#LOESSMOOC

OPENS ON: 03/03/2025

SOIL EDUCATION: AN INTEGRATED STEM APPROACH

MASSIVE OPEN ONLINE COURSE

Transforming STEM Education for a Sustainable Future

LOESS

SCIENTIX
The community for science education in Europe

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Thu, 27 Mar 2025 17:00 - 18:00 (UTC+01:00) Brussels, Copenhagen, Madrid, Paris

PRESENTATION BY ANNA MAGKIOSI:
«THE WONDERFUL WORLD OF SOIL»

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«The Wonderful World of Soil»

Project's aims

1. **Recognizing soil as an essential part of nature**
2. **Understanding the role of soil in ecosystems .**
3. **Develop responsibility for caring for the environment**
4. **Exploring the importance of soil in sustainability and in our lives**
5. **Educating for a healthier planet through soil awareness**

Anna Magkiosi, *Awarded Scientix ambassador from Kindergarten of Rizario, Greece*

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«The Wonderful World of Soil»

Recognize soil as an essential part of nature

What is soil and why is Important ?	Exploring the secrets of soil	What is Healthy soil and what does this mean?	How can we keep Soil healthy?	Types of soil and soil properties.	What lives in the soil?	Can we make Soil?
Elaboration	Exploration	Investigation	Inquiry	Research	Discovery	Experiment
Brainstorm Outdoor activities	Outdoor activities	Indoor and Outdoor activities	Indoor and Outdoor activities	Indoor and Outdoor activities	Outdoor activities	Indoor and Outdoor activities

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METHODOLOGY AND ACTIVITIES

Indoor and outdoor STEM activities with the BSCS 5E Instructional Model
The lesson plan aims to help children understand the importance of soil for our very life and includes:

1. Engaging children through active participation in playful activities
2. Exploring soil through sensory activities (touching, smelling and observing)
3. Elaborating (What is soil, healty soil ,types of soil properties, composting)
4. Explaining (Soil Experiments, Outdoor Exploration, observing of planting plants)
5. Evaluation (Group Discussion & Reflection, participation, observations, results)

UNDERSTANDING THE ROLE OF SOIL IN ECOSYSTEMS

Children explore tiny life in the soil using magnifying glass**.**

We learned that soil holds the rainwater, keeps it clean. It prevents also the ground from flooding.

It is home for many tiny creatures as bugs, worms and even small animals and all these little creatures help make the soil healthy.

For example, the earthworms help mix the soil and ants dig tiny tunnels ,that help air and water move through the ground.

RECOGNIZING SOIL AS AN ESSENTIAL PART OF NATURE

Soil is life itself. It helps plants and trees to grow, giving them water, air, food and it holds their roots.

Without soil, we wouldn't have trees, flowers, vegetables and fruits! Animals would not find food if there was not the soil and grass.

Plant Growth Experiment : We planted plants in different soil types (sand, clay, garden soil).Compare which soil helps plants grow best.

LEARNING THE DIFFERENT TYPES OF SOIL

Children learned after exploration about the several types of soil, classified based on their texture, composition and properties.






EXPERIMENTS WITH THE DIFFERENT TYPES OF SOIL

Soil Absorption Test : We pour water on different soil types and observe which absorbs water best.

EXPLORATION AND SENSORY ACTIVITIES

Soil Texture Hunt – We ask children to touch and feel different types of soil (wet, dry, sandy, clay-like) and describe their textures.

Dig & Discover – We provide small shovels and let children dig in the soil to find roots, bugs, worms and small stones. We discuss what they found. Why all these are in the soil? With this activity we help children to understand that soil is not just soil but is a **world full of life.**

THE SCIENCE OF NATURE: TURNING LEAVES INTO SOIL

Understanding nature's processes.
How Does Nature Make Soil?
Children learn the decomposition and how leaves turn into soil. Leaves break down slowly with the help of rain, sun, and little creatures. Over time, they turn into soft, rich soil!
Simple experiment: We put dry leaves in one jar and wet leaves in another and observe changes over days.

EXPERIMENTAL PROCEDURE OF COMPOST

STEM AND SCIENCE EXPERIMENTS

- **Creation of a Worm Observation Station**
- We also place worms in a jar with soil, leaves and water and observe how they move and mix the soil.









" MUD KITCHEN"

Time for cooking ! Ready for the " Mud Kitchen "
We have a corner in our school yard with baking pans, bowls, pots, plates cups, spoons and soil for making pretend “mud pies“…

so today is again our day for cooking with soil !

Children become **"Little chefs "** and make a mix from soil and water, make soil balls and they add flowers or leaves from wild vegetable from our yard to decorate and present their dishes.

CREATIVE and ARTISTIC ACTIVITIES

Soil Painting **using a mix of soil with water to create natural paints on paper.**

Soil Collage **: We use different soil colors and textures to make creative nature collages.**

Game : Children try to find the right water balance for corn plants adding water from clouds. With this way they learn that plants need water and how much it needs to grow.

https://leara-elearning.com/projects/nutrien/survivor_soak/

EXTENSION ACTIVITIES

Soil as nature ‘s factory of building material .
From the soil, we obtain raw materials for building houses and other structures, as well as for making furniture and various objects(stones, gravel, sand, bricks, wood, coal).

We invited an agronomist to talk to children about her job, about the fertilizers that improve soil quality and when soil needs fertilization, how we can determine if the soil is good for cultivation, and whether all types of soil are suitable for farming.

Hands on activities :

Children explore the nature and find what we ask by them (find a rock, find a bug, find soft soil, find dry soil) We encourage them to discover nature’s treasures!

We ask the children to stomp on soft soil, hard soil, and sand. Then we ask them to describe if their footprints looked the same on each surface or if they noticed any differences."

