

# **LOESS INTEGRATED LEARNING SCENARIO TEMPLATE**

## **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).

## **Keywords**

***Sustainability, environmental awareness, nature exploration, creativity, collaboration, outdoor education***

## **Title**

***The wonderful world of soil***

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## **Summary**

*This learning scenario introduces children to the importance of soil, its composition, and its role in sustaining life. Through interactive activities, experiments, and creative handiwork, children will explore different types of soil, their properties, and their impact on plants and the environment. The scenario integrates technology by introducing simple coding concepts, digital storytelling, and sensory-based learning. The plan integrates research and practical tasks, in order we help young students to understand the importance of soil in nature and how it helps plants, animals and people.*

*Soil is life! It is everywhere around us, but have we ever thought about why soil is so important? Children through related hands-on activities and experiments will learn about soil, what healthy soil means for our life and environment and how we can protect the soil. Educating children about soil through hands-on activities like composting, gardening, and soil observation we will foster appreciation and responsibility for this essential resource.*

## **Licenses**



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## **Subjects**

**Science, Technology, Engineering, Mathematics, Art , Biology**



## Real-life questions

- What would happen if there was no soil on Earth?
- How does soil help the plants we eat (fruits, vegetables, grains) grow?
- Why does rainwater disappear when it falls on soil
- Why are worms useful for the soil?
- How the nature turn the leaves to soil?
- Can we make soil?

## Learning objectives

- Recognizing soil as an essential part of nature.
- Understanding the role of soil in plant growth and animal habitats.
- Exploring different types of soil through hands-on activities.
- Developing responsibility for caring for the environment.
- Understand the relationship between soil health and food production.
- Encourage sensory exploration and hands-on learning.
- Recognize the importance of microorganisms in soil health.
- Students will be able to identify and describe the different layers of soil.
- Students will be able to explain how soil supports plant growth and the importance of soil in ecosystems.

## Link to curriculum

The Kindergarten program, as is known, is quite flexible and this lesson can be incorporated into the daily Kindergarten activities. Through exploration and experimentation, children will learn the importance of soil for our own lives and for life in general on the planet. They will practice their critical thinking through playful activities, and develop their expression and creativity and cooperation as a team.

**Sustainable Development Goals (SDGs).** This Learning scenario supports

**Goal 13:** Climate change and its impacts.

**Goal 15:** Life on Land, encouraging students to protect, restore and understand that everything is part of the land ecosystem.

**Goal 3:** Good Health and Well-being: Ensuring healthy lives because healthy soil means healthy life.

## Age of students

4 -6

## Time

**Preparation time (total):** 90 min

**Teaching time:** 6 hours

- **Subject 1: science** (100 min)
- **Subject 2: biology** (40 min)



- **Subject 3: Maths** (30 min)
- **Subject 4: Engineer** (30 min)
- **Subject 5: Technology** (60 min)
- **Subject 6: Art** (60 min)
- **Subject 7: Sustainability** (40 min)

## Teaching resources (materials & online tools)

### Material for all lessons

- Computers/tablets.
- Internet connection.
- various soil samples (e.g., sand, clay, loam),
- magnifying glasses,
- sieves,
- water
- worms
- seeds and flowers bulbs
- small containers
- glass jars
- pots
- various soil samples (e.g., sand, clay, loam),
- small containers
- gloves
- zip bags,
- digging shovels
- labels with the name of types of soil
- Bowls, plates ,cups ,spoons ,baking pans, soil, water and wildflowers of other natural material ( leaves ,seeds, fruits, nuts)

### **Materials for Preparation lesson 1**

Different types of soil ,jars, shovels ,gloves,zip bags ,magnifying glasses

### **Materials for Lesson 2**

Pots or containers with different types of soil, gloves , seeds and flower bulbs

### **Materials for Lesson 3**

Containers or jars ,coffee filter, water ,soil, rubber band

### **Materials for Lesson 4**

Containers , food scraps, fruit peels, vegetable leftovers, eggshells, dry leaves, grass, and small twigs.

### **Materials for Lesson 5**

Baking pans, bowls, pots, plates cups, spoons, soil ,water and wild flowers or grass or other natural material (nuts ,little rocks ,leaves)



