# LESSON PLANS

## Module 5: Farm Life as an Out-of-School Learning Environment Storytelling

## Lesson Plan 1

THE SCIENCE OF SOIL

**Proposed Students Age Range: 3-5 years old**

| Purpose / Learning objectives |
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| * By the end of this lesson, students will be able to identify different types of agricultural soil and understand their uses in farming. |
| Intersecting objectives |
| * Students will understand how soil, together with other agricultural and natural features, is necessary for productive and efficient farming. |
| Facilitation |
| 1. Samples of different types of soil (sand, silt, clay, loam)  2. Small containers with sand, silt, clay, and loam for hands-on exploration  3. Posters or images of crops grown in different types of soil  4. Students to wear aprons or old clothes (they may get dirty)  5. Seeds or small potted plants for a hands-on activity  6. Small containers such as yoghurt cups for each student (for planting their own seeds/plants) |
| Ideas for follow - up |
| Give students a gardening-related homework assignment, like finding an interesting plant in their garden/a public park and labelling the type of soil it needs to grow.  After this lesson each student will have their own plant to observe and take care of |
| Resources required |
| * Smartboard with Internet access * A video <https://www.youtube.com/watch?v=7h6psLfYA7w> * An on-line quiz game <https://wordwall.net/pl/resource/7242347/science/soil-game> * photos of soil and crops printed on a cardboard for a memory game |
| Source / The day of the lesson: Materials & Class preparation |
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| Implementation |
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| Timing | Instructions step by step |
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| 15 min | 1. Begin by engaging the students with a question: "Have you ever wondered why some plants grow better in some places and not in others?"  2. Share a simple story to pique their interest (when I was little, I wondered what happens to the watermelon/apples seeds, if I swallow them together with the fruit. Can it grow inside my stomach? What do you think? What do plants need to start growing?)  3. Explain that today, they will become soil detectives and learn about different types of soil and how they are used in farming. |
| 20 min | Activity 1: Soil Exploration:   1. play the video <https://www.youtube.com/watch?v=7h6psLfYA7w> to present 4 types of soil 2. After they watch, pass around small containers with samples of each soil type for students to touch and feel. Encourage them to describe how each feels (e.g., sandy soil is gritty, clay soil is sticky, loam soil is crumbly). 3. Have a discussion about their observations. Ask questions like, "Which soil feels best for making a mud pie?" and "Which soil is hard to dig in?" 4. Explain that farmers use different types of soil to grow different crops because some soil types are better for certain plants. |
| 20 min | Activity 2: Matching Soil to Crops:   * + - 1. Images of various crops such as corn, carrots, and wheat       2. Discuss with the students which type of soil they think is best for each crop. Encourage them to think about what they learned in the previous activity.       3. Have a fun matching game where students match each crop to the type of soil they believe is best for it. Use pre-printed cards with types of soil and crops for a memory game |

| Hands on activity / farm - based learning |
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| Timing | Description of activity |
| --- | --- |
| 25 min | Activity 3: Hands-on Planting  1. Prepare the classroom together with students:   * spread a painting cover foil flat on a carpet * put the containers with soil and different seeds/plants in the foil center.   2. Provide each student with a small cup and some soil (use the presented samples of sand, silt, clay and loam).  3. Let the students plant a seed or a small potted plant in the soil, instruct students to water them. Encourage them to take care of it and observe how it grows. Give the students markers to label their plants (name/type of soil/species of a plant)  4. Tidy up the classroom together  5. Place the plants on a window sill for further observation |
| 10 min | Summary - ask the students what they have remembered from the lesson. Encourage to play a soil game  <https://wordwall.net/pl/resource/7242347/science/soil-game>  Thank the students for their hard work |

## Module 5: Farm Life as an Out-of-School Learning Environment Storytelling

## Lesson Plan 2

SOIL TEXTURE

**Proposed Students Age Range: 3-5 years old**

| Purpose / Learning objective |
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| 1. \*\*Science:\*\* Understand the different soil types and their properties.  2. \*\*Engineering:\*\* Design a simple tool for soil testing.  3. \*\*Art:\*\* Create a visual representation of different soil layers. |
| Intersecting objectives |
| Develop teamwork and communication skills.  - Foster an appreciation for nature and agriculture.  - Encourage creativity through engineering. |
| Facilitation |
| This lesson will be conducted in a school garden, so ensure the garden is ready for the activities.  - Break the lesson into segments to keep students engaged.  - Encourage active participation, discussion, and hands-on exploration. |
| Ideas for follow -up |
| Visit a local farm or invite a guest speaker from the agricultural industry to share their experiences and knowledge with the students, connecting the lesson to real-world applications |
| Resources required |
| 1. Soil testing kits (pH testers, moisture meters, etc.)  2. Garden tools (shovels, rakes, buckets)  3. Paper, markers, and colored pencils  4. Data collection sheets  5. https://wordwall.net/resource/61400455  For each student - a jar with a lid |
| Source / The day of the lesson: Materials & Class preparation |
| 1. Set up the school garden area with labeled sections for different soil types (sandy, loamy, clayey).  2. Ensure all soil testing kits are in working order.  3. Prepare data collection sheets for each student.  4. Arrange seats for a classroom discussion at the beginning and end of the lesson. |

| Implementation |
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| Timing | Instructions step by step |
| --- | --- |
| 15 min | Gather students in a classroom setting.  - Discuss the importance of soil in farming.  - Share the lesson objectives.  - Conduct a brief discussion on what students already know about soil. |
| 20 min | Activity 1  Head to the school garden.  - Divide students into groups, assigning each group a soil type (sandy, loamy, clayey).  - In their groups, have students use garden tools to dig and collect soil samples from their assigned sections.  - Encourage students to observe and describe the texture, color, and moisture of the soil.  - Discuss their findings as a class. |
| 15 min | Activity 2  Introduce soil testing kits.  - In their groups, guide students in using the kits to test pH levels and moisture content of their soil samples.  - Record the results on data collection sheets.  - Discuss how technology helps farmers determine the right conditions for different crops. |
| 30 min | Activity 3  Method 1:  The Jar Test -   * let the students fill their glass jars halfway with their soil samples * fill the remaining part with water * attach the lids, then shake the jars vigorously until there are no more any chumps of soil * set the jars aside to rest for 24 hours (if you need to speed up, add soap dish to the water, so the process will take 30 minutes) * after it rests, your jar’s content will have settled into different layers (sand, silt and clay) * by measuring the height of the layers, you can verify the quality of your soil (the best proportions are 30% sand+40% silt+30%clay)   Method 2:  The Squeeze Test  To determine your soil type, take a handful of moist (but not wet) soil from your garden, and give it a firm squeeze. Then, open your hand. One of three things will happen:   * It will hold its shape, and when you give it a light poke, it crumbles. Lucky you—this means you have luxurious loam! * It will hold its shape, and when poked, sits stubbornly in your hand. This means you have clay soil. * It will fall apart as soon as you open your hand. This means you have sandy soil.   Now that you know what type of soil you have, you can work on improving it |
| 10 min | Conclusion and discussion  Gather students back in a classroom setting.   * Play <https://wordwall.net/resource/61400455>   - Discuss what they learned about soil types and their role in farming.  - Encourage questions and reflections.  - Remind to check on the jars the next day. |