DEVELOP RESPONSIBILITY FOR CARING FOR THE ENVIRONMENT

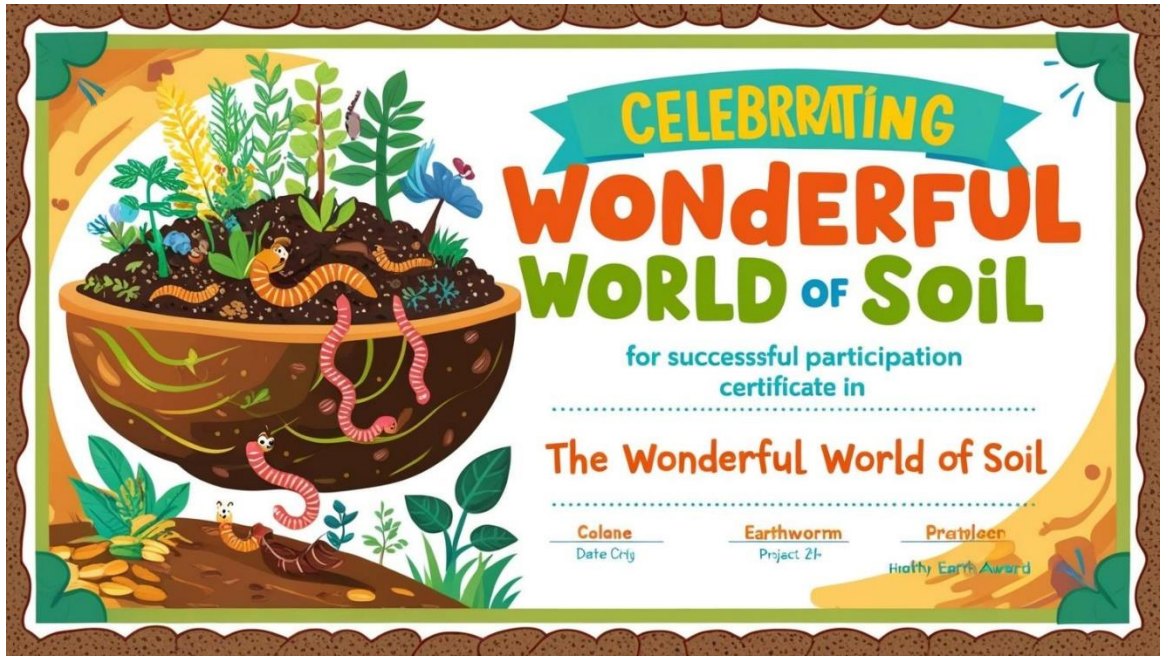
Educating children about soil through hands-on activities like composting, gardening, and soil observation fosters appreciation and responsibility for this essential resource.

By adopting sustainable actions ,such as reducing waste, using natural fertilizers and protecting green spaces ,we can contribute to maintaining healthy soils for future generations.
Healthy soil means Better quality of life!

EVALUATION OF PROJECTS' RESULTS AND CELEBRATING EVENT

At the end of the project, we organized an event where the children presented their work to their invited parents. However, we also prepared a surprise for the children too!

A small gift in a paper bag that included a small bag of soil, a flower bulb, a wooden trowel, planting instructions, an eco-friendly pot made of recycling paper to plant their bulb and a certificate for their participation to this project.



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PRESENTATION BY DIANA YVETTE VALDEZ MARTÍNEZ:

«FROM SOIL RESEARCH WITH SYNCHROTRON TECHNIQUE TO THE CLASSROOM»

FROM SOIL RESEARCH WITH SYNCHROTRON TECHNIQUE TO THE CLASSROOM

Diana Yvette Valdez Martínez

I hold a degree in Biotechnology Engineering from Universidad Abierta y a Distancia de México, and I'm currently pursuing a Master's in Science Education at Universidad Politécnica de Sinaloa. I'm training in the applications of particle accelerators and have completed several courses, including one at Jagiellonian University and SOLARIS, as well as program on synchrotron light sources and their applications organized by the International Centre for Theoretical Physics (ICTP). Since 2017, I have been teaching at various educational levels. Currently, I deliver courses to sixth-form students and early university undergraduates from institutions across Mexico.

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[image] UN (nd) SDG https://sdgs.un.org/2030agenda

WHAT IS SOIL?

Soil is a natural resource that can be categorized into different soil types, each with distinct characteristics that provide growing benefits and limitations. (Boughton, nd).

[Image] Agave Road Trip (nd) Better soil makes better mezcal. https://agaveroadtrip.com/episodes/s2e54-better-soil-makes-better-mezcal

MEXICO'S KEY EXPORTS TO EUROPE INCLUDE:

Avocado

Coffee beans

Berries

Cocoa and Cacao beans

Mexico is the birthplace of **cacao** called Xocolatl in Nahutatl lenguage of the aztecs

- Mexperience (2025) Chocolate's Odysseys https://www.mexperience.com/chocolates-odyssey/
- Gobierno de México (nd) Mexico and EU agreement. https://www.gob.mx/senasica/documentos/mexico-and-the-european-union-agree-on-the-benefits-of-the-new-free-trade-agreement#:~:text=Rivera%20Torres%20said%20that%20the,%2C%20mango%2C%20banana%2C%20avocado%2C

SOIL TYPES

Sandy

Is light, warm, dry and tends to be acidic and low in nutrients.

Clay

Is a heavy soil type that benefits from high nutrients.

Silt

Is a light and moisture retentive soil type with a high fertility rating.

Peaty

Optimum soil base for planting.

Chalky

Is always highly alkaline due to the calcium carbonate, hey will not support the growth of ericaceous plants.

