

European SWOT Analysis on Education for Environmental Citizenship



Edited by
Andreas Ch. Hadjichambis, Pedro Reis & Demetra Paraskeva-Hadjichambi

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European Network for
Environmental Citizenship
Cost Action CA16229



ENEC Cost Action Report

European SWOT Analysis on Education for Environmental Citizenship

Edited by

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List of Main Abbreviations

CE: Citizenship Education
CoP: Community of Practise
DSP: Dominant Social Paradigm
EA: Environmental Attitudes
EB: Environmental Behaviour
EC: Environmental Citizenship
ECn: Environmental Citizen
EE: Environmental Education
EEC: Education for Environmental Citizenship
EfS: Education for Sustainability
ESD: Education for Sustainable Development
FCN: Frequency of Contact with Nature
NC: National Curriculum
NEP: New Environmental Paradigm Scale
PSAs: Public Service Announcements
SE: Science Education
SSIBL: Socio-Scientific Inquiry-Based Learning
STEM: Science Technology Engineering & Mathematics
TPB: Theory of Planned Behaviour
TPD: Teacher Professional Development
VBN: Values Beliefs Norms

Foreword

Environmental citizenship is crucial for the success of any environmental policy. Sustainable development, a circular economy, a low-carbon economy, and a bio-economy require an effective citizen engagement. Citizens are called upon to adopt environmental attitudes and behaviours, make green choices, increase civic participation, and to be aware of and apply their environmental rights and duties. The contemporary environmental crisis with climate change, biodiversity loss, air pollution and all other local and global environmental problems demand an education that is capable of empowering environmental citizens. Education plays a key role in shaping future environmental citizens; nobody is born environmental citizen but anybody can become so by education.

This report presents a SWOT Analysis of an integrated and holistic type of education in Europe “Education for Environmental Citizenship”. The SWOT analysis is presented in two levels. In Part A a synthesis of the results of 157 experts from 28 European countries are presented. In Part B the reader can explore the 23 European country reports.

It is important to clarify that this research regarding SWOT analysis was undertaken before any development on the concept of Education for Environmental Citizenship such as common definition and the pedagogical approach. In this fact it illustrates the experts’ opinion in the different contexts through out Europe.

We hope that European stakeholders will find it useful.

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19. Short Country Report SERBIA

SWOT Analysis of Education for Environmental Citizenship

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Abstract: Environmental Education (EE) was established in Serbia at the beginning of the twentieth century. The oath for those pupils attending second grade of elementary school in 1914 was: “I swear that I will not destroy the trees, and treat flowers badly”. From that time onwards, EE was integrated into various subjects of the curriculum and has existed in different kinds of education. There are a lot of challenges caused with dated and faulty technology, uncontrolled traffic, and other harmful influences that noticeably disturb the natural balance and harm the environment. This imposes a need for long life education so that the environment can be protected. A survey of where ecology is placed in educational system in Serbia, from the compulsory to university education, was conducted for this paper. The school subjects that do have ecology are mentioned. Since ecology is not a special subject in compulsory education, we gave an overview of the school subjects and activities in which the ecological contents are studied. The subjects in high school education that have ecological contents are reviewed according to areas of work and specific educational profiles. A review of university education where ecology has a significant place is also provided. As a conclusion of this survey we observed that the environmental education was included in the educational agenda in different forms for more than century but it never took the importance to be leading subject and terminology of EE and ESD, SE and CE was not clearly differentiated. The whole concept of EEC is not established and understood well in Serbia but it has a potential especially aspiring to become a member of EU.

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19.1 Introduction

In the modern world, system of ecological education plays an important role in the formation of ecological culture in the society. Environmental education should develop deep understanding of the problems in the material and spiritual life activities. A wide range of the environmental issues implies the synthesis of knowledge and skills from natural and social sciences.

In Serbia many reforms and adaptations which aim to face future challenge in the Serbian education system are already done and are expected in the near future, following the frequent government changes, but unfortunately none has the priority in EEC.

In the Republic of Serbia at the beginning of the school year 2018/19 there were 2842 preschool education institutions, 3,119 regular primary schools, 506 regular secondary schools. A total number of 527,834 pupils attended the study in primary schools, 260 507 students attended the first, obligatory, cycle of elementary education (1-4th grade), while the second cycle (5-8th grade) was attended by 267,327 pupils. There were 252,108 students attending regular secondary schools, and 256 172 students were signed at university education level (Statistical Office of the Republic of Serbia, 2019).

