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Advocacy for Ecological Education in Romania Under the Information and Knowledge Society

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Authors' contributions

This work was carried out in collaboration among all authors. Authors BVC and MM designed the study, performed the literature searches and wrote the first draft of the manuscript. Authors MC and ALP managed the analyses of the entire study. All authors read and approved the final manuscript.

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ABSTRACT

Much has been written about ecological education, the term is associated with both sustainable development and the current principles of the Information and Knowledge Society. At the same time, proenvironmental education is intensely focused on developing the personality of today's students, the future active citizens of the community. In this sense, to show that the concern for the implementation and adoption of ecological education in the Romanian education system is a special one, we chose to synthesize and present a series of opinions, of those with concerns in the field, regarding the role and importance of education. ecological for the individual and implicitly for the community. Starting from the international level, where bodies such as the EU, UNESCO, UNEP, and FEM promote this approach, we came to interpret the vision of the Romanian

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education system, which more and more often, lately, transposes the principles of ecology applied in schools and communities. Also, the documentation of the study is based on papers and opinions from 2018-2021, associated with the activities of teachers, especially those in the pre-university environment. The summary of these interpretations and opinions shows that although environmental education still has a long way to go at the national level compared to other EU countries, there are still a lot of people and projects that support environmental education. All these elements show that we need such training, in the spirit of sustainable development of communities and in the harmonious development of the young generations of digital citizens.

Keywords: Appplied ecology; curricular configuration; digitization; educational perspectives.

1. INTRODUCTION

In recent decades, the process of globalization in almost all spheres of civilization has led to the aggravation of some aspects of communities, while bringing to the fore various problems resulting from human-environment interactions [1]. To overcome these problems and to implement community sustainable development policies, it is necessary to define, develop and adopt new concepts and techniques to study, understand, evaluate and manage the changes that occur. At the same time, it is necessary to support future generations for a harmonious evolution, in the spirit of resource protection and biodiversity conservation [2].

The protection of the nature, although it has accompanied man since ancient times as a voluntary concern, appeared sporadically after the first millennium BC. [2], however, remains, as a consistent form, the fruit of modern society. Thus, we show that we are responsible for the environment in which we carry out our activities, from which we earn our living, and where we are in fact administrators. We often forget these aspects and "allow" ourselves to spoil the perfection of the place. Inevitably, there are consequences. The most pressing consumer consequences of modern society (environmental urban sprawl, pollution, and excessive industrialization) - as a result of humanenvironment interaction - are complex and do not fall within the boundaries of a single area of interest [3]. The very dynamics of socialecological systems make them very difficult to manage, without a specific approach.

To prevent a disaster or to slow down environmental degradation, educational institutions can carry out environmental education actions every year, involving young people. These activities are an investment in our common future if we are to summarize the concerns of the Brundtland Report. We need to

invest in children from an early age, in this direction of environmental education, so that when they grow up they respect the environment; as the saying goes. Teach the child the way to follow, and when grows old he/she will not deviate from it [4]. The investment in children materializes in the adult aware of the effects of his actions, including the effects on the environment of which he is a part.

The idea that man is not separate from the environment, but is an integral part of it, draws attention to reality, that the existence of life, and therefore of man, is in a relationship of interdependence with the environment in which he lives. Life does not stop where the body ends but continues in everything around us, so the awareness that the environment is alive and dynamic comes as a necessity for maintaining a healthy ecosystem/organism.

In the sense of the above, the educational program entitled "Eco-Schools" has appeared. running for about 27 years (see Fig. 1), under the vision "a sustainable world in which education creates a positive change for all" [5]. It brings together 99 member organizations from over 70 countries and is coordinated internationally by the Foundation for Environmental Education (FEE) [4,5]. The Eco-Schools program is also supported worldwide by the European Union (UE), the United Nations Educational, Scientific and Cultural Organization (UNESCO), and the United Nations Environment Program (UNEP). This training program (Eco-Schools) is one of the largest sustainable education projects in the world, based on the themes of environmental education and health education.

The Eco-School program began worldwide as a pilot program in 1994, starting from the need to involve young people in finding solutions to the challenges posed by sustainable development at the local level [6]. For example, in 2018, more than 59,000 schools around the world participated in the program, of which 17,916 hold

the Eco-School Certificate and the Green Flag. At the same time, 19,800,465 young people and over 1,400,000 teachers are constantly developing this program worldwide [6].

