Sustainable Learning through Outdoor Activities

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Arsakeio Lyceum of Patras, Greece[1, 2, 3, 4, 5, 6, 7]

Abstract

In Arsakeio Lyceum of Patras, a school that is part of a wider educational organization, the most historic in Greece (The Society for Promoting Education and Learning) we are constantly trying to enrich the educational process with innovative teaching methods such as flipped classroom and digital platforms but also we try to carry out outdoor activities that bring students closer to the environment and also cultivate co-educational methods of learning. Thus our partnership with University of Patras and its departments provided us with environmental suggestions and gave us a motivation to create an open area sustainability park including three outdoor learning classes (Biology, Geology and Physics) and a small green house for Agriculture and more exhibits that we describe to the full paper. Moreover other institutes from our country help us establish in our school a meteorological station and a seismograph that now are been connected with the national meteorological network as well as with the national geodynamic institute of Greece. The basic aspect of that paper is to share with the delegates of the conference our experience of the impact of the new approach of learning "by doing" to our students and investigate ways of developing the sustainable park with new exhibits or activities that combine sports activities, science teaching and more

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Introduction

The SUSTAINABLE SCHOOL is an visionary school that operates as a community [1]. It is based on communication and collaboration among all members of the school community, and in the everyday school life. It provides opportunities for everyone (students, educators, administration, parents, local community) to engage with common goals and their sustainable management in a spirit of teamwork and participation [2]. A sustainable school serves democracy and human rights, promotes culture and the environment, and shapes active and creative citizens. Our School, during the school year 2022-2023,as well as the oncoming school year 2024-25 acquired the label of a Sustainable School for the next three years under very difficult conditions due to the pandemic. The effort continues with actions that further strengthen sustainability based on outdoor learning activities performed in Arsakeio Sustainability Park established to Patras Greece.

Necessity – Objectives

We focus on the holistic transformation of the school into a learning and collaboration organization, and based on this vision, we have built the philosophy of the Sustainable School action plan: Everyone Cares, Everyone Participates.

Another key objective of ours is for our team to serve as a connecting link among various partners who are driven by our common vision or serve some aspect of it. Our partners include educators from participating schools, education officials, university professors, experts, members of other programs, educational services, etc. Each partner contributes with their specific expertise and competencies.

Through our actions (seminars, conferences, publications), we aim to create the content with which we can support our students in their transformation efforts and the local community inspired by our principles.

Actions & Implementation Timeline

For the better organization of the sustainable school, the introduction of sustainability has been organized around eight pillars of sustainability: a) Democracy and participation in the school. b) Improvement of the learning framework. c) Promotion of culture and arts in the school. d) Sustainable building and increasing biodiversity in the school. e) Policy for energy conservation and transportation to and from the school. f) Rational management of natural resources (water, materials, and waste). g) Promotion of health in the

school. h) From local to global scale. A key element for building the sustainable school is the collaboration initially of educators who constitute the pedagogical team and the action team, and then of students, parents, representatives of local government, etc., to form the Sustainable School team [3].

The pedagogical team of educators in the school devises the school's strategy and makes decisions regarding the primary needs that need to be met and the issues to be addressed in order to transform the school into a sustainable one. Additionally, the pedagogical team plans how to approach the goals set by the action team of educators in an interdisciplinary and intercultural manner. Finally, the action (control) team monitors and evaluates the degree of implementation of the action goals based on the timeline. The expanded school schedule allows for the implementation of Environmental Education, Health Education, and Cultural topics programs that promote the idea of sustainability in education and are in line with the eight pillars identified as key actions for the implementation of the action.

Success Criteria for the Action

The pedagogical team of our school, with the motto "we all care, we all participate," aims to design the process for transforming the school into a sustainable one. This includes setting qualitative criteria that will serve as "road signs" for each school on this journey. To facilitate the design and implementation of action plans, the creation of eight sustainability pillars in the school is proposed, with the first and most important being the Pillar of Democracy and Participation.

The qualitative criteria for sustainability in the school encompass several key areas. First, it emphasizes active participation and collaboration by facilitating the involvement of all school community members in decision-making and encouraging collaborative actions and initiatives. Second, it highlights the importance of democratic processes through transparent and equitable decision-making. Third, it focuses on ensuring quality education by incorporating sustainability principles into high-quality educational programs and continuously improving and adapting educational methods and content. Fourth, it underscores the need for social and environmental awareness by integrating these aspects at all educational levels and developing actions that promote social responsibility and ecological consciousness. Fifth, it advocates for a holistic approach that links sustainability with all aspects of school life, integrating sustainability principles into all school activities and operations. Sixth, it calls for continuous professional development by providing opportunities for the ongoing training of educators on sustainability issues and promoting lifelong learning for all school community members. Lastly, it emphasizes the importance of evaluation and feedback through systematic assessment of sustainability actions and programs, using feedback for continuous improvement and adaptation of strategies. By adopting these pillars and criteria, the school can move towards transforming itself into a place that promotes sustainability, democracy, and the participation of all school community members.

Promoting Biodiversity in School Outdoor Areas

Every school has an outdoor area, and regardless of budget constraints or geographical location, engaging and meaningful outdoor activities can always be organized. For instance, students can participate in building birdhouses, creating small terrariums, or cultivating flowers to attract butterflies and bees. Additionally, establishing a small vegetable garden allows children to learn about growing their own food and experience the joy and fulfillment of observing plants thrive.

