GREEN AGRIPRENEURS OF FUTURE

STEM and AI THEME: SUSTAINABLE AGRICULTURE

STEM ACTIVITY PLAN

Country:	Poland
Teachers' Names:	Katarzyna Muras
Subject Title:	Purification and recovery of water needs for growing plants.
Learning Objectives/Goal:	Raising awareness of the importance of water in plant cultivation and its purification.
Related Outcomes:	Science: 1. Reminder of the water cycle in nature a discussion of the role of water in agriculture 2. Getting to know the term water footprint 3. Learning how to reduce your water footprint.
	Information Technology: 1. Designing a crop observation card using canva 2. Reading qr codes 3. Evaluation using mentimeter
	Engineering: 1. Construction of water purification filters and water recovery systems.
	Maths: 1. Calculating water consumption in a household for one person and for the whole family.
	Others: 1. Establishing tomato, pepper and radish cultivation
Grade:	5th Grades
Duration:	6 weeks
21st Century Skills:	Teamwork and collaboration, using technological tools effectively, critical thinking and problem solving, data literacy, digital literacy, creativity and innovation, entrepreneurship and self-management.
Learning Approach:	Learning by doing and experiencing, research, cooperative learning, learning by discovery.
Duties (Student and Teacher roles):	Teacher: guidance, project planning and evaluation. Student: Idea generation, research, design, implementation and reporting.

Materials and Technologies to use:	1. Tomato, pepper and radish seeds, soil, water 2. Notepad and pens 3. Stones, sand and activated carbon, cosmetic pads, plastic bottle 4. A sample of water from the park pond 5. Computer, canva, tablets 6. Scanner qr code 7. Materials for conducting an experiment with the water cycle
Lesson Plan According to 5E Learning Model	Engage – enter**:** 20 min The teacher asks the students to think about what the topic of the project could be based on the experience conducted. After a short brainstorming session, students guess the topic of the lesson and describe the water cycle in nature. Each group has to put together a puzzle, and then they watch a film as a summary of this part.
	Exploring – duration: 20 min Students work in groups to come up with ways to save water. Getting to know a new water footprint term. Water consumption calculation in the production of trousers, dresses, shoes. Calculation of water consumption during the day and water consumption for household activities during the week.
	Explain:30 min The teacher asks if the students know how to purify water? Students work in groups (4 people) to invent ways to purify water. The group that successfully identified water purification methods receives a QR code. İn addition to storing the QR code, students are tasked with building a simple water purification filter. Students try to filter water from a pond.
	Elaborate: 6 weeks Establishing tomato, pepper and radish cultivation. Comparison of seed germination in a greenhouse and in a school on w windowsill. Designing a plant observation sheet on canvas. After the seeds have germinated, the students take the seedling home and look after, observe, care for them and water them. Complete the observation sheet.

	After 6 weeks, the students bring the plant to school and we plant it in the school garden. (In Poland , there are frosts until mid- April which can destroy seedlings, so students take them home)
	Evaluate: Students complete a survey summarizing the project. School vegetable growing is being established.
Related Resources:	Online videos, general network
References:	