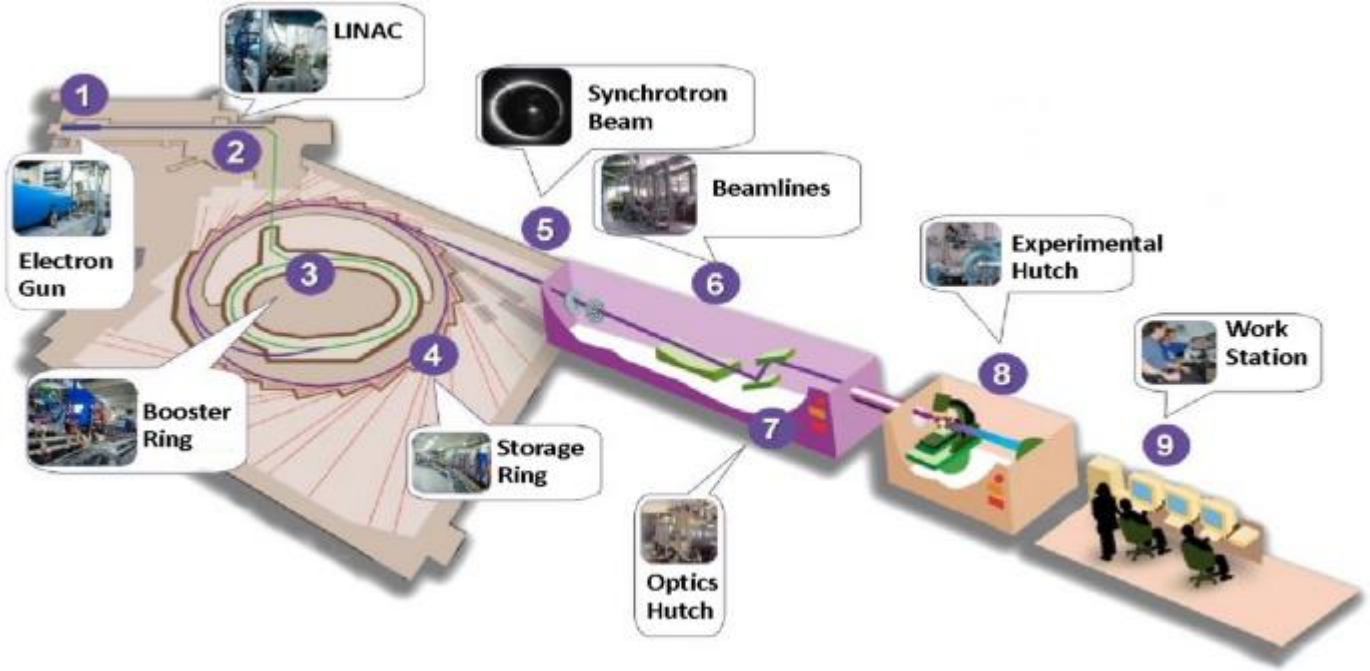
Loamy

Is a mixture of sand, silt and clay that are combined to avoid the negative effects of each type.

- Boughton (nd) Soil types https://www.boughton.co.uk/products/topsoils/soil-types/

WHAT IS A SYNCHROTRON?

Synchrotron is a type of a circular particle accelerator that produces intense beams of light more than a million times brighter tan the sun. (SLAC, nd).

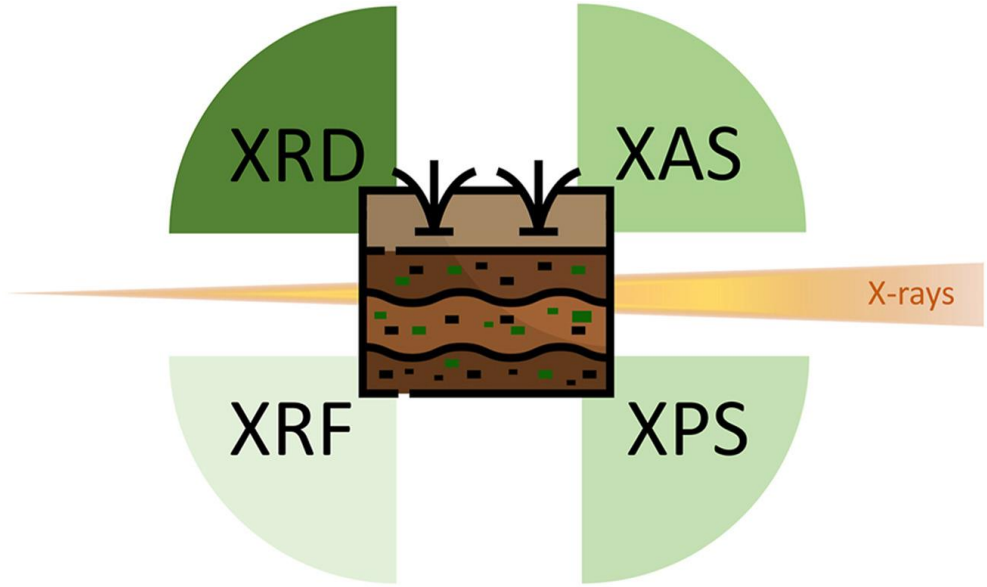


Indore, et. al (2022) Synchrotron tomography applications in agriculture and food sciences research: a review https://plantmethods.biomedcentral.com/articles/10.1186/s13007-022-00932-9

[Image] APS (2020) Rebirth of ESRF. https://www.aps.anl.gov/APS-News/2020-07-15/rebirth-of-the-european-synchrotron-radiation-facility/2020-07-15/rebirth-of

SYNCHROTRON TECHNIQUE: X-RAY ABSORPTION SPECTROSCOPY (XAS)

X-ray absorption spectroscopy (XAS) is a technique that uses X-rays to study the chemical composition and structure of elements in soil and plants. It can be used to evaluate soil remediation strategies, analyze micronutrients, and study the interactions between metals and soil amendments.



The continuous improvement of synchrotron radiation sources expands the possibilities of the associated methods, making it possible to obtain new data on the object of study

Kirichov, M. et al. (2024) Application of X-ray based modern instrumental techniques to determine the heavy metals in soils, minerals and organic media https://www.sciencedirect.com/science/article/abs/pii/S0045653523030527

AGRICULTURAL RESEARCH USING SYNCHROTRON: MEXICAN COFFEE BEANS

In 2023, Mexico exported $552M in Coffee. The main destinations of Mexico exports on Coffee were United States ($369M), Canada ($29.1M), Switzerland ($28.7M), Germany ($20.9M), and France ($18.8M).

https://oec.world/en/profile/bilateral-product/coffee/reporter/mex

The influence of roasting on sulfur speciation in coffee beans by using X-ray absorption near edge structure (XANES) spectroscopy at the sulfur K-edge. (Prange, et al., 2007)

SOIL EDUCATION

- **Students learned about soil types.**
- **Students learned about synchrotron technology apply in soil education.**
- **Peaty soil was used.**
- **A tomato and cucumber garden was made.**
- **Students are taking care of their garden.**

Editors (2020) **Everything You Need to Know About Starting a Vegetable Garden.** https://www.goodhousekeeping.com/home/gardening/a20706435/vegetable-garden-tips/

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PRESENTATION BY EMMA ABBATE:
«SOS! SAVE OUR SOILS!»

CASE STUDIES REPOSITORY FOR GEOGRAPHY TEACHERS

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CASE STUDIES

Here you can find a collection of over 60 case studies gathered by LOESS partners in 15 countries demonstrating a range of soil education practices, resources and initiatives. Use the search facility to find those most suitable to your interests.

