

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

*2021-1-SE01-KA220-SCH-000032448*

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

**LESSON PLAN 10: Fossil fuels**

*Presented by Osnovna škola Glina*

## Lesson procedure:

<b>Date:</b>	__/__/__
<b>Teaching staff:</b>	Mr/Mss/Ms
<b>Term:</b>	2022-2023
<b>Week:</b>	1
<b>Year Level:</b>	Primary/low secondary
<b>Time/length</b>	Project day (one school day)
<b>Key Learning Area:</b>	Use of soft skills for climate change and blending interdisciplinary subjects, including science, math, art and social studies
<b>Topic/focus:</b>	Fossil fuels
<b>Lesson Name:</b> Fossil fuels	
<b>Foreseen Outcomes:</b>	
At the end of this lesson, students will be able to:	
<ul style="list-style-type: none"> <li>✓ define fossil fuels</li> <li>✓ define Greenhouse effect</li> <li>✓ describe how Acid rain occur</li> <li>✓ describe fossil fuel finding places</li> <li>✓ describe exploitation and processing of fossil fuels</li> <li>✓ design posters and artworks, relevant to topic,</li> <li>✓ 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.</li> </ul>	
<b>Lesson Description:</b>	
This lesson shall demonstrate:	
<ul style="list-style-type: none"> <li>● What are fossil fuels?</li> <li>● What type of fossil fuels exist?</li> <li>● What is the Greenhouse effect?</li> <li>● What is Acid rain?</li> <li>● Where can we find fossil fuels?</li> <li>● What are the ways of exploration and processing of fossil fuels?</li> <li>● What effects fossil fuels have on climate change?</li> </ul>	
<b>Prerequisites to this lesson plan (not applicable):</b>	

### 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 materials for the dance play. 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 fossil fuels. 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 using fossil fuels as little as possible in everyday life.
- ✓ Through creating and performing, students will gain knowledge about how using less fossil fuels is important for human existence.
- ✓ Regarding this, it can be expected that understanding of the topic will lead students to use more renewable energy sources in the future.

### 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 fossil fuels. Also they will find out what can be done for people to use them less. 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 are fossil fuels?
- What type of fossil fuels exist?
- What is the Greenhouse effect?
- What is Acid rain?
- Where can we find fossil fuels?
- What are the ways of exploration and processing of fossil fuels?
- What effects fossil fuels have on climate change?

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 fossil fuels on the board and reads it to the students. Then he/she asks them to think and tell them how important it is to produce less fossil fuels.
2. Teacher asks students to brainstorm what would happen if we stop using them as much as we do now. 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):

- ✓ What are fossil fuels?
- ✓ What type of fossil fuels exist?
- ✓ What is Acid rain?
- ✓ What effects fossil fuels have on climate change?

Questions for group B (Technology-minded students):

- ✓ Describe the process of fossil fuel combustion.
- ✓ What is the Greenhouse effect?
- ✓ How does acid rain occur?

Questions for group C (Engineering-minded students):

- ✓ Research fossil fuel finding and exploitation places.
- ✓ How can fossil fuels be transported?
- ✓ What are the ways of processing fossil fuels and their main products?

Questions for group D (Art-minded students):

- ✓ Can you design a poster and a slogan to prevent use of fossil fuels?
- ✓ Can you produce artwork made with charcoal sticks?

- ✓ Research the internet and find videos of oil pollution.

Questions for group E (Math-minded students):

- ✓ Research the internet and find the unit of measurement for oil products.
- ✓ Research the internet and find data about oil production in the world by country.
- ✓ Create an Excel chart with countries data.
- ✓ Research the internet and find data about oil prices in the past 10 years.
- ✓ Create a linear graph using the data.

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''

Students will produce dance play. Working together they have to create a choreography that will last up to 3 minutes. Also they need to research the internet and find music for their dance play. The topic of the dance play will be the rain and how it helps our planet Earth to be healthy and prosperous. When done, students will record a video and put it on the school website.

### 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 dance play.

### 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 "Fossil fuels" and the essential questions defined under **Case section**.

### Practice:

Teacher will deeply explain the roles and importance of the environmental impact of using less fossil fuels. 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:**

Organize a bicycle ride or any other vehicle like a romobile that doesn't use fossil fuels.