In Romania, in recent years, following the idea that ecological education must be a process starting from preschool [7], the "Eco-School" program makes its presence felt and impact under the patronage of the Carpatho-Danubian Center for Geoecology (CDCG) [6]. Thus, its national transposition follows through the 8 proposed desiderata (awareness, knowledge, attitude. skills. involvement. collaboration.

change, and participation), the internationally agreed format (see Fig. 2) [8].

According to the educational policies in Romania, ecological education aims at presenting environmental data, correlations of values, problems, and solutions, all of which are related to ecology and the human-environment relationship. Knowledge of nature awakens the child's thinking and contributes to the development of creative ability, making the child meditate on the phenomena and entities around him [7].

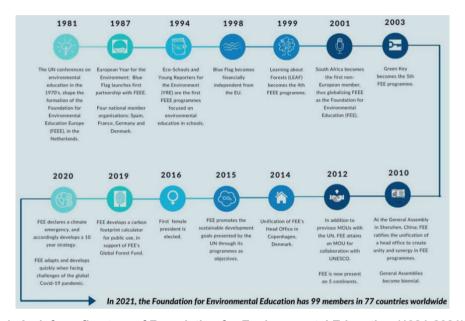


Fig. 1. An infografic story of Foundation for Environmental Education (1981-2021) [5]



Fig. 2. An infografic of the Seven Steps Framework and the Eco-Schools Themes [8]

2. MATERIALS AND METHODS

The present study started from the current state of knowledge on environmental education in the world and Romania, from the perspective of the main entities with a special role in its promotion. In this sense, the initial documentation on environmental education was made through the official platforms of the main actors involved (EU, UNESCO, UNEP, FEE, CDCG), to which are added other bodies with concerns in the field.

Regarding the configuration of the plea for the adoption and implementation of environmental education in Romania, it is based on a series of articles written mainly by teachers from the pre-university environment. Among their concerns is the promotion of the ecological spirit, a favorable element for the development of young people's personality. The present study aims to make a collage of opinions on their perception of the adoption of ecological principles in the classroom, it is known that each of those involved has implemented at least one activity specific to ecology.

3. RESULTS AND DISCUSSION

We all know that health is the most precious good, being a necessity of the human body, which has a responsibility to maintain throughout life [7]. It would not be an exaggeration to say that the planet is a living organism. Like any organism, the quality of its health depends on the health of the organs. Viewed in this way, the environment no longer seems as something separate from man, but the body itself, the body of which man is a part.

Just as neglect, or rather, destruction of the body, leads to the loss of health and life itself, in the same way, the excessive wear/tear of the environment leads to the same effects, which ultimately means self-destruction. The idea that poor environmental health automatically means a gradual illness of man, must be emphasized as soon as possible in the life of the future adult. The preschooler does not have information. knowledge. and attitudes towards health problems (his/her, his/her peers, or environment), so he/she must be helped. Everyone around him/her should help him/her understand how to preserve it, protect nature, form behaviors and habits towards fellow humans, plants, and animals.

Thus, the kindergarten takes the first steps in the formation of ecological behaviors adequate to the

protection and care of nature. To achieve these, increasing emphasis is placed on organizing activities that put children in direct contact with nature, in the situation of knowing their secrets and beauties. As such, after perceiving the aspects of the environment, children are presented with different ways of relating to nature, such as the pleasure of looking at the clear sky, breathing the fresh air of a forest, listening to the murmur of a stream, etc [7]. At this stage, the role of the educator is to discuss and draw attention to these issues and to emphasize the benefits of a clean, healthy environment, as well as our belonging to natural systems, and the communication between us and the natural environment.

The principles of environmental education can be drawn using various working tools. A unique approach, very easy to apply in the classroom, is given by the thematic philately [9]. A series of examples in this regard, with direct reference to environmental education, are detailed in the series of works dedicated to the stamps Europe 2016 - Think Green (as shown in Fig. 3) [10].

As Sergidou describes her philatelic design [11], the main purpose was to show that it is in the community's hand to create a greener planet, and actively replacing the grey colour - the environmental pollution - with the green colour which symbolizes environmental living and hope, and in turn inspire us for a better world. The promotion of the concept of green thinking, environmental education appears both at the level of postage stamps [11,12], and envelopes with the mention "first day of the issue" [13,14], or other philatelic materials.