SEARCH: Search ... | EDUCATION LEVEL: All | LEARNING SPACE: All | NATURE OF LEARNING ACTIVITY: All | COUNTRY: All | Reset | Submit

ALNARP'S AGROECOLOGY FARM

Alnarp's Agroecology Farm, located on the Swedish University of Agricultural Sciences (SLU) campus in Southern Sweden, is a student-led initiative focused on sustainable, hands-on, agroecological farming.

Read More

A SECRET UNIVERSE – A LITTLE FILM ABOUT SOIL

'A secret universe' (in Swedish: Ett hemligt universum) is a nine-minute film in Swedish about soil produced by the Swedish Society for Conservation of Nature, Sweden's largest environmental NGO. The film explores the intricate ecosystem of soil, its importance and the

SOIL REVITALIZATION PROJECT IN A TRADITIONAL APPLE AND PEAR ORCHARD

The "Each Tea Brew Is for the Soil" project (in Turkish: "Her Dem Toprak İçin") is a Corporate Social Responsibility (CSR) initiative undertaken by a private tea production company.

Read More

THE LEARNING SCENARIO: SOS! SAVE OUR SOILS!

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www.loess-project.eu | LOESSproje

SCIEN

LOESS INTEGRATED LEARNING SCENARIO

Introduction

In LOESS, the acquisition of soil health knowledge is facilitated using integrated STEM teaching and learning, which is carried out via the Biology Science Curriculum Study (BSCS) 5E Instructional Model by Bybee and colleagues (Bybee et al. 2006) as well as the application of innovative pedagogical approaches (PBL, IBL, etc).

Topic

Endangered soils, soil conservation, human – environment interaction, water erosion

Title

SOS! Save Our Soils!

Authors

Emma Abbate & Vittoria Buccigrossi

Summary

This learning scenario engages students in understanding soil health through interactive, hands-on activities that examine soil properties and their role in ecosystems and society. Students investigate soil types, conduct experiments in a virtual lab, and analyse soil degradation using digital tools, culminating in a presentation challenge. The plan integrates web research and practical tasks to build skills in data analysis, interpretation, and persuasive communication. Flexible and adaptable to various curricula, it emphasises ecology, biodiversity, sustainability, physical geography, and human-environment interaction. Familiarity with satellite imagery, graphs, and GIS resources is recommended to maximise learning outcomes.

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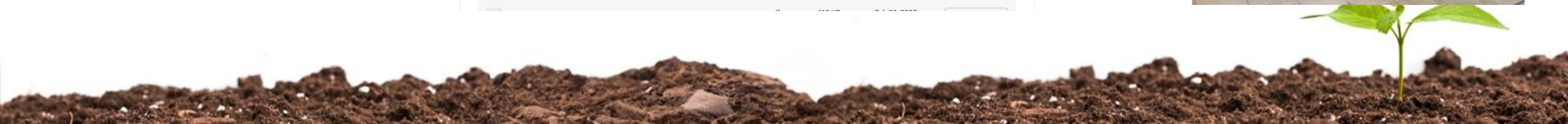
LEARNING SCENARIOS

The Learning Scenarios enable LOESS to integrate soil into education as part of a curation process. The best Learning Scenarios will be included in the LOESS Atlas of Soil Education and published.

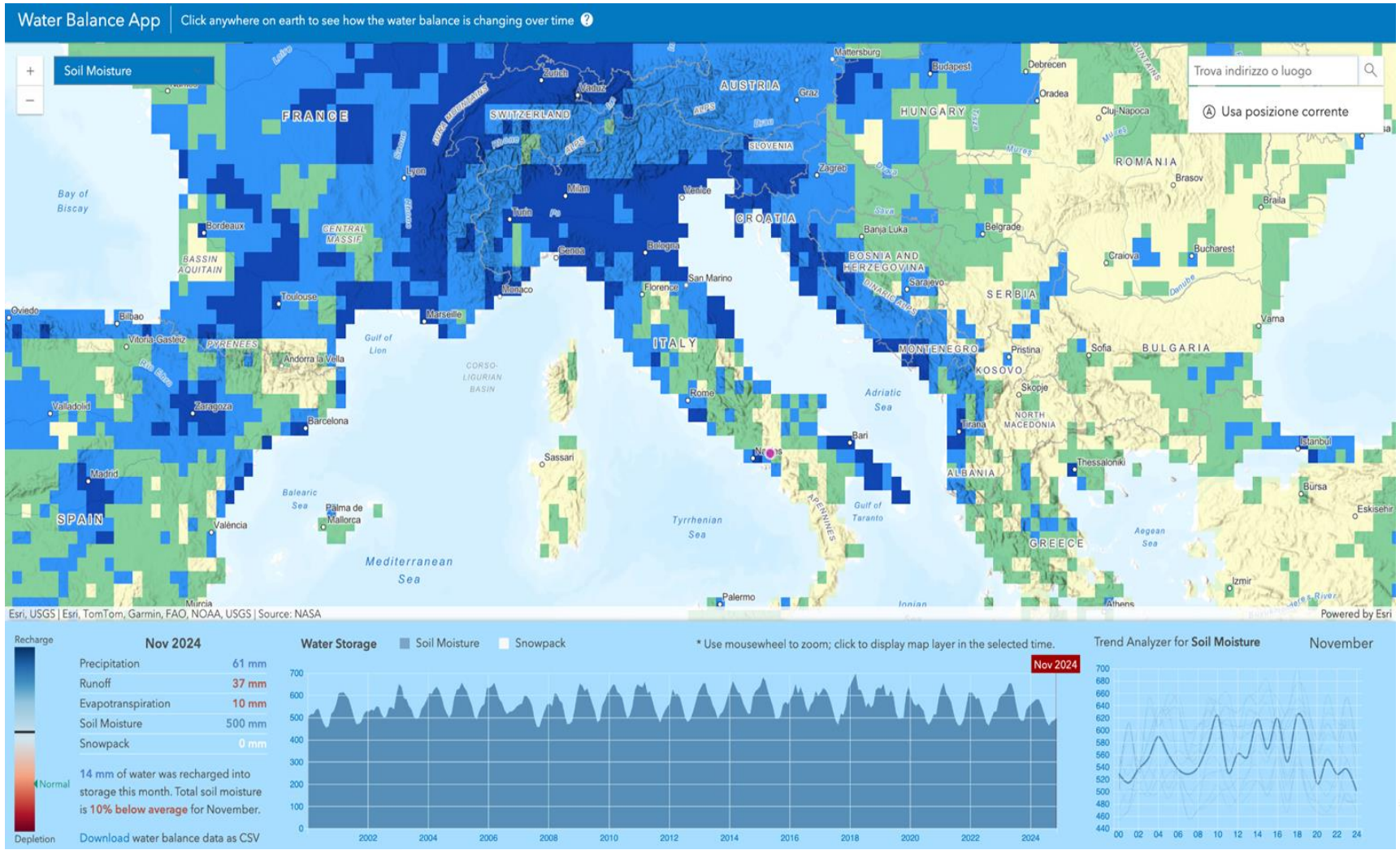
ENGLISH | SPANISH

Search by title...

