

*Creating an ECO online Natural Fit Virtual Programs to Prepare Students for
boosting 21st century Skills 4 the Future (UNITY)*

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*STE(A)M-focused PBL for transferring 2021st skills for fighting against
climate change*

LESSON PLAN 2: Healthy soil, healthy food!

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Lesson procedure:

Date:	__/__/__
Teaching staff:	Mr/Mss/Ms
Term:	2022-2023
Week:	1
Year Level:	Primary/low secondary
Time/length	Project day (one school day)
Key Learning Area:	Use of soft skills for climate change and blending interdisciplinary subjects, including science, math, art and social studies
Topic/focus:	Prevent soil pollution
Lesson Name: Healthy soil, healthy food!	
Foreseen Outcomes:	
At the end of this lesson, students will be able to:	
<ul style="list-style-type: none"> ✓ define types of soil ✓ define compost ✓ describe tools for soil cultivation ✓ describe difference between soil cultivation now and then ✓ units of measurement used for measuring grounds ✓ design posters and poems, relevant to topic, ✓ improve their social skills, including group communication, interaction and discussion, improve their soft skills such as design thinking, critical thinking, decision making, efficient use of resources. 	
Lesson Description:	
This lesson shall demonstrate:	
<ul style="list-style-type: none"> ● What types of soil exist? ● What is compost? ● What tools did we use for soil cultivation in the past? ● What tools do we use for soil cultivation nowadays? ● What are the units of measurement used for measuring grounds? ● How to produce your own food? ● How to create a flower pot? 	
Prerequisites to this lesson plan (not applicable):	

Length (Lesson procedure):

This lesson is organized as a school project day and will take 6 hour, which also includes interdisciplinary learning.

Depending on how to implement the planned lesson, the teacher will need some ICT materials (computers, tablets, etc.) and other building materials for the School flower garden. The teaching staff shall follow the following steps to implement the lesson successfully:

Step 1. Lead in:

Teacher greets the students, and asks them to think about the importance of soil in everyday life. After collecting the feedback from the students, the teacher asks for grouping in accordance with the students' learning intelligence and or learning style. Here, teacher group students as:

- ✓ Group A: 2-3 students, having science learning interest/intelligence/capability/style
- ✓ Group B: 2-3 students, having technology learning interest/intelligence/capability/style.
- ✓ Group C: 2-3 students, having engineering (creativity) learning interest/intelligence/capability/style.
- ✓ Group D: 2-3 students, having art learning interest/intelligence/capability/style.
- ✓ Group E: 2-3 students, having math learning interest/intelligence/capability/style.

Note: As grouping the students, the number of students can change according to the class-size.

Lesson standard:

- ✓ The lesson is standardized around STEAM focused PBL for transferring 2021st skills for fighting against climate change. Here, we focus on understanding the importance of clean and healthy soil and how to prevent its pollution.
- ✓ Through creating and performing, students will gain knowledge about how healthy soil is important for human existence.
- ✓ Regarding this, it can be expected that understanding of the topic will lead students to work on taking more care to prevent soil pollution.

Common Core State Standards:

The teacher shall connect and correlate the lesson with the national syllabus and or program, which shall incorporate the lesson with the national curriculum.

Enduring Understandings:

The students will understand the core ideas and philosophy behind the prevention of soil pollution. Also they will find out what can be done to prevent soil pollution and have healthy food. Students will understand their role of doing it in everyday life. The learning outcomes of the lesson shall be used by the students in their future life and incorporated in their local communities. Besides, the lesson is connected with following areas:

- ✓ soft skills development,
- ✓ interdisciplinary learning,
- ✓ blended/hybrid learning,

The lesson will also answer the following questions:

- ✓ Is the lesson transferable for skills development?
- ✓ Can it be teachable over and over again?
- ✓ Does it connect to real-life issues?

Essential Questions:

What types of soil exist?

What is compost?

