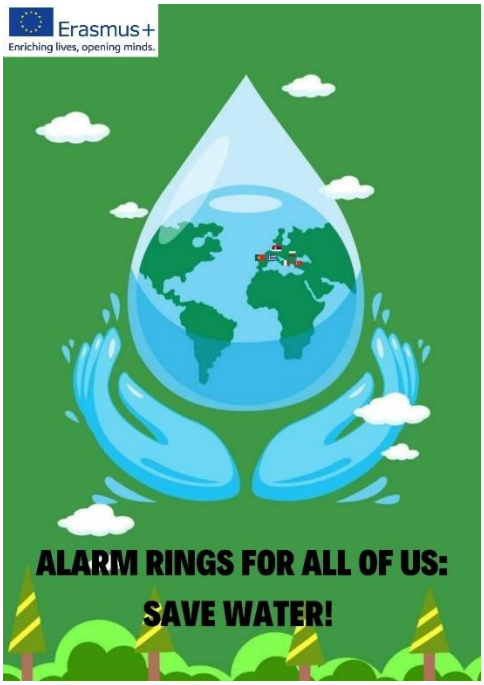
ERASMUS+ PROJECT "ALARM RINGS FOR ALL OF US: SAVE WATER!" - 2022-1-BG01-KA220-SCH-000085699



Environment and Water Pollution Curriculum

Water – The Key to Life: Properties, Importance, and the Environmental Impact of Water Scarcity and Pollution

Bulgaria – Turkiye – Serbia – Portugal – Italy – Greece

Co-funded by the European Union

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Environment and Water pollution **Curriculum** ***Water – The Key to Life: Properties, Importance, and the Environmental Impact of Water Scarcity and Pollution***	
Description and application of the curriculum	The curriculum is structured to be highly adaptable, enabling educators to select specific topics, lesson plans, and activities that best fit the age, needs, and prior knowledge of their students. Teachers are encouraged to use the curriculum as a framework to create engaging and relevant learning experiences that align with their local educational standards and cultural contexts. By offering a diverse array of content and teaching strategies, this curriculum aims to foster a deep understanding of water's significance and to inspire students to take an active role in addressing global water challenges. Whether in urban or rural settings, in developed or developing countries, educators can utilize this program to empower the next generation of water stewards. This curriculum serves not only as an educational tool but also as a catalyst for discussion and action on the vital issues of water scarcity and pollution facing our planet today.
Aim	The curriculum "Water – The Key to Life: Properties, Importance, and the Environmental Impact of Water Scarcity and Pollution" aims to provide students with a comprehensive understanding of water's essential role in sustaining life. It explores the unique properties of water, its significance in ecosystems and human society, and the critical issues of water scarcity and pollution. Students will examine the causes and consequences of water shortages and contamination, developing awareness of the need for sustainable water management. They will also critically assess the economic and social impacts of water-related challenges, fostering a sense of environmental responsibility and action toward water conservation.
Outcomes	Upon completion of the curriculum students will be able to: • explain the molecular structure, physical properties (such as boiling point, freezing point, and solubility), and chemical behavior of water, understanding how these characteristics contribute to its unique role in natural processes. • understand and describe water's essential role in cellular functions, metabolism, and sustaining life in organisms, including its role in plant photosynthesis and maintaining homeostasis in living beings.

	• analyze the distribution of water resources on Earth and assess the economic importance of water in agriculture, industry, and human settlements, understanding how water availability influences economic development and regional stability. • evaluate the role of water in ecosystems, exploring aquatic habitats, biodiversity, and the impact of human activities (such as pollution and climate change) on water systems and ecological balance. • explore how water has shaped human civilizations, discussing historical and contemporary water conflicts, cultural practices, and the social impact of water access, scarcity, and management in different regions and time periods.
Age	12 -18
Number of classes	Up to 28

Areas	• **Physical and chemical characteristics of water**
	  ○ Water molecule – properties, polarity and hydrogen bonding
	  ○ Density of water and ice. Thermal and optical properties of water
	  ○ Amphoteric nature of water. Electrical properties of water.
	  ○ Cohesion and adhesion
	  ○ Water properties (a gamıfıcatıon approach)
	• **Biological importance of water**
	  ○ Importance of water for maintaining hygiene
	  ○ Importance of water for the human body
	  ○ Water as a living environment
	  ○ Water as medicine
	• **Geographical - economic importance of water**
	  ○ The Geographical and Economic Importance of Dams
	  ○ Dıseases transmıtted by water and their Impact on Geography and Economics
	  ○ Waterborne Diseases and Public Health
	  ○ From dry landscapes to water ones
	• **Water ecology**
	  ○ Climate Change and Its Impact on Water Ecosystems
	  ○ The Water Cycle and Its Impacts on Ecology
	  ○ Water Pollution and Its Effects on Aquatic Life
	  ○ River ecology and dam impacts
	  ○ Invasive species in aquatic environments
	  ○ Microplastics and their impact on water ecosystems
	  ○ Aquatic ecosystems and food chains
	• **Social and historical importance of water**

	○ Water wars ○ Symbolic value of water in art ○ Water disasters: historical cases and contemporary policies ○ The role of water ın world relıgıons
Methodology	● Flipped classroom ● Project - based learning ● Problem- based learning ● Gamification ● Learning by doing ● Peer to peer ● Debates
Cross-curriculum competencies of students	● Artistic and cultural awareness and expression ● Awareness of national and European water policies ● Acquisition of habits and practices of sustainable water use ● Acquisition of a civic attitude towards the use of water ● Historical evolution of water treatment processes ● Competence for lifelong learning ● Responsible attitude towards the environment ● Digital competence ● Work with data and information ● Problem solving ● Cooperation ● Communication ● Responsible attitude towards health ● Responsible participation in a democratic society

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