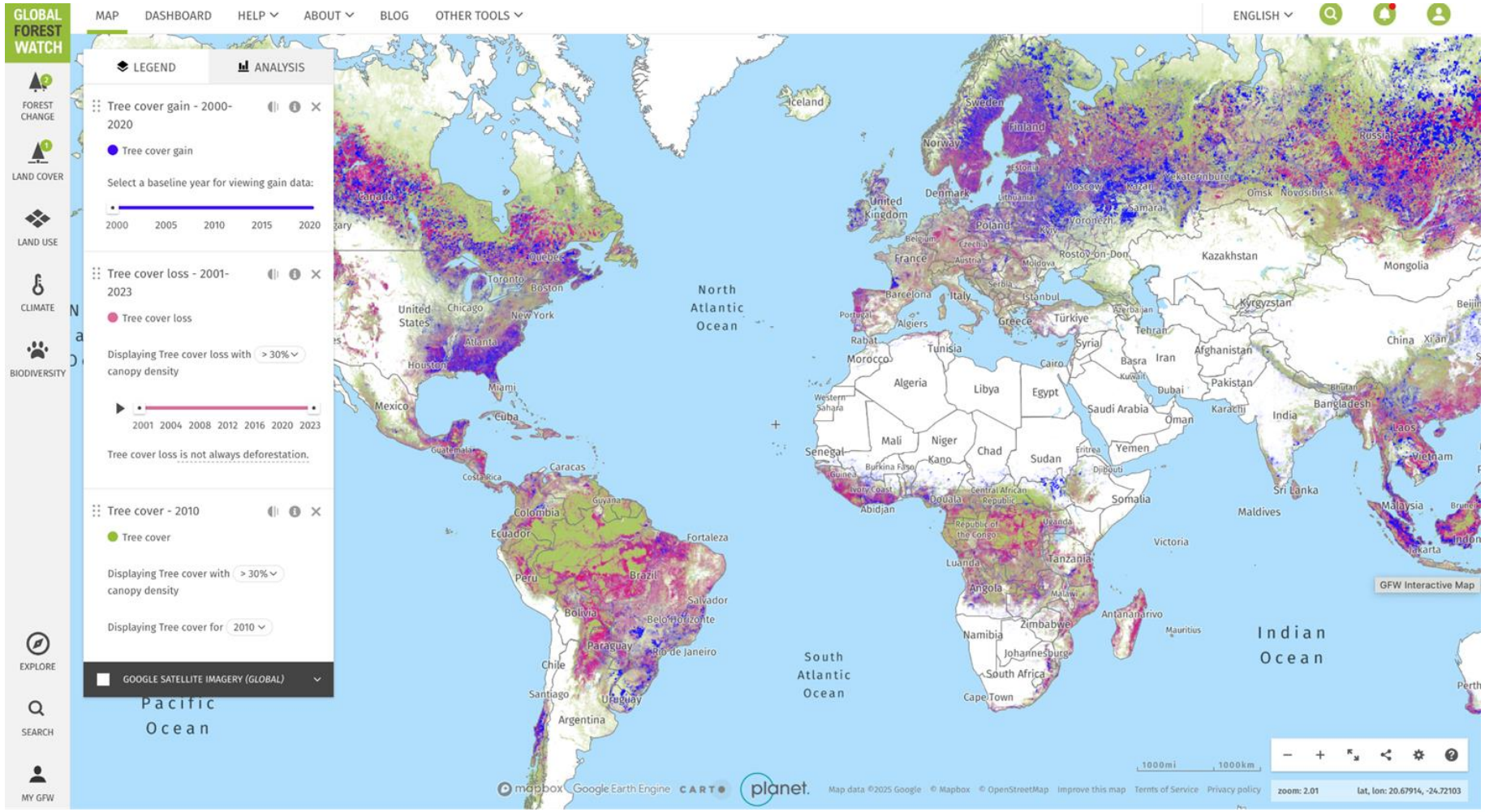
Title	Type	Size	Updated	Link
LOESS-LS-Exploring-soil	pdf	331 KB	Feb 20, 2025	Download
LOESS-LS-Exploring-soil	docx	10 MB	Feb 20, 2025	Download
LOESS-LS-Life-beneath	pdf	309 KB	Feb 20, 2025	Download
LOESS-LS-Life-beneath	docx	205 KB	Feb 20, 2025	Download
LOESS-LS-Save-Our-Soils	pdf	1 MB	Feb 20, 2025	Download
LOESS-LS-Save-Our-Soils	docx	5 MB	Feb 20, 2025	Download



WATER BALANCE



GLOBAL FOREST WATCH



PLANT GROWTH VIRTUAL LAB

VIRTUAL LABS

Plant Growth

Which colors of the light spectrum are most important for plant growth?

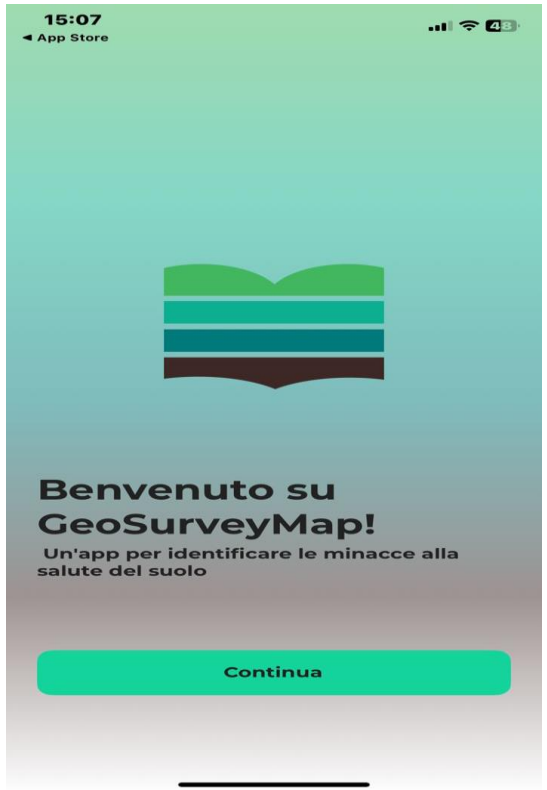
Photosynthesis is the process in which plants use light energy, water, and carbon dioxide to produce food. Plants use the food they make for growth and for carrying out other life processes.

