Lesson Plan

2023-1-SK01-KA220-SCH-00015112

Topic	Environmental Awareness and Technology	
Block Title	EcoTech: Exploring Environmental Awareness through Technology	
Age category 7-15	**Duration (min)** 120 min	**Number of teaching hours** 3

Student-oriented educational goals (content and performance standards)

Educational Goals:

- Understand the Role of Technology in Environmental Conservation
- Explore how digital tools and emerging technologies contribute to environmental protection and sustainability
- Apply STEAM principles to create solutions that address environmental challenges.

Didactic materials and didactic techniques

- PC with internet access, 3D World environment,
- Collaborative Tool like Google Jamboard.

References/Sources (videos, methodologies)

- Presentation on Environmental awareness

Motivational phase

Duration (min): 15 min

Activity: "Virtual Ecosystem Exploration"

Objective(student-focused):

Students will explore a virtual ecosystem (forest, ocean, or city) where they can see various environmental issues such as deforestation, pollution, endangered species, and climate change.

Task: As students move through the 3D virtual environment, they will observe different environmental problems and take notes on potential solutions they think technology could provide (e.g., pollution sensors, renewable energy solutions). The students should work in teams and collaborate with tools like Jamboard.

Follow Up: After the exploration, each team should work together to write a summary of their notes and deliver it to the teacher. The teacher can initiate a discussion in the classroom about the environmental problems they identified and those they missed and brainstorm on how technology could help mitigate or solve those problems.

Exploratory phase

Duration (min): 45 min

Activity: "Design Your Eco-Friendly Smart City"

Objective: Students will work in teams to design a sustainable smart city, integrating eco-friendly technology to minimize environmental impact.

Task:

Students should first do research for issues like waste management, pollution, and energy consumption, as well as the role of technology in addressing these challenges (e.g., renewable energy, smart waste management, green architecture).

Based on what they learned they should use the 3D virtual environment to design a smart city that incorporates sustainable solutions such as renewable energy sources (solar, wind, etc.), smart transportation systems (electric vehicles, bike lanes), and waste reduction strategies (smart bins, recycling). They should try to simulate how their smart city's technology reduces environmental impact. For example, they could create a solar-powered city or use smart systems to monitor air

and water quality.

Finally, each team should reflect on how their smart city promotes environmental sustainability and prepare a short presentation about the technologies they found most impactful in protecting the environment.

Fixation phase (consolidation and deepening)

Duration (min): 60 min

Activity: "EcoTech Challenge: Innovating for the Environment"

Objective: Students will select an environmental problem and design a technological solution to address it, focusing on sustainability and conservation. For example two possible scenarios are “Smart Ocean Clean-Up Technology” and “Urban Air Quality Monitoring System” but the students should be encouraged to come up with their own ideas.

Description:

The first part of this activity concerns the selection of the problem. Students should write a presentation about the selected environmental issue (for example pollution, waste, or deforestation) and identify how technology can provide a solution (for example AI can be used for monitoring deforestation, drones can be used for planting trees).

Then students should brainstorm about the solutions, considering which technologies can be leveraged to create a positive environmental impact. Based on this, they should design a prototype of their solution using the 3D virtual environment. Using the virtual world, students will simulate how their technology addresses the chosen environmental problem. For example, they could create a virtual robot that monitors and collects plastic in the ocean.

Each Team should make a presentation of the selected issue to the class, demonstrate their implemented solution in the Virtual World and explain how it addresses the environmental issue and how technology can make a significant difference. Finally, students should use feedback from their peers and the teacher to improve their designs.

Student Assessment

Each team can be assessed based on their performance on the following tasks:

- Identifying all the issues in the Virtual Ecosystem
- Depicting environmental challenges in the designed Smart City
- Applying suitable solutions for the challenges in their Smart City
- Description of the selected environmental problem.
- Design of a prototype for positive impact
- Presentation of their work in classroom

Annexes:

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