### Online tools:

- All about soil ( many information in one video about soil)  
<https://youtu.be/I3A7OnTlSM8?si=L9W8XNyxJ0V4Py>
- What is soil ? Video for kids  
<https://youtu.be/-6BaL-VVlwA?si=MI9LLJMzrUX99wyJ>
- Why soil is one of the most amazing things on Earth (BBC video)  
<https://www.youtube.com/watch?v=OILITHMVcRw>
- Types of Soil (Quiz Edition)  
[https://youtu.be/3NK6ZosNxZo?si=UuIBRZeUZKLWh0\\_n](https://youtu.be/3NK6ZosNxZo?si=UuIBRZeUZKLWh0_n)
- SOIL PROPERTIES  
[https://youtu.be/ko-GJDbnXE8?si=n82evJ\\_XEOi\\_Rc4p](https://youtu.be/ko-GJDbnXE8?si=n82evJ_XEOi_Rc4p)
- Properties of Soil (Gravel, Sand, Silt, Clay, & Topsoil)  
[https://youtu.be/\\_yp4WuIVuA4?si=kRBSc440oXdKRBXY](https://youtu.be/_yp4WuIVuA4?si=kRBSc440oXdKRBXY)
- Understanding Soil Types and Soil Texture (test your own soil)  
<https://youtu.be/AUhOBxVFcFk?si=-fcSC9QFG3X6fpK6>
- Save Soil | Why Soil Is Important | The Planet Voice  
<https://youtu.be/XfqaJqm5nCk?si=yQTq9ZUfnH2lfdFd>
- THE SOIL | FUN FACTS FOR KIDS | Happy Learning  
<https://youtu.be/nvqOLeZGItk?si=YLOQIQQL-JGcV0QL>
- Simple Soil Testing // How To Test Your Soil  
[https://youtu.be/UoD-cUMkRZY?si=gEVc3yn2lBP\\_UqVh](https://youtu.be/UoD-cUMkRZY?si=gEVc3yn2lBP_UqVh)
- FAO Soil portal (soil properties)  
<https://www.fao.org/soils-portal/en/>

### Games:

- [https://leara-elearning.com/projects/nutrien/survivor\\_soak/](https://leara-elearning.com/projects/nutrien/survivor_soak/)  
**Description of game in lesson 5**
- <https://www.soils4kids.org/games/>  
**Includes various related lessons and games**

### Lesson 1. Brainstorming and discussion

- Types of Soil (Quiz Edition)  
[https://youtu.be/3NK6ZosNxZo?si=UuIBRZeUZKLWh0\\_n](https://youtu.be/3NK6ZosNxZo?si=UuIBRZeUZKLWh0_n)
- Why soil is one of the most amazing things on Earth (BBC video)  
<https://www.youtube.com/watch?v=OILITHMVcRw>

### Lesson 2. Preparation for next lesson

- Soil Types and Soil Texture  
<https://youtu.be/AUhOBxVFcFk?si=-fcSC9QFG3X6fpK6>
- All about soil  
<https://youtu.be/I3A7OnTlSM8?si=G3lulHJfMezd9KNc>
- THE SOIL | FUN FACTS FOR KIDS | Happy Learning  
<https://youtu.be/nvqOLeZGItk?si=YLOQIQQL-JGcV0QL>



### Lesson 3

- SOIL PROPERTIES  
[https://youtu.be/ko-GJDbnXE8?si=n82evJ\\_XEOi\\_Rc4p](https://youtu.be/ko-GJDbnXE8?si=n82evJ_XEOi_Rc4p)
- Properties of Soil [Gravel, Sand, Silt, Clay, & Topsoil]  
[https://youtu.be/\\_yp4WuIVuA4?si=kRBSc440oXdKRBXY](https://youtu.be/_yp4WuIVuA4?si=kRBSc440oXdKRBXY)
- *Understanding Soil Types and Soil Texture (test your own soil)*  
<https://youtu.be/AUhOBxVFcFk?si=-fcSC9QFG3X6fpK6>

### Lesson 4.

- What is soil ? Video for kids  
<https://youtu.be/-6BaL-VVlWA?si=Hdrc8odMblPl46J>
- *Simple Soil Testing // How To Test Your Soil*  
[https://youtu.be/UoD-cUMkRZY?si=gEVc3yn2lbP\\_UqVh](https://youtu.be/UoD-cUMkRZY?si=gEVc3yn2lbP_UqVh)
- *FAO Soil portal ( soil properties)* <https://www.fao.org/soils-portal/en/>
- Game online : <https://www.soils4kids.org/games/>

### Lesson 5.

- **Game:**  
[https://leara-elearning.com/projects/nutrien/survivor\\_soak/](https://leara-elearning.com/projects/nutrien/survivor_soak/)
- Save Soil | Why Soil Is Important | The Planet Voice  
<https://youtu.be/XfqaJqm5nCk?si=yQTq9ZUfnH2lfdFd>

## STEM Strategy Criteria

Developing the LOESS learning scenario will help you and your school comply with the [STEM School Label criteria](#). The STEM School Label criteria fulfilled by this Learning Scenario are in the table below.