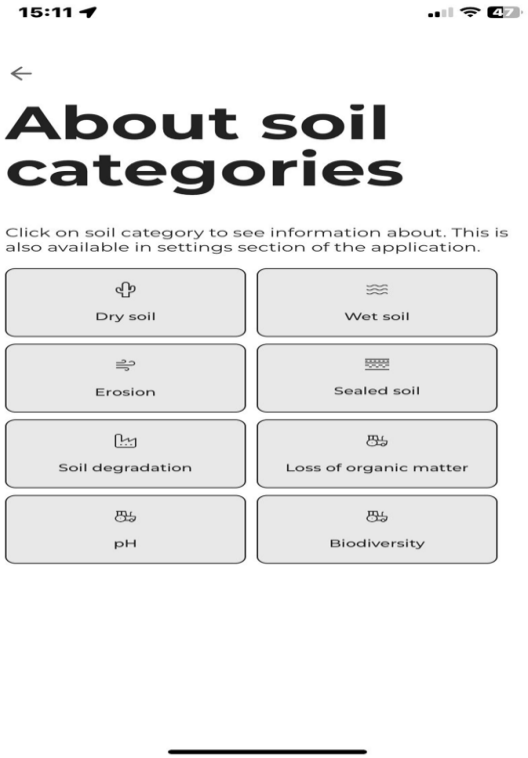
Sunlight is the natural energy source for photosynthesis. White light from the Sun is a mixture of all colors of the light spectrum: red, orange, yellow, green, blue, and violet. Light can be either absorbed or reflected by substances called pigments. Most plants are green because the pigment chlorophyll reflects green and yellow light and absorbs the other colors of the spectrum.

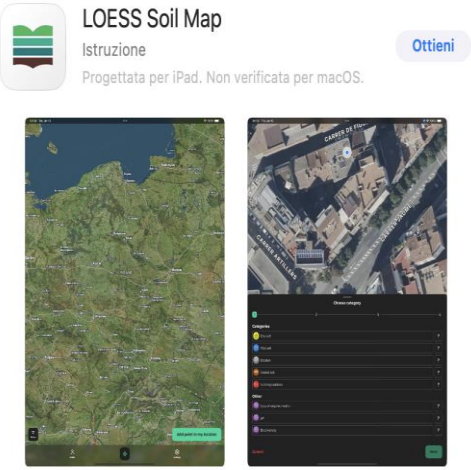
In this Virtual Lab you will perform an experiment to investigate what colors of the light spectrum cause the most plant growth. You will calculate the plant

Journal | Calculator | Table

LOESS SOIL MAP APP: CITIZENS SCIENCE







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PRESENTATION BY JESUS GONZALEZ:

«SCHOOL GARDEN: A PROJECT ACROSS GENERATIONS»

OBJETIVOS DE DESARROLLO SOSTENIBLE

Colexio MONTESOL

European Schoolnet | Academy

COLEXIO MONTESOL'S ENVIRONMENTAL COMMITMENT

Educational center with a strong focus on sustainability.
Participation in Voz Natura for more than 7 years.
School's environmental projects

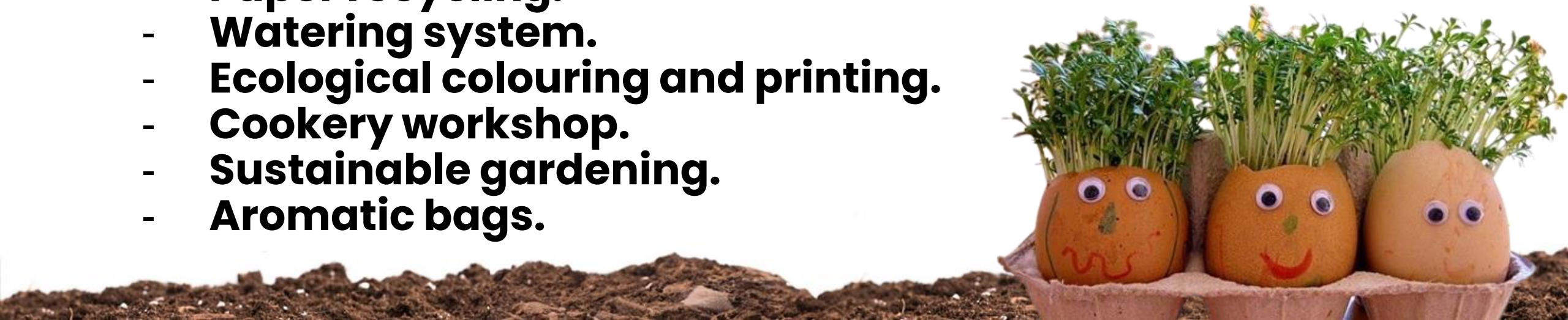
- **MeoEscols**
- **Reforestation.**
- **Recycling.**
- **School garden.**
- **Outdoor activities.**
- **Beach cleaning.**

THE SCHOOL GARDEN AS A SPACE FOR INNOVATION

- **Interdisciplinary space with practical learning:**
  - **STEM**
  - **Values**
  - **Coexistence**
- **Integration with the school curriculum and Voz Natura activities.**

THE INTERGENERATIONAL GARDEN PROJECT

- **Weekly activity with grandparents and students from Infant and Primary education.**
  - **Grandparents answer a form.**
- **Workshops on urban ecology, recycling, and sustainable cultivation.**
  - **Ecological plantation: seeds with recycled paper glasses.**
  - **Garden maintenance: sowing (beans, tomatoes, leek, onion, carrot)**
  - **Paper recycling.**
  - **Watering system.**
  - **Ecological colouring and printing.**
  - **Cookery workshop.**
  - **Sustainable gardening.**
  - **Aromatic bags.**



IMPACT AND FUTURE

- **Students involved.**
- **Sessions held.**
- **Species cultivated.**
- **Expansion of the project with new technologies:**
  - **humidity sensors.**
  - **automated greenhouses.**

https://sites.google.com/colexiomontesol.com/cultivandoelfuturo/inicio

THANK YOU

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PRESENTATION BY SERPIL AKKOL & AYFER YILMAZ:

«THE EARTH IS ESCAPING, WE ARE CHASING IT»

Hello, I am Serpil

- I am Serpil Akkol from İstanbul-Türkiye
- I am a primary school teacher
- I am married and I have a son (28) and a daughther (18)
- My husband and I grow our own flowers, vegetables and fruits in a small town near İstanbul
- I like involving my pupils in outdoor activities especially gardening activities.

