

GREEN AGRIpreneurs of Future

STEM and AI Theme: Sustainable Agriculture

STEM Activity Plan

Country:	Poland
Teachers' Names:	Iza Kołacińska
Subject Title:	The importance of plants in the process of air purification and oxygen production.
Learning Objectives/ Goal:	<p>It lists the sources of air pollution.</p> <p>It defines the concept of photosynthesis.</p> <p>It explains the importance of photosynthesis for air quality.</p> <p>It lists local actions to reduce carbon dioxide emissions.</p> <p>In the drawing, it marks the elements of the tree's structure.</p> <p>It explains the role of plant organs for the tree and human economy.</p> <p>It analyzes the factors necessary for plant germination.</p> <p>It involves the cultivation of oxygen trees.</p> <p>He gives the advantages of growing oxygen trees.</p>
Related Outcomes:	Science: <p>It lists plant organs and explains their functions.</p> <p>Identifies sources of air pollution.</p> <p>It defines the concept of photosynthesis.</p> <p>It explains the impact of photosynthesis on the state of the air.</p> <p>Conducting an experiment of photosynthesis in a Canadian marsh.</p> <p>Establishing the cultivation of oxygen trees from seeds.</p>
	Technologies: <p>Completes and reads QR codes using tablets.</p> <p>Solves interactive tasks (LearnigApps) after scanning a QR code.</p> <p>Learn about the possibilities of slide encryption in Genially.</p> <p>It uses the interactive design Genially.</p>

	<p>Engineering:</p> <p>He plans and executes the design of an irrigation system made of paper pipes.</p>
	<p>Mathematics:</p> <p>Performs addition, subtraction, multiplication, and division operations up to 100 taking into account the order of operations.</p>
	<p>Other:</p> <p>He takes part in teamwork.</p> <p>He shares his own ideas.</p> <p>He analyzes ideas and chooses the best one.</p> <p>It effectively presents the product.</p>
Grade:	3rd class
Duration:	90 minutes
21st Century Skills:	<p>Communication and collaboration.</p> <p>Technology and media literacy.</p> <p>Creativity and innovation.</p> <p>Learning skills.</p> <p>Personal development.</p>
Learning Approach:	<p>Project-based learning.</p> <p>Collaborative learning.</p> <p>Active learning through play.</p>
Duties (Student and Teacher roles):	<p>The teacher acts as a guide and directs the students by asking them questions.</p> <p>On the other hand, students take on the role of researchers, question the topic and its effects, and create their own projects, developing proposals for solutions.</p>
Materials and Technologies to use:	<p>Tablets</p> <p>Letter cards</p> <p>QR codes, black markers</p> <p>Flower pots, cotton wool, oxygen tree seeds, water</p>

	<p>Blue balls, cardboard pipes, duct tape</p> <p>Aquatic plant (Canadian marsh), 2 beakers, boiled water, sparkling water</p>
<p>Lesson Plan According to 5E Learning Model</p>	<p>Engage-Enter - Duration: 5 minutes</p> <p>The teacher says that today's topic of the lesson is hidden as an audio puzzle. He plays the sounds of the wind to the students.</p> <p>The children come to the conclusion that today we are going to talk about wind, and after a few auxiliary questions, the word AIR appears.</p>
	<p>Exploration - Duration: 12 minutes</p> <p>Students conduct an experiment with Canadian marsh. Put the water plant into the beaker with boiled water (no CO₂) and into the beaker with sparkling water and irradiate.</p> <p>https://www.youtube.com/watch?v=JqcgTU9MSR0</p> <p>Students will think about what kind of gas is emitted from the leaves in the form of bubbles and what process takes place.</p>
	<p>Explain-Time 30 minutes</p> <p>Students point out the parts of the plant on the Genially presentation, determine their functions. According to the instructions, they point to the crown of the tree on the slide as the center of photosynthesis. The teacher briefly explains this process. Pointing to the crown of a tree redirects the presentation to a YT video. From the film, students learn about the sources of air pollution and what local actions can be taken to counteract it. Students and their teacher wonder about the importance of carbon dioxide uptake and oxygen release by plants on the state of the air. The teacher introduces the concept of "oxygen trees" and briefly explains their advantages.</p>
	<p>Elaboration-Duration Time 30</p> <p>The next task is to find paper letters in the room. The created password will allow you to start the next slide with a hint.</p> <p>On the uncovered slide, there is a command to find the box with the green leaf. The box contains oxygen tree seeds, pots, cotton wool, and water. The students sow seeds.</p> <p>After sowing, the students plan and execute a design of the water supply system modeled on aqueducts. The material is cardboard pipes, duct tape and all available items from the classroom.</p>

	<p>Evaluation-Time 13</p> <p>After completing the task, students in pairs receive unfinished QR codes. To complete them, they must paint over the numbers, which are the results of mathematical problems. (Annex 1) Properly colored code is read by tablets and redirected to the summary task from the LearnigApps application.</p>
Related Resources:	<p>You Tube</p> <p>LearnigApps</p> <p>Genially</p> <p>Mal-den-code</p>
References:	<p>You Tube (https://www.youtube.com/watch?v=JqcgTU9MSR0, https://www.youtube.com/watch?v=SYCWhBw6gzw)</p> <p>LearnigApps (https://learningapps.org/watch?v=pnqmjj9fa25)</p> <p>Genially (https://view.genially.com/5f9dc07199153e0d7b53af4a/social-action-apat-projekt)</p> <p>QR Code Creation: https://mal-den-code.de/</p>

Annex 1

Pokoloruj cyfry, które są wynikami działań:

(Color the numbers that are the results of the operations):

$$21 - 4 \times 5 = \dots\dots\dots$$

$$9 : 3 = \dots\dots\dots$$

$$16 : 2 - 2 \times 2 = \dots\dots\dots$$

Zeskanuj tabletem.

Scan with tablet