Elements and criteria	How is this criterion addressed in the learning scenario?
<b>Instruction</b>	
<b>Personalisation of learning</b>	Through their personal participation in hands- on activities and exploration.
<b>Problem and project-based learning (PBL)</b>	The hands-on investigations and experiments in the lesson reflect PBL, where students will explore real-world issues like soil health, sustainability, and erosion. This promotes critical thinking and problem solving of this learning scenario.
<b>Inquiry-Based Science Education (IBSE)</b>	Students will investigate how different soil types affect water retention or plant growth and how nature turns the leaves to the soil.
<b>Curriculum implementation</b>	The interdisciplinary approach ensures that the curriculum is implemented according to the official curriculum of Kindergartens .It involves the integration of various pedagogical approaches,



Elements and criteria	How is this criterion addressed in the learning scenario?
	including the BSCs 5E Instructional Model, to ensure effective and more interesting learning.
<b>Emphasis on STEM topics and competencies</b>	
<b>Interdisciplinary instruction</b>	In this Learning Scenario, we will examine and implement a variety of activities by connecting environmental education Biology and Geology.
<b>Contextualisation of STEM teaching</b>	Contextualization of STEM teaching is obtained by linking soil health to real-life challenges. Students and teachers are encouraged to connect the activities with local case studies and field experiences.
<b>Assessment</b>	
<b>Continuous assessment</b>	The scenario includes continuous assessment, such as formative evaluation during the BSCs 5E Instructional model phases, to monitor student learning.
<b>Personalized assessment</b>	Personalised assessment is addressed by using a variety of assessment methods and is adapted to individual student needs and learning styles.
<b>Professionalization of staff</b>	
<b>Highly qualified professionals</b>	The scenario requires the involvement of highly qualified professionals who can facilitate the complex pedagogical approaches required for the proposed learning activities.
<b>Existence of supporting (pedagogical) staff</b>	The presence of supporting staff is recommended to assist in the implementation of the learning activities, ensuring that students receive the necessary support.
<b>Professional development</b>	The lesson scenario gives opportunities for professional development.
<b>School leadership and culture</b>	
<b>School leadership</b>	School leadership is necessary to foster a culture that supports the implementation of the pedagogical approaches on which the Learning scenario is based, and the necessary resources for their success.
<b>High level of cooperation among staff</b>	The scenario encourages cooperation among staff to ensure that best learning results
<b>Inclusive culture</b>	This lesson plan is for all children and cover all learning needs.
<b>Connections</b>	
<b>With parents/guardians</b>	There was cooperation with parents.
<b>With local communities</b>	There was cooperation with the local community.
<b>School infrastructure</b>	



Elements and criteria	How is this criterion addressed in the learning scenario?
Access to technology and equipment	School has access to technology and equipment
High quality instruction classroom materials	High quality instruction classroom materials In our school we offer quality education so all teaching materials are according to this and are adapted to serve this purpose.

## Description of activities

Name of activity	Procedure	Time
<b>1<sup>st</sup> Lesson</b>		
<b>5E Phase</b>	<b>Engage, Explore, Explain</b>	
<b>Brainstorming and discussion</b>	In the classroom we discuss with children "What is soil and why is Important? Then children watched related videos to understand the usefulness of soil. Why soil is one of the most amazing things on Earth (BBC video) <a href="https://www.youtube.com/watch?v=OILTHMVcRw">https://www.youtube.com/watch?v=OILTHMVcRw</a> Types of Soil (Quiz Edition) <a href="https://youtu.be/3NK6ZosNxZo?si=Uu1BRZeUZkLWh0_n">https://youtu.be/3NK6ZosNxZo?si=Uu1BRZeUZkLWh0_n</a> Questions: "What do you think soil is made of? Why do we need it? We go for exploration to our school yard(outdoor activities)	45'
<b>Discussion and preparation for the next lesson</b>	In our school yard we have various types of soil (school garden, under the trees, sand) So we go out and children explore the soil and they will go for a soil hunt. We ask them to collect soil from different areas.  <b>Experiment : Feeling the texture of soil</b> <ul style="list-style-type: none"> <li>We ask children to touch the different types of soil and compare colours and textures.</li> <li>They describe how it feels and looks using their senses.</li> <li>Then we make <b>a collection</b> with the different types of soil that are collected by children in our school yard and children write the name and the color of each type of soil.</li> </ul> <p>Preparing the next lesson we ask them to bring at school the next day a jar with soil from their garden ,to compare it and enrich our soil collection.</p>	45'
<b>2<sup>nd</sup> Lesson</b>		
<b>5E Phase</b>	<b>Engage ,explore ,elaborate ,explain</b>	
<b>Subject 1</b>	<b>Science , biology ,engineer and technology</b>	
<b>Plant Growth Experiment</b>	Understanding the role of soil in ecosystems. Next day we start our lesson watching new videos in order the children to understand better the Soil Types and Soil Texture <a href="https://youtu.be/AUhOBxVFcFk?si=-fcSC9QFG3X6fpK6">https://youtu.be/AUhOBxVFcFk?si=-fcSC9QFG3X6fpK6</a> All about soil <a href="https://youtu.be/I3A7OnTlSM8?si=G31uhJfMezd9KNC">https://youtu.be/I3A7OnTlSM8?si=G31uhJfMezd9KNC</a>	45'