Best wishes from our garden

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- I work at Murat Kölük Primary school in İstanbul
- I have 35 pupils in my class. They are 9 years old and they are in the 3rd grade.
- We are lucky because our school has a big garden and we spend a lot of time outside.
- We are lucky because our school is very near to a forest where we go there several times a week.

This is our school garden

This is the forest near our school

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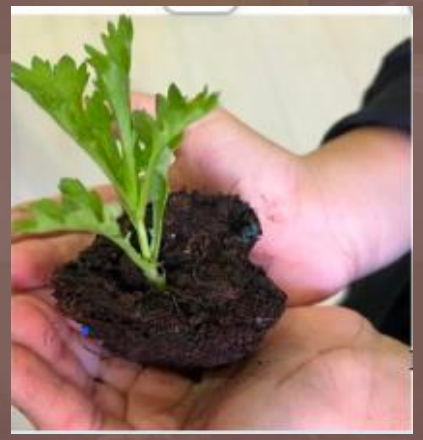
NOW, I AM GOING TO SHARE WITH YOU SOME SOIL ACTIVITIES THAT

I HAVE BEEN DOING WITH MY PUPILS.



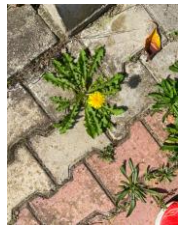
! At the end of my presentation, I will share the link of the lesson plan of these activities.

«THE EARTH IS ESCAPING, WE ARE CHASING IT»

I prepared this LESSON PLAN

- according to the *5E Model* (Engage - Explore - Explain - Elaborate - Evaluate)
- for *Science* and *Life Science courses* at the 3rd grade of primary school in accordance with the curriculum of the Turkish Ministry of National Education.

This LESSON PLAN includes topics such as ***the life cycle of plants***, ***the importance of plants, animals, soil and the environment in our environment.***



Duration: 2 lesson hours (80 minutes)

Learning Objectives:

For Science course: To explain the life cycle of plants, realize the importance of soil for living things and recognize plants and animals in the environment.

For Life Science course: To recognizes living beings in the environment and raise awareness to protect them.

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1. ENGAGE

Duration: 10 minutes

Objective: To attract pupils' attention to the topic and activate their prior knowledge.

Suggested Activity:

The teacher tries to attract pupils and increase their willingness to participate in the new topic. For example: She brings a chickpea and a glass of water to the classroom, then asks the pupils:

- What do you think this chickpea could turn into? How does a plant grow? Could plants survive without soil?
- A short classroom discussion is held and/or pupils listen to a song from Youtube
- Then, teacher introduces the topic: "Today we will discover how plants are grown and why soil is important!".

A song about seeds, saplings and forest

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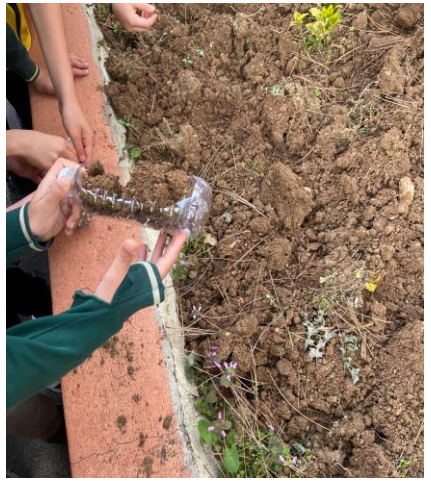
2. EXPLORE

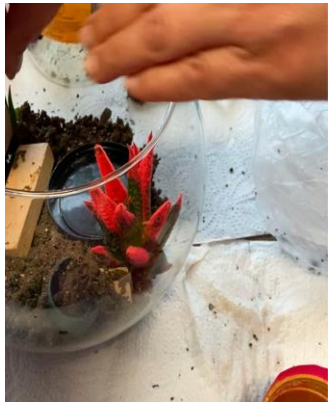
Duration: 20 minutes

Objective: To have pupils learn the life cycle of plants and the properties of soil by trying them out, recognize the importance of soil, recognize plants growing in the environment, recognize animals living in the environment.

Suggested Activities:

- Chickpea germination using cotton (in groups in the class)
- Planting Chia seeds (in groups in the school garden)
- Seed planting activity (individual at home)
- Egg cartoon recycling to make paper pulp and seed ball. Finally, planting seed balls in school garden and at home (in groups in the school garden and a home)
- Soil Testing to investigate if it is hard, soft, dry, or moisty
- Trip to Atatürk Forest to investigate the soil there (rain effect?)
- Trip to botanical park. Activity to find the specific plants and animals there.





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3. EXPLAIN

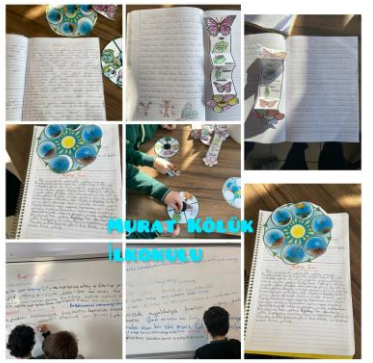
Duration: 20 minutes

Objectives: To systematically explain the life cycle of plants and the importance of soil.