Fig 1 Open gardening area to Arsakeio Lyceum of Patras

Encouraging Students to Conserve Energy and Minimize Plastic and Paper Waste

Paper and plastic are among the most heavily used materials in schools, so it is crucial to promote their reduction not only among students but also among teachers and administrative staff. Increasing the use of e-books or promoting digital teaching platforms is an excellent option, as it reduces waste and lessens the weight of students' backpacks. Encouraging the reuse of paper, such as writing on the blank side of used sheets, and purchasing recycled or upcycled paper are effective ways to make progress with existing resources. Understanding how to reuse objects and materials is essential for reducing waste and promoting resource recovery. Schools can organize creativity workshops where students develop projects using recycled materials like plastic bottles, glass jars, newspapers, and various containers. There is no limit to the variety of objects that can be created, and such activities will be highly valued by students while fostering their ingenuity and creativity—skills that will be beneficial throughout their lives.

Fig. 2 Recycling plastic bottle caps to Arsakeio Patras (Primary and secondary school)

Collect Weather Data

A simple but effective environmental activity for kids that helps the wide world of science, collecting weather data for the Community Collaborative Rain, Hail, and Snow Network draws on those data and analysis skills while helping students to make predictions and see real-world connections to the work they're doing in math class.

Fig. 3 Meteorological station of Arsakeio Patras

Organise Nature Walks and Dialog Breaks

Students have numerous opportunities to gain a deeper understanding of environmental and sustainability issues through various initiatives such as Field Studies and Service Learning programs. Additionally, any activity that brings students into contact with nature serves as an excellent opportunity to teach the importance of environmental stewardship. Nature walks and similar activities provide valuable hands-on experiences that strengthen students' connections to the environment, encouraging them to move beyond merely discussing sustainability to actively engaging with it.

Fig. 4 Outdoor experiments concerning water consumtion

Exchange Good Environmental Practices through Europe

To further emphasize the importance of environmental and sustainability issues, invite guest speakers or visit environmental experts to share their knowledge with students. Hearing from professionals or other students in the field of sustainability, provides real-world perspectives and insights, making environmental issues more tangible and relatable. Additionally, these experts can help educators fill in any knowledge gaps, thereby creating a stronger foundation for future class discussions on environmental stewardship.

Fig. 5 Erasmus mobility to Latvia for Arsakeio Patras 10th grade students.

Initiate Sustainability Challenges and Competitions

Organize sustainability challenges or competitions within the school. Whether it's a waste reduction challenge or a project focused on renewable energy, friendly competitions can engage students and inspire innovative solutions. For example, students celebrated Earth Day in 2024, or Chemistry Day by creating bioplastics using everyday ingredients, building a vertical garden, and participating in a scavenger hunt to identify different plants found on campus.

Gamefication

The fight against climate change is prioritized, as the first and foremost aim is to raise environmental knowledge and awareness (EK&A) in school students. School aim in creating future adults with all the essential knowledge, understanding and critical thinking, as well as the practical skills needed to cultivate caring for nature so that they have the ability to actively work together to pause climate change and its consequences. In order to achieve this purpose, school definitely need the right tools, which are innovative tools for teaching practices and learning, that can transform teacher centered techniques to be more attractive for school students and simultaneously, help the student in rethinking learning as a process that does not have to be boring and uninteresting, but may instead be creative, engaging, and constructive. The teaching tool that we develop, and which stimulate teaching and learning practices is the 3Dimension Virtual World Learning Environment (3D VWLE).

The students' acceptance of this technology should be used to extend the pedagogical benefits of 3D environments. The project proposal is beneficial in merging the world of education with the possibilities that technology can bring, while also promoting environmental values and combating climate change. We may mobilize and apply a combination of knowledge, skills, and attitudes using 3D VWLE. Furthermore, the virtual environment allows for the development of previously determined curricular competences for a certain subject or course. The game's mechanics and challenges are designed to be tackled by multiple players, often requiring collaboration, strategy and communication. The game experience is usually more dynamic and unpredictable, as players can influence each other's progress and decisions.

Fig. 6. A 3D virtual world

Conclusion-Suggestions

These are just a few of the many steps that can be taken immediately to make schools more sustainable. Implementing recycling programs in every classroom can significantly reduce waste. Schools can also switch to energy-efficient lighting and install solar panels to decrease their carbon footprint. Introducing school gardens can teach students about growing their own food and the importance of local produce. Encouraging the use of reusable water bottles and lunch containers can further reduce single-use plastics. Additionally, schools can host workshops and events focused on environmental awareness. Promoting carpooling, biking, or walking to school can help reduce emissions from transportation. Integrating sustainability into the curriculum across subjects can provide students with a well-rounded understanding of environmental issues. These suggestions are simple, resource-efficient, and likely to receive support from parents who are increasingly aware of environmental concerns. By making these changes, schools can lead by example and foster a culture of sustainability within the community.

Teaching children sustainable practices from a young age will help future adults make more conscious and environmentally aware decisions. Children who learn about recycling, energy conservation, and the importance of biodiversity are more likely to carry these values into adulthood. Schools can incorporate lessons on climate change and its impacts into science classes to provide a deeper understanding of global challenges. Encouraging students to participate in local clean-up events or conservation projects can give them hands-on experience in making a difference. By celebrating Earth Day and other environmental observances, schools can emphasize the importance of ongoing environmental stewardship. Creating student-led environmental clubs can empower children to take initiative and develop leadership skills in sustainability. Schools can also invite guest speakers who specialize in environmental science to inspire students with real-world applications of what they learn in class. Encourage and inspire your students to adopt a more sustainable lifestyle and to take action against climate change. By doing so, educators can help shape a generation that is equipped to tackle environmental issues with knowledge, creativity, and a commitment to making a positive impact.

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