Name of activity	Procedure	Time
	<p><b>Experiment :</b></p> <ul style="list-style-type: none"> <li>The children planted seeds and flower bulbs in different types of soil, such as garden soil, clay, and sand.</li> <li>Every day, they observed the pots to see what would happen. Over time, they noticed that in some types of soil, like sand, <b>nothing grew</b>, while in others, the plants began to <b>sprout and grow</b>.</li> <li>This helped the children understand that <b>not all soil is the same</b>, and some soils are better for plants than others.</li> </ul> <p>We discussed in our class why <b>Soil is life itself</b>.</p> <ul style="list-style-type: none"> <li>What does soil give to plants?</li> <li>Can plants grow without soil?</li> <li>What would happen if there were no soil for the roots?</li> </ul> <p>What kinds of food grow in the soil?</p> <p>Answers: Soil helps plants and trees to grow, giving them water, air, food and it holds their roots (we observe some plants of our school ,into the classroom and out in the school yard)</p> <p>Here we can make <b>an experiment :</b></p> <ul style="list-style-type: none"> <li>"We can place one plant without water and soil in a dark place, and another plant in a pot with soil and water it, to see what will happen."</li> <li>Plants need three important things to live and grow soil, water, and light. The plant without soil, water, and light will not grow because it does not get what it needs. However, the plant in the pot has soil, water, and light, so it can grow strong and healthy.</li> <li>We can ask by children to bring their own plant and take care of it every day ,so they can watch the plant's growth and keep notes every day.</li> </ul>	
<p><b>Creation of worms station</b></p>	<p><b>The magic world of soil</b></p> <p><b>Questions:</b></p> <ul style="list-style-type: none"> <li>Who lives in the soil?</li> <li>What do earthworms do to help the soil?</li> <li>Why do ants make tunnels in the ground?</li> </ul> <p>Children watched related videos about life in soil and underground life and we went to our school yard for a new exploration : to dig the soil and to discover what we can find . Of course we have a lot of ants and all these little creatures that help make the soil healthy.( earthworms help mix the soil and ants dig tiny tunnels that help air and water move through the ground.)</p> <p>Discussion after the watching of the videos:          THE SOIL   FUN FACTS FOR KIDS   Happy Learning  <a href="https://youtu.be/nvqOLeZGItk?si=YL0QIQOL-JGcV00L">https://youtu.be/nvqOLeZGItk?si=YL0QIQOL-JGcV00L</a></p> <p>We decided to <b>create a worm station</b> to observe better, what exactly their work is and how they help the soil to stay healthy. We put in a container</p>	<p>45'</p>



Name of activity	Procedure	Time
	soil, leaves and worms and placed it out in our schoolyard. Then we water the worm station every day and we watched what happened. We make the same using a jar and keep it in our class.	
<b>Learning products</b>	Children learned that soil is a very important part of our ecosystem as it is the home for many tiny creatures such as bugs, worms and even small animals. Without soil, we would not have trees, flowers, vegetables and fruits, as they need soil to grow! Animals would not find food if there was not the soil and grass.	
<b>3<sup>rd</sup> Lesson</b>		
<b>5E Phase</b>	<b>Engage ,explore ,,explain , elaborate</b>	
<b>Subject 2</b>	<b>Science ,technology ,Maths</b>	
<b>Properties of soil</b>	<p><b>Recognize soil as an essential part of nature.</b></p> <p><b>Soil Absorption Test</b>          Children learned that soil holds the rainwater and keeps it clean. They watched the video, we discussed it and then we took part in some experiments to understand it better.          SOIL PROPERTIES  <a href="https://youtu.be/ko-GJDbnXE8?si=n82evJ_XEOi_Rc4p">https://youtu.be/ko-GJDbnXE8?si=n82evJ_XEOi_Rc4p</a></p> <p>Properties of Soil [Gravel, Sand, Silt, Clay, &amp; Topsoil]  <a href="https://youtu.be/_yp4WuIVuA4?si=kRBSc440oXdKRBXY">https://youtu.be/_yp4WuIVuA4?si=kRBSc440oXdKRBXY</a>  <i>Understanding Soil Types and Soil Texture (test your own soil)</i>  <a href="https://youtu.be/AUhOBxVFcFk?si=-fcSC9QFG3X6fpK6">https://youtu.be/AUhOBxVFcFk?si=-fcSC9QFG3X6fpK6</a></p> <p>They also learned that soil also keeps the ground from flooding.</p> <ul style="list-style-type: none"> <li>• What does soil do with rainwater?</li> <li>• How does soil help keep water clean?</li> <li>• Why is clean water important for plants and people?</li> </ul> <p>They found answers to these questions by their active participation to this <b>experiment:</b></p> <ul style="list-style-type: none"> <li>• We took three clear containers and children put different types of soil (sand, clay, and potting soil) and they added water (about 1 cup for each container) We added labels with the name of the type of soil on each container.We explained to children that soil could be different. Some soils hold water well, while others let water pass through quickly.</li> <li>• Children observed the results of what happened with each type of soil after pouring the water in. (Will the water go through quickly, or will it stay in the soil?)</li> </ul> <p><b>Results:</b></p> <ul style="list-style-type: none"> <li>• With sand, the water went through very quickly and gathered at the bottom.</li> <li>• With clay, the water stayed on top longer, as clay absorbs water more slowly.</li> <li>• With potting soil, the water moved more slowly, but it drained, showing that potting soil holds water more effectively than sand</li> </ul>	60'