Suggested Activities:

- The teacher draws the life cycle of the plant on the board (seed → germination → seedling → adult plant → flowering → seed formation).
- Each stage is explained through plants such as chickpeas, dandelions, sunflowers, etc.
- A short section from the TEMA Foundation educational videos is watched (living creatures in the soil and the formation of the soil).
- Teacher explains that earthworms help soil and tree roots and prevent erosion
- Students are asked to answer the questions “Why do plants grow in the soil?” and “How do earthworms help the soil?”
- They are asked to explain what they have learned by drawing pictures.

https://youtu.be/PLgd-BqSpLU?si=EFN7kdzqbFx8HS2B



We colored the life cycle of plants papers, had a competition, they arranged the pictures showing the life cycle of plants on the life cycle wheel in the order of their occurrence. They wrote stories telling the life cycle of wheat.

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4. ELABORATE

Duration: 20 minutes

Objective: Students relate what they have learned to real life and produce creative products.

Suggested Activities:

- *Plant Life Cycle Wheel:* Students make a wheel out of cardboard and place each stage on the wheel by drawing them. They turn the wheel and play out the life cycle of the plant.
- *Coloring activities* that describe the life cycle in the shape of an accordion are carried out
- *Botanical Park and Monumental Trees Connection*: The locations of protected monumental trees are shown on the map. The question of "Why are these trees protected?" is discussed.
- *Erosion Experiment Plan:* Two containers are prepared: Soil and plant seeds are put in one, and only soil is put in the other. After the plants grow a little, irrigation is done with the idea of rainwater harvesting and how erosion is prevented is observed (the results of the experiment will be discussed in the following lessons).







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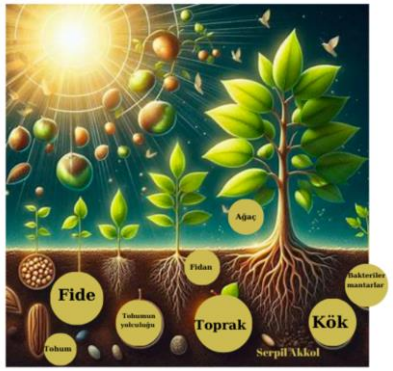
5. EVALUATE

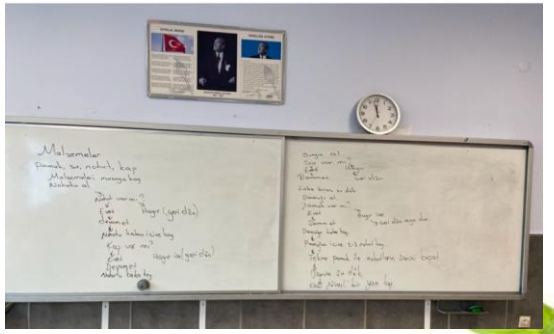
Duration: 10 minutes

Objectives: To evaluate how much the students have understood the subject.

Suggested Activities:

- *Question-Answer:* "What is needed for a plant to grow?" "What happens if the soil dries out? What are worms used for?"
- *Coloring Work:* Students complete a coloring page describing the life cycle of a plant and verbally explain each stage.
- *A competition* is held to order the life cycle in the shortest time on the wheel.
- *Formative assessment* can be done: *Journaling.* Students write down the first day of the chickpea germination experiment in a notebook (for example, "Today we put chickpeas in cotton, what will happen tomorrow?").
- *A coding exercise* can be done by writing the steps of the chickpea germination process.





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Materials needed:

- Chickpea grains, chia seeds, cotton, containers, water
- Dry and moist soil samples
- Cardboard, crayons, scissors
- TEMA Foundation educational videos (soil and living things)
- Atatürk Forest Map (for monumental trees)






Assessment Criteria:

Students correctly rank the plant life cycle.

Students explain the environmental importance of soil and living things.

Level of participation in experiments and activities.

LINK for the LESSON PLAN:
https://docs.google.com/document/d/1MwVcxoNU4NEI76rdi_kaSa2N4R5gg3jXzI6C1XyRfqc/edit?tab=t.0

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THANK YOU

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PRESENTATION BY MONA SAWAN:

«EMPOWERING STUDENTS TO TACKLE ENVIRONMENTAL CHALLENGES THROUGH SOIL LITERACY»

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BUILDING FOUNDATIONS: INTEGRATING SOIL EDUCATION INTO STEM FOR A SUSTAINABLE FUTURE

Empowering Students to Tackle Environmental Challenges Through Soil Literacy

Presented by Mona Sawan

Date : March 27, 2025

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WHY SOIL MATTERS: THE FOUNDATION OF LIFE AND ECOSYSTEMS

- Soil is essential for life on Earth.
- Supports ecosystems, nutrient cycling, and biodiversity.
- Provides critical ecosystem services: food, water, carbon storage.
- Understanding soil health is key to addressing environmental challenges.

Healthy soil = Healthy planet = Healthy future

SOIL HEALTH AND STEM: A PATHWAY TO ENVIRONMENTAL SOLUTIONS

- **Science**: Study soil composition, biodiversity, and nutrient cycles.
- **Technology**: Use tools like infiltrometers, pH kits, and DNA analysis.
- **Engineering**: Design solutions for soil conservation and filtration systems.
- **Math**: Analyze data on soil erosion, salinity, and carbon storage.

"Soil education bridges STEM subjects, equipping students with skills to tackle environmental challenges."

"Empowering the next generation of problem-solvers and environmental stewards

ENGAGING STUDENTS: HANDS-ON LEARNING FOR ENVIRONMENTAL STEWARDSHIP

- Hands-On Activities: Soil sampling, pH testing, and sedimentation experiments.
- Outdoor Learning: Visit farms, parks, or wetlands to observe soil ecosystems.
- Project-Based Learning: Design composting systems or solutions for soil erosion.
- Interdisciplinary Approach: Connect soil to geography, history, and art

"Inspire curiosity and environmental responsibility through soil education."

"Fostering critical thinking and innovation in the classroom."

BUILDING A SUSTAINABLE FUTURE THROUGH SOIL LITERACY

- Soil literacy is critical for informed decision-making and sustainable land use.
- Integrating soil education into STEM prepares students to address global challenges like climate change, food security, and soil degradation.
- Join initiatives like the LOESS project to promote soil literacy and community engagement.

THANK YOU

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QUESTIONS & ANSWERS

DO YOU HAVE ANY QUESTION FOR THE SPEAKERS?
PLEASE, WRITE THEM DOWN IN THE CHAT!

#LOESSMOOC

OPENS ON: 03/03/2025

SOIL EDUCATION: AN INTEGRATED STEM APPROACH

MASSIVE OPEN ONLINE COURSE

Transforming STEM Education for a Sustainable Future

LOESS

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