Fig. 3. Representation of the human community's belonging to the environment through dedicated philatelic issues [10]

Ecological education can be carried out either through educational projects (Fig. 4) [15,16], as well as through extracurricular activities (thematic visits, walks and exploratory excursions, outdoor

camps, etc), through optional activities and guided frontal activities (observations, readings after pictures, educational games, stories, memorizations, conversations, etc.), or through the chosen games and activities (role-playing games, board games, insight games, construction games, etc.).

To demonstrate that people's strength to mobilize and self-educate to support the planet, teachers and mentors along with children and other educational partners (especially NGOs with concerns for environmental protection) can organize actions such as [15]:

- activities for transmitting notions about water, air, soil, plants, forests, animals, energy, waste, recycling, etc.
- practical activities: "Fish at home", "Boat on the water", "Animals in the forest"
- model, "Glass-decorative element", "Today I want to be..."
- making costumes from recyclable materials, "A recyclable Christmas!"
- > making Christmas ornaments, etc.
- waste collection campaigns in public spaces (forests, playgrounds, etc.)
- exhibitions with objects made of recyclable materials.
- planting;
- outdoor games etc.

Regardless of the form it takes, ecological education is best suited to the classroom if it is accompanied by practical activities, in which the student takes the step from theorizing to direct experimentation, specific to project-based learning [15]. Project-based learning is an essential practice that helps students acquire important skills through which they can acquire skills and develop critical thinking, communication, collaboration, and creativity [17,18]. Another advantage of project-based learning is that it helps students acquire valuable thinking skills. Students are engaged in solving local problems, real-world problems for which there may not be a clear answer. To meet this challenge, students must make informed judgments and choices. Inevitably, they are based on a new curricular approach.

The new dimension of the curriculum makes ecological education initiate and promote responsible attitudes towards the environment. The main objective is to form the premises for understanding the effects of inappropriate behavior on the environment and the attitude of environmental protection [19]. Thus, by the participation of all educational factors (school, family, community, media, etc.) in achieving these intentions [15], the child better understands the effects of inappropriate behavior on the environment.



'A clean park"

 strengthening knowledge on how to maintain cleanliness in parks
 developing the ability to describe and interpret a picture using correctly the previously acquired notions



"Ecological traffic light"

- consolidating and fixing students' knowledge about the rational relations of man with nature
- forming a disapproving attitude towards those who violate specific rules for maintaining environmental hygiene



"Animals in the forest"

- strengthening and fixing students' knowledge of human rational relationships with the forest ecosystem
- forming a disapproving attitude towards those who violate the specific rules of forest animal safety



"Why do people throw waste in the trash?"

- strengthening knowledge on maintaining the cleanliness of public areas
- developing recycling capacity both at school and in the community

Fig. 4. Examples of teaching activities to promote environmental education

At the same time, ecological education represents the way to reach, through knowledge, understanding, and respect of nature of the environment of which we are part. It must be seen as a whole, with a special dynamic. Unfortunately, the environment is still being studied monodisciplinary. Ecological education requires a transdisciplinary approach. This can be done both inside and outside the school. Within school subjects, ecological education can be approached, as we mentioned, in various forms. However, the best example remains the ecological didactic game [19]. Didactic games provide a favorable framework for participatory learning, stimulating students' initiative and creativity; accessible, enjoyable, an attractive form of learning [20], which corresponds to the psychic peculiarities of small schoolchildren.

Among the activities proposed to students, those aimed at the relationship with the environment occupy a special place. Discovering the main components of the natural environment, identifying the sources of pollution and the possibilities of eliminating them, expressing thoughts and feelings towards the environment (see Fig. 5) [16], are just some of the objectives considered. Children must know, protect and protect nature; to become friends and protectors, becoming aware of the interdependent relationship between natural health and human health.

From the perspective of mentors (educators, teachers, etc.), the use of the game in teaching knowledge of the environment offers many

pedagogical advantages. The game is an admirable way to determine children, even the timidest, to actively participate in the lesson by becoming more fickle, braver, more confident in their abilities, and more confident in their answers) [19]. Moreover, the ecological game develops the spirit of cooperation, skill, the spirit of observation, ingenuity, inventiveness, and, last but not least, it is an attractive technique for exploiting/exploring reality/nature. In addition, environmental education through play provides not only knowledge about the current situation. but also about the prospects of nature [18]. It teaches children, and not only, to explore through practical activities all problems related to the environment and to consciously commit to its conservation.