Name of activity	Procedure	Time
	<p><b>Discussion:</b> After the experiment, discuss with the children: Which soil held the water the longest? Which soil let the water pass through quickly?</p>	
<p><b>How Does Soil Help Keep Water Clean?</b></p>	<p><b>Experiment :</b> <b>Soil as filter</b></p> <ul style="list-style-type: none"> <li>We took a clear jar and we stretched a coffee filter over the top of the empty jar ,used a rubber band to keep it in place and added soil ,2–3 spoonful of soil on top of the filter.</li> <li>Then in a glass we pour clean water and added some soil so our water become "dirty"</li> <li>We slowly pour your "dirty" water into the soil that was in the filter of the jar and let it drip through the soil</li> <li>The water that comes out and looks clearer than what went in.</li> <li>We talked about the soil that trapped the dirt and let cleaner water through.</li> </ul> <p>What happened to the dirt in the water? Did the water look cleaner after it passed through the soil? What does this tell us about how soil works in nature?</p>	30'
<p><b>Learning products and outcomes</b></p>	<p><b>Learning products :</b></p> <ul style="list-style-type: none"> <li>Creation of "mud kitchen" in our school yard</li> <li>Creation of a corner with flowers and plants into the pots by children.</li> <li>Creation of a worm station for observation</li> <li>Creation of a poster : " What the soil offer to plants and trees"</li> <li>Collection of soil types in jars</li> </ul> <p><b>Learning outcomes</b></p> <ul style="list-style-type: none"> <li>Children explored the characteristics and importance of soil by using their senses, engaging in hands-on experiments, and participating in discussions.</li> <li>Using descriptive words such as soft, rough, smooth, sticky, dry, or wet, enriched their vocabulary.</li> <li>Observed and compared how different types of soil react when water is added, whether they absorb water quickly, slowly, or let it run through.</li> <li>Recognized that some types of soil retain water better than others, which affects how plants grow.</li> <li>Understood that soil holds the roots of plants and trees, giving them support and providing the water and nutrients, they need to grow.</li> <li>Discovered that soil can help clean rainwater by acting like a natural filter, removing dirt and impurities as water passes through it.</li> <li>Appreciated the role of soil in nature, understanding that it is a living part of our environment that supports life for plants, animals, and humans.</li> </ul>	
<b>4<sup>th</sup> Lesson</b>		
<b>5E Phase</b>	<b>.Engage ,explore ,,explain , elaborate</b>	



Name of activity	Procedure	Time
Subject 3	Science , technology , sustainability	
<b>How Does Nature Make Soil?</b>	<p><b>The science of nature : Turning leaves to the soil! (30 min)</b>  <b>Understanding nature's processes.</b>          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!</p> <p><b>Simple experiment:</b> We put dry leaves in one jar and wet leaves in another and observe changes over days.          Children also learned about the composting</p> <p><b>Can we make soil? Yes we can through the Composting:</b>          Composting is a way to turn food scraps and plant waste into nutrient-rich soil. So children took part in this <b>experiment</b> :          We Collected food scraps (fruit peels, vegetable leftovers, eggshells) and added dry leaves, grass, and small twigs.          In a few months, the compost turned into dark, rich soil that helps plants grow and we will use it for our school garden. .          What is soil ? Video for kids  <a href="https://youtu.be/-6BaL-VV1wA?si=Hdrc8odMbIP146Ja">https://youtu.be/-6BaL-VV1wA?si=Hdrc8odMbIP146Ja</a></p> <p><b>Why Should We Help Make Soil?</b>          Reduces waste - Less food scraps go in the trash.          Makes plants stronger          Compost adds important nutrients to the soil. Protects nature          Helps keep the earth healthy for people, animals, and plants.</p>	30'
<b>What does means Healthy Soil?</b>  <b>Visit by an agronomist</b>	<p>What is Healthy Soil? What does it mean <b>for the economy and society?</b>          Why is good soil important for farmers or gardeners?</p> <p>We invited an <b>agronomist</b> 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. She gave us some advices for our school garden and all together planted flowers and aromatic plants. And explain to children the connection between <b>climate change and healthy soil</b>.</p> <p>We watched the following videos too:  <i>Simple Soil Testing // How To Test Your Soil</i>  <a href="https://youtu.be/UoD-cUMkRZY?si=gEVc3yn2IbP_UqVh">https://youtu.be/UoD-cUMkRZY?si=gEVc3yn2IbP_UqVh</a>  <i>Fao Soil portal ( soil properties)</i>  <a href="https://www.fao.org/soils-portal/en/">https://www.fao.org/soils-portal/en/</a></p> <p>Children made their questions</p> <ul style="list-style-type: none"> <li>• What happens to old leaves and food scraps in the soil?</li> <li>• What is composting?</li> <li>• How does composting help plants and trees grow?</li> </ul> <p>They learned that :          Soil Helps the Earth Stay Healthy and the world of soil is just perfect and wonderful!</p>	60'
<b>Learning products</b>	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 <b>better quality of</b>	