What tools did we use for soil cultivation in the past?

What tools do we use for soil cultivation nowadays?

What are the units of measurement used for measuring grounds?

How to produce your own food?

How to create a flower pot?

Before the lesson implementation, the teaching staff shall brainstorm the above questions with the colleagues at the same school.

Case section:

The teacher shall follow the following steps:

1. Teacher writes Soil on the board and reads it to the students. Then he/she asks them to think and tell how important it is to have healthy soil.
2. Teacher asks students to brainstorm what would happen if all soil gets polluted. Students can give their answers freely by raising their hand.

'Step 1. Lead in'. Each question is asked to the students who are grouped from A to E. Each group should have a tablet or a computer.

Questions for group A (Science-minded students):

- ✓ Look for the definition of a soil?
- ✓ What are the types of soil?
- ✓ Research soil composition.
- ✓ What affects soil fertility?

Questions for group B (Technology-minded students):

- ✓ Research the types of natural and artificial fertilizers?
- ✓ Research tools for soil cultivation
- ✓ What is compost?
- ✓ How is compost made?

Questions for group C (Engineering-minded students):

- ✓ Describe soil cultivation in the past.
- ✓ Describe modern machines to cultivate soil.
- ✓ What are the advantages of modern machinery?
- ✓ What are the disadvantages of modern machinery?

Questions for group D (Art-minded students):

- ✓ Can you design a poster and a slogan to prevent soil pollution?
- ✓ Can you compose haiku poems about the soil?
- ✓ Research the internet and find a video about modern cultivation machinery.

Questions for group E (Math-minded students):

- ✓ Research the internet and find all area units of measurement in your country
- ✓ Search for area units of measurement in other parts of the world.
- ✓ What are measuring instruments used for ground measures?
- ✓ Measure the school ground.

When all groups are done each group presents their findings to the rest of the class. Students from other groups when each presentation is over are free to ask questions.

'Step 2. Make it real''

To see real effects of how different substances can pollute soil, students will conduct an experiment. For the experiment they need 2 jars of water and several flowers. In the 1st jars they will add different chemicals like detergents and products for bathroom washing and in the 2nd one only water. Students will observe the changes on the flowers in each jar and how fast will the flowers die in each of them.

Students will also plant several flower pots and take good care of them. [Plant flower pots](#)

Skill focus:

During the lesson, Cognitive Skills, Decision Making, Problem solving, Creative Thinking and Interpersonal Skills will be the focus.

Content:

The content of the unit is based on the disciplinary or topic-area concepts.
Building Knowledge through learning by doing.

Assessments:

Describe the diagnostic, formative, and summative assessments employed in this lesson to gauge student learning.

Evidence of Student Learning:

Provide a list of the process documentation that you plan to acquire during the course of the lesson. These may include photographs of students engaged in learning, drafts of student work, quotes from students, interviews of students, video, etc.

Texts/Resources:

The collection of short and extended works aligned to the standards and content. Examples: materials for the flower pots and seeds.

Learning Activities:

A series of tasks the student will engage in over the lesson. The activities are based on what students need to understand and be able to do for the performance and are aligned to the defined standards **"Healthy soil, healthy food"** and the essential questions defined under **Case section**.

Practice:

Teacher will deeply explain the roles and importance of the environmental impact of soil pollution. Here, the teacher shall elaborate or describe the lesson using these prompts provided.

The teachers shall create a flexible learning environment for the students. Here, the teacher uses:

Warm-up: ask about the questions and make the students ready for learning for the topic-specific subject.

Practice: The teacher sets-up demonstration/modeling (I do-we do-you do)
Studio/Rehearsal/Workshop (students engage in creating/planning/refining).

Clean-up: During the procedure, the teacher walks around the class and observes the students on what they need and control. If the students have questions, the teacher answers them.

Presentation of Work

Suggested Extensions:

Flower pots can be used as a present for Mothers day.