In practical activities, specific to the projects, the child can express himself freely to give free rein to the imagination, that is why we must give them the due interest. The more attractive the materials, the more diverse the techniques, the more the child works with pleasure, satisfies his thirst for knowledge, and the results are as expected [21,22]. As an extracurricular activity, ecological education through play has immense formative educational values, being a critical resource for the full development of students' personalities [23]. Because they are out of the classroom, they transpose students into new relational contexts that can contribute to strengthening the relationships between them and the cohesion of the school group. A positive atmosphere is thus formed between students. shaping a school climate conducive to learning.

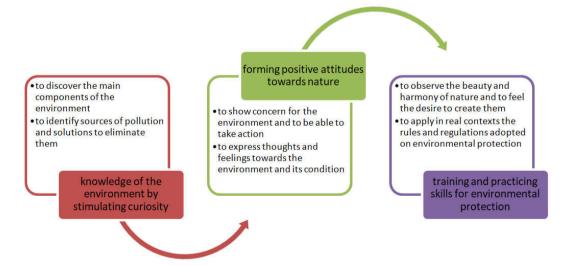


Fig. 5. Examples of goals and objectives associated with teaching activities to promote environmental education

Regardless of the appearance, scale, and resources used (human or material), any Eco-School activity is meant to sensitize students, teachers, the local community on everyday issues [4]. Perhaps through the theoretical and practical skills, transmitted through activities, putting the shoulder together, it will be possible to mobilize other communities to finally solve problems. We some environmental are convinced that today's students, tomorrow's young people, and tomorrow's adults have brought and will contribute to sustainable community development, by responsible and efficient participation to the anticipation and solution of all environmental problems. One thing is clear - the eco generation exists in schools, regardless of origin (rural environment, urban environment, a small or large number of students, etc.).

Love for the environment must be instilled from the first years of children's lives, and we adults are obliged to guide them in the civic spirit of protecting the environment around them [24]. Our role as teachers is to inspire all those who are not (yet) involved in protecting the environment. What can we leave and what do we want to leave behind the activities of such a project? We leave consolidated values, promoted through local actions - social responsibility, volunteering, involvement in community life, active citizenship, etc.

We leave a network of volunteers who will multiply and practice in school, family, and community civilized attitudes and behaviors. And we leave behind major changes in mentality and collective involvement for communion with nature. We all (students, teachers, parents, local authorities, various partner entities) learn through each activity carried out under the umbrella "Eco-School" [4]. We learn how important it is to live in a clean environment, to have a responsible attitude towards nature and people, and to make the best decisions based on an ecological conscience. Only such an awareness will ensure "our common future" in the Information Society and the Knowledge Society. As such, we can say with certainty that environmental education is not only a tool in solving environmental problems or managing natural resources but also a necessity [25], an essential educational process in recognizing environmental values, aimed at improving the quality of life.

Strictly from our point of view, for those of us who still have concerns for environmental protection

and resource conservation, ecological education from an early age is a necessity. We believe that in today's consumer society we must focus on more responsible management of resources. What is consumed should be consumed responsibly, so that the components of the environment or other members of the community are not affected. In this sense, we appreciate that young people must be very well and effectively guided. In addition, they must understand that they also care about the community and the environment, by extension of the entire planet.

4. CONCLUSION

We live in the age of speed of easy access to information and knowledge, but maybe too preoccupied with ourselves neglecting/forgetting what keeps us healthy in life - the environment. Melting glaciers, floods, or the disappearance of thousands of species of plants and animals are just a few signs that the planet no longer has the strength to fight alone, but needs our help! Man must not fight with nature but must collaborate because, in a certain sense, man is nature, not a separate part. Neither superior nor inferior, but part of life on Earth. Maybe in time, man will change his position towards what surrounds him, and from egocentric/anthropomorphic, he will become more ecocentric, realizing that caring for the environment, means at the same time caring for himself and those what will come. We must learn and learn to respect nature as a "mother" because she gives us everything we need.

Through environmental education, students discover common inclinations and interests with other classmates, interact, and collaborate with colleagues they may have ignored in class. All this strengthens the cohesion of the group. The school space thus becomes a factor conducive to the full training and development of students. Here they find a climate of trust, support, and acceptance. This is the reason extracurricular activities, implicitly those aimed at ecological education, must be capitalized in the light of this reality.

As a result of the public opinion of teachers with concerns for ecology and protection of resources, we believe that ecological education must more and more often find a place in students' curricula. It is also necessary that with the introduction of this discipline, a series of common-sense principles be introduced, in correlation with the policies of sustainable development of the communities.

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COMPETING INTERESTS

Authors have declared that no competing interests exist.

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