Name of activity	Procedure	Time
	life!	
<b>5<sup>th</sup> Lesson</b>		
<b>5E Phase</b>	<b>Engage ,elaborate ,explore ,evaluate</b>	
<b>Subject 4</b>	<b>Art ,Science ,Math , Technology</b>	
<b>Art and games with soil</b>	<p><b>Games with soil and dirty hands!</b>  <b>"Mud cooking"</b> is an interesting activity for all children in the world!          Time for cooking! Ready for the " Mud Kitchen "          In a corner in our school yard with baking pans, bowls, pots, plates, cups, spoons and soil children play and cook pies.</p> <p>Children become "<b>Little chefs</b>" and make a mix from soil and water, make soil balls and they add flowers or leaves from wild vegetables from our yard to decorate and present their dishes.</p> <p><b>Creative and artistic activities</b>          Part of this learning scenario is also to leave children to use their fantasy and their creativity and create beautiful handicrafts.</p> <p><b>Soil Painting</b> using a mix of soil with water to create natural paints on paper.</p> <p><b>Soil Collage:</b> We use different soil colours and textures to make creative nature collages.</p> <p><b>Game via computer:</b> Children try to find the right water balance for corn plants adding water from clouds. They start the game and move the clouds on the corn giving the water that it needs to grow up.. With this way, they learn that plants need water and how much it needs to grow. This digital game complements the art- and creativity-based activities by giving children an interactive way to experiment with how much water plants need to grow. While the creative activities (such as drawing, crafting, or observing real plants) allow children to express their understanding through imagination and artistic expression, the game helps them test and visualize the scientific idea of water balance. Together, these approaches combine creativity with scientific exploration, helping children understand and express why plants need the right amount of water to stay healthy.          The link for the game is this  <a href="https://leara-elearning.com/projects/nutrien/survivor_soak/">https://leara-elearning.com/projects/nutrien/survivor_soak/</a></p>	40'
<b>Soil celebration event</b>	<p><b>Evaluation of learning outcomes</b></p> <p>Presentation : Children will share what they learned through drawings, songs and a dramatization ( they will wear customs and will become little bugs ,flowers and butterflies and they pretend that they live and play happily in a green field ) in an open event to parents organised by our school.</p> <p>We watch the video :          Save Soil   Why Soil Is Important   The Planet Voice</p>	80'



Name of activity	Procedure	Time
	<p><a href="https://youtu.be/XfqaJqm5nck?si=yQTq9ZUfnH2lfdFd">https://youtu.be/XfqaJqm5nck?si=yQTq9ZUfnH2lfdFd</a></p> <p>Certificate of Soil Explorer will be given to all participants children to this project for completing the soil adventure!</p> <p>At the end children will offer to their parents as a gift a little pot (made by recycling paper ) with soil and a flower bulb.</p> <p>We will ask children and their parents to evaluate the learning outcomes of this learning scenario.</p>	
<b>Learning products</b>	<p>By the end of this learning scenario, children will be able to:</p> <ul style="list-style-type: none"> <li>Recognize soil as an essential part of nature and describe its appearance, texture, and function.</li> <li>Understand the role of soil in plant growth, water absorption, and sustainability and that soil is full life .</li> <li>Build environmental awareness and understand that caring for soil means caring for our planet.</li> </ul>	

### Initial assessment

At the beginning of the LOESS learning experience, students will take part in simple activities to assess their prior knowledge and experiences with soil:

**Soil Senses Exploration:**

Children explore different soil types (e.g., sand, clay, garden soil) using touch, sight, and smell. The teacher observes how they describe the samples to assess vocabulary and observation skills.

**Experience Sharing Circle:**

A class discussion where children talk about any experiences with soil or gardening. Questions include: "Have you ever played in the soil?" and "What do you think lives in the soil?"

**Soil Sorting Activity:**

Children are shown pictures of various materials (soil, rocks, compost, etc.) and asked to sort which ones are soil and which are not. This helps identify prior understanding and misconceptions.

