency
* Learning to learn competency.
* Initiative and entrepreneurship competencies
* Social and citizenship-related competence
* Cultural awareness

## Lesson objectives:

* *The students deepen their knowledge regarding the varieties of fertilisers (see in Lesson 1 part 1).*
* The students deepen their knowledge about the importance of trees (Lesson 1 part 2).
* They apply the knowledge to practical activities.

# 3. LEARNING – TEACHING PROCESSES

There are four activities in this lesson part:

*Lesson 1 Part 2 - Atmosphere:*

1. **ENGAGE:** Why are trees important?
2. **EXPLAIN:** discuss topics - deforestation, the magic of one single tree, how trees can heal
3. **EXPLORE:** monoculture, polyculture, FSC
4. **EXTEND:** Tasks for students – the right way of cutting a tree, communication of the trees

# 4. EVALUATION

Atmosphere-urban tree benefits.

# DOCUMENTS

### ENGAGE

**Area of focus: Trees providing oxygen**

Q: Discuss in groups and state the reasons why trees are important.

**Obsah obrázku venku, rostlina, krajina, strom

Popis byl vytvořen automaticky**

*Possible answers: Caption: Tree in nature © source: pixabay.com*

**Obsah obrázku kresba, skica, Perokresba, umění

Popis byl vytvořen automatickyFunctions of trees**

* Regulate climate.
* Filter the water
* Clean the air.
* Source materials

Picture source © pixabay.com

**Q:** Study and discuss the following topics - deforestation, the magic of one single tree, how trees can heal,

*Deforestation*

Not only are forests disappearing, but trees are also disappearing from everywhere, and for many reasons.

Even from places such as agricultural lands, savannas, forests, and cities.

Obsah obrázku mapa

Popis byl vytvořen automaticky

**An example is a rainforest –** rainforests are disappearing because of many reasons.

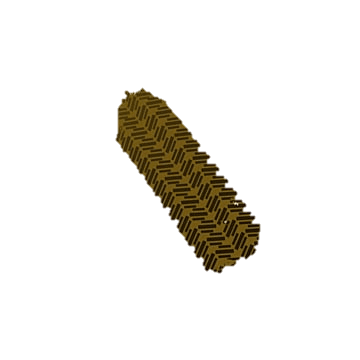
* economic corruption (Brazil’s economy is built on trade with wood)
* palm oil farms
* climate change (fire forest, extreme heat)
* black market (rare animal and plant species)
* growing population

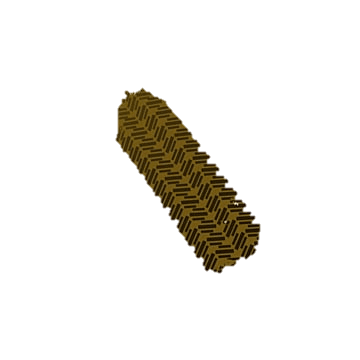
Picture source © pixabay.com

**How the deforestation looks like:**



explored part of the rainforest





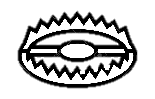




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*The magic of one single tree*:

* cooling effect of 1 healthy tree=10 room sized A/C units operating for 20hours a day
* surface and air temp. may be 20°-45° cooler than areas without tree shade.
* one tree can produce up to 150kg of oxygen a year – enough for one person for an entire year.
* the root system absorbs up to 30% of precipitation – reducing stormwater runoff and flooding potential for urban properties.
* 1 mature tree can store up to 378,5 litres of water during storm events and the soil dryness during hot months.

**SO, TREES BASICALLY SAVE YOU MONEY!!!**

*How trees heal***:**

* HELP REDUCE SKIN CANCER (shade from trees reduces the UV rate, which is the primary cause of skin cancer) (decreases sunburn in just 50 % shade)
* TREES AND BUSHES CAN REDUCE STRESSFUL NOISES BY 50 % AND ALSO PROVIDE SAFETY FOR ANIMALS IN A BUSY CITY
* KEEPING THE AIR CLEAN – childhood asthma rates are lower in urban areas with higher density of trees

### EXPLAIN

*Discuss what is monoculture and polyculture. Right after that, fill out this table.*

**The task for students:**

**POSITIVES NEGATIVES**

**MONOCULTURE**

**POLYCULTURE**

*Q: Discuss the significance of this logo:*

**Obsah obrázku kresba, skica, kreslené, Kola jízdních kol

Popis byl vytvořen automaticky**

Picture source ©: Pixabay.com

**FSC**

You can find this logo on almost every product. It is a company that focuses on sustainable wood sources. They don´t cut trees across the board, but individual trees, suitable for processing. This type of tree-cutting does not disturb the forest's ecosystem.

### EXTEND

Q: Watch the video and find out how trees communicate with each other

<https://www.youtube.com/watch?v=7kHZ0a_6TxY>

**Other ways how trees communicate:**

* using pheromones to warn each other.
* chemical signals

**The strongest will survive –** some plants take this more like a competition rather than cooperation.

**For example:**

* Orchids – hacking the system.
* Black walnut tree – producing toxic chemicals into the system.
* Black locust tree – the leaves that fall from the tree, release the poison into the ground below.

### EVALUATE

**Obsah obrázku interiér, několik

Popis byl vytvořen automaticky**

*Caption: Money grow © Source: pixabay.com*

Q: What are the benefits of urban trees?

Possible answers:

*Urban tree benefits*

* air cooling, filters of urban pollutants
* habitats for animals (increasing urban biodiversity)
* regulating water flow and improving the quality of the water
* one tree can absorb up to 150kg of CO2 per year (climate change)
* providing food, wood can be used for heating or cooking.
* spending time near trees improves physical and mental health (decreasing stress and blood pressure)
* trees planted around buildings can reduce air conditioning needs by 30% and save energy used for heating by 20-50%

**Sources:**

* <https://www.treekeeperswc.org/tree-benefits-information>