**Pre-lesson Quiz**

A simple quiz using images or oral questions to check basic knowledge about soil types and their properties, like "Which soil holds the most water?" or "What can grow in soil?" ([Annex 1](#))

### Formative evaluation

Throughout the LOESS learning experience, formative assessment will be used to monitor student progress, give feedback, and adjust activities as needed:

**Soil Poster Creation:**

Children work in small groups to create posters showing what they have learned about soil types, soil creatures, and how soil helps plants grow. Teachers observe collaboration, understanding, and creativity.

**Interactive Quiz Game:**



A playful, oral or visual quiz using real objects, pictures, or digital tools (if available). Questions include identifying soil types, matching animals to their soil homes, or sorting plant growth stages. This checks ongoing understanding in a fun way.?" ([Annex 2](#))

### **Observation and Dialogue:**

Teachers take notes while observing children during exploration and discussion. They ask guiding questions like "Why do you think this plant grows here?" to assess thinking and adjust the lesson flow. ([Annex 3](#))

### **Learning Journals or Drawings:**

Children draw or describe what they've learned so far in personal journals or on worksheets. This provides insight into each child's individual progress.

## **Final assessment**

Each small group of students will prepare and **present a mini-presentation** that will include what they discovered during their soil exploration.

1. How plants responded in different soil conditions (After the experiment was conducted).
2. How the nature turns the leaves to soil?(After the experiment)
3. Do all the types of soil have the same texture?
4. One action they would take to protect the soil.

### **Oral presentation using drawings, pictures, or models.**

1. Poster or collage with the world under the soil
2. Teacher's Observation Checklist:
3. Did the student understand basic soil properties (e.g., texture, color)?
4. Can they explain why soil is important for plants?
5. Do they recognize that pollution harms soil and plants?
6. Why are worms useful for the soil?

### **A quiz with matching, sorting, or multiple-choice questions about:**

Types of soil ([Annex 4 -quiz 1](#))

What soil is made of soil ([Annex 4 -quiz 2](#))

How can we take care of soil ([Annex 4 -quiz 3](#))

## **Student feedback**

*To gather student feedback and encourage reflection on the learning experience, the following methods will be used*

### **1. Oral Comments and Group Discussion:**

What they liked most about the soil activities.

What new things they learned about soil.

### **2. Smiley Face Feedback stickers**

Each student will place a sticker or draw a smiley face on a simple chart to show how they felt about:

- Learning about soil
- Doing experiments
- Working in a group
- Presenting their work



### 3. Draw their impressions

#### Teacher feedback

The teacher will provide feedback by writing a short reflection after the lesson, noting:

- How students responded to the activities
- Students engagement
- What worked well and what could be improved
- Any unexpected outcomes or moments of interest

A simple self-assessment table also will be used to evaluate key areas such as student engagement, learning outcomes, and classroom management. ([Annex 5](#))

#### Reflection on the development process

The idea for my learning scenario came from my ongoing interest in environmental education, especially how we can introduce important topics like soil health and sustainability to young children in a meaningful and playful way. I was inspired by my students' natural curiosity about the earth and their love of outdoor play and the huge schoolyard with many trees, which made soil a perfect theme to explore. One more reason is that our school is one of the STEM and NBS Schools, which means that the teaching and learning process is based on nature-based solutions and soil is an important part of nature.

In preparing this scenario, I researched child-friendly approaches to teaching soil science –even though I already have a lot of experience teaching this topic, I found new excellent resources from educational platforms, environmental organizations, and previous eTwinning and Erasmus projects that helped me design hands-on activities for this age-appropriate that encourage the exploration, the initiative, the inquiry, and promote the collaboration of teamwork.

Through this process, I wanted to give the opportunity to my young students for exploration and experimentation with the elements of nature (like the soil) and space for initiatives and creativity because I believe that the developing a successful learning scenario means not only just about what children will learn, but how they will feel with their active participation, during the implementation of this LS.

Because in the end, it's the journey that truly counts, not just the result and as it turned out, our young learners truly enjoyed it.



## Annex 1 – Pre lesson quiz

### Quiz 1: Which soil holds the most water?

1. If we pour water on **sand**, what will happen?
  - a) The water will run through quickly
  - b) The water will stay for a long time
2. If we pour water on **clay soil**, what will happen?
  - a) The water will stay in the soil
  - b) The water will disappear very fast
3. Which soil is best at **holding water** for plants?
  - a) Sand
  - b) Clay
  - c) Garden soil (mix)

### Quiz 2: What can grow in soil?

1. Which of these needs soil to grow?
  - a) A flower
  - b) A chair
2. Which of these can we plant in the soil?
  - a) A tree
  - b) A toy car
3. Which of these grows roots in the soil?
  - a) A carrot
  - b) A balloon



## Annex 2 – Interactive quiz game

### Playful Soil Quiz

1. Look at the soil: Is it sand, clay, or garden soil?

### 2. Which soil feels soft and sticky?

(a) Sand (b) Clay

3. Which soil keeps the water longer?

### 3. Animals and Their Soil Homes

- Which animal lives in the soil?

(a) Worm (b) Fish

- Who digs little holes in the ground to live?

(a) Rabbit (b) Bird

- Who helps make the soil healthy?

(a) Worms and beetles (b) Cars and trucks

### 4. Plant Growth Stages

- Which one comes first? (Seed, Sprout, Plant, Flower)

- What grows after a seed? (a) plant (b) pot

## Annex 3 – Teacher's observation checklist

1. What do you notice about this soil? Is it wet, dry, soft, or hard?
2. How do you think the soil helps the plant?
3. What might happen if there was no water in the soil?
4. Which animals do you think live under the soil? Why?
5. What changes do you see in the plant from yesterday to today?
6. Where do you think the seed gets its food to grow?
7. Why do you think this soil is different from the other one?
8. What do you think would happen if we planted this seed in sand? In clay?
9. How does the plant use the sunlight, soil, and water together?



## Annex 4 – Final assessment quizzes

### Quiz 1: Types of Soil

#### 1. Multiple Choice

Which soil is very soft and smooth, like powder?

- a) Sandy soil
- b) Clay soil
- c) Rocky soil

(Correct answer: b) Clay soil

#### 2. Multiple Choice

Which soil has big grains and feels rough in your hand?

- a) Sandy soil
- b) Clay soil
- c) Garden soil

(Correct answer: a) Sandy soil

#### 3. True or False

Loamy soil is good for growing plants because it holds water and air.

(Correct answer: True)

#### 4. Multiple Choice

Which soil lets water pass through very quickly?

- a) Sandy soil
- b) Clay soil
- c) Loamy soil

(Correct answer: a) Sandy soil

#### 5. Activity Question (Hands-on)

Give children a cup of each soil type (sand, clay, loam). Ask:

- Which soil sticks together when you squeeze it? (Clay)
- Which soil falls apart easily? (Sandy soil)
- Which soil feels “just right” for plants? (Loamy soil)

#### 6. Fun Riddle

I am smooth and sticky, I hold lots of water, who am I?

(Answer: Clay soil)

### Quiz 2: What is Soil Made of?

#### 1. Multiple Choice

Soil is made of tiny pieces of broken \_\_\_\_\_.

- a) Plastic



- b) Rock
- c) Glass

*(Correct answer: b) Rock)*

## 2. Multiple Choice

What part of soil comes from dead plants and animals?

- a) Humus
- b) Sand
- c) Air

*(Correct answer: a) Humus)*

## 3. True or False

Soil has no air inside it.

*(Correct answer: False – soil has little spaces with air!)*

## 4. Sorting Activity

Circle the things that are part of soil:

Humus / Water / Rocks / Candy / Air / Sand

*(Correct answers: Humus, Water, Rocks, Air, Sand)*

## 5. Which soil holds the most water?

- Show 3 jars with sand, clay, and garden soil (or use pictures).
- Ask: “Which one keeps the most water after we pour it in?”
- Children point to or say the answer (clay).

## Quiz 3: How Can We Take Care of Soil?

### 1. Multiple Choice

Which of these helps keep soil healthy?

- a) Throwing trash on the ground
- b) Planting trees and flowers
- c) Pouring oil into the soil

*(Correct answer: b) Planting trees and flowers)*

### 2. True or False

Recycling and reducing waste helps protect the soil.

*(Correct answer: True)*

### 3. Multiple Choice

What happens if we use too many chemicals on the soil?

- a) Soil becomes dirty and unhealthy
- b) Soil becomes stronger
- c) Soil turns into gold

*(Correct answer: a) Soil becomes dirty and unhealthy)*



#### 4. How does soil feel?

- Pass around small containers: sandy soil, clay, garden soil.
- Ask: *“Is it rough, smooth, or sticky?”*
- Children describe what they feel.

#### 5. Why is soil important?

- Show pictures of plants, animals, and food.
- Ask: *“Who needs soil to live?”*
- Children answer: plants, animals, people.

### Annex 5 – Teacher’s feedback

Area	Description	Self-Assessment Rating (1–5)	Notes / Evidence
<b>Student Engagement</b>	Are students actively participating and showing interest?		Examples of participation, attention, questions asked
<b>Learning Outcomes</b>	Are students meeting the learning objectives?		Observations, assessments, or work samples
<b>Classroom Management</b>	Is the classroom environment well-organized and conducive to learning?		Notes on transitions, behavior management, routines
<b>Instructional Strategies</b>	Are the teaching methods effective and appropriate for the students?		Strategies used, success, or areas to improve
<b>Student Understanding</b>	Are students able to demonstrate understanding of concepts?		Examples, discussions, or hands-on activities