The basic principle of environmental education should be expressed not just in providing information about facts, but to develop life-long education, awareness and responsibility throughout educational systems adherence to environmental requirements. Ecological awareness consists not only of the knowledge, but also of emotionally-willing components that are very important, because knowledge without a belief and practical activity do not mean much (Ćurčić et al., 2012).

Ecological education and the formation of an ecological way of thinking start at a young age, and the role of educators is therefore very important at all levels to provide knowledge. The task of education is to provide such knowledge to the growing generations: teaching them how to solve environmental problems, the hazards of the endangered environment, and the methods of removing negative consequences of the disturbed ecological balance. Taking into consideration the philosophy of the education, it's perfectly clear that all activities should be directed towards professors and teachers and their ability to teach young people how to think and how to act. Emphasis is placed on skills developing and horizons broadening, that could be used in process of decisions making in risk management. Of at most importance is developing the way of critical thinking (Zint, 2001). In order to be able to expect ecological behaviour, changes in people's attitudes and pro-environmental behaviour can only be done by introducing ecological content into all levels of the educational system. Regarding the needs of environmental protection, it is necessary to answer the following points: What are the necessary factors, how many and when do they contribute to the goal of building an ecologically responsible personality? How an individual sees the contribution of individual factors in achieving

the goals and tasks that are posed as demands and needs of preserving a healthy and quality life is an important point.

The Environmental Education (EE) system in Serbia is not reflected in the concept of Education for Environmental Citizenship. This report aims to provide the orientation of Education for Environmental Citizenship in Serbia. The following SWOT analysis is based on the expert surveys of six decision-makers. Two experts work in the field of EE, Education for Sustainable Development (ESD) or in Science Education (SE)/Citizenship Education (CE) (n=2), one educator/teacher in primary education who works in EE/ESD or SE/CE (n=1), an educator/teacher in secondary education who works in EE/ESD or SE/CE (n=1), a decisionmaker at a national NGO who works in EE or ESD (or secondarily in SE or CE) (n=1), and a decisionmaker in Educational Professional Society who works in EE or ESD (or secondarily in SE or CE) (n=1).

Despite our initiative to involve in the survey representatives of the relevant ministry, policy-makers from the Ministry of Education RS, who should be the most competent to sublimate what is legally and formally established by the legislation in Serbian educational system in respect to environmental education, the ministry representatives did not respond.

According to the experts, Education for Environmental Citizenship is not seen as an applicable instrument to influence environmental responsibility on a large scale. Education for Environmental Citizenship alone cannot provide solutions to environmental problems. EEC requires interdisciplinary collaborations and long-term dimensions for its successful implementation. In formal education, it is not differentiated. For example, in primary and secondary schools EE is part of a broad range of subjects (biology, geography, physics, and chemistry), and Education for Environmental Citizenship requires precise preparation and planning from the teacher. The success of Education for Environmental Citizenship strongly depends on the teacher's potential to create a participative and motivating learning environment. In the future process of the more efficient actions in EEC digital and online learning (DOL) has to be more visible.

19.2 Strengths of Education for Environmental Citizenship in Serbia

According to the respondents of this survey, the major advantages of Education for Environmental Citizenship include: having a holistic approach; understanding of how nature and society are connected and dependent; developing responsibility; providing opportunities to merge students' experiences from different themes (i.e. cross-curricular and integrative topics); educating critical-minded citizens; facilitat-

ing decision-making at early age; facilitating students' self-awareness and prompting them to act accordingly; participating actively; being personally responsible; and taking into consideration local, regional and global issues.

19.3 Weaknesses of Education for Environmental Citizenship in Serbia

According to the experts, the weaknesses of Education for Environmental Citizenship in Serbia are: the discrepancy between engrained socio-economic and political community values (i.e. the local community is on the threshold of poverty); overall centralistic tendencies in the country; the complexity of issues addressed that could lead to excessive theorising; presenting Education for Environmental Citizenship in an old fashion manner and in academic manner (not applicable for all citizen to understand); values not appreciated by the overall social environment (i.e. gender equality in Serbia); a rigid and centralised education system; economic poverty at a community and individual level; political strife (efforts to attract foreign investors and to increase profits because of the lack of strict environmental protection regulations, at the expense of citizens and local natural resources, for example, small hydroelectric power plants construction are now a serious problem and reason for rebellion against government); the instability of the education system (change of educational policies with change in governmental structure); the lack of support of the important local/national stakeholders or decision-makers; no guarantee of behavioural change; the avoidance of theoretical learning; the lack of ministerial support; a lack of educational material; uneven regional development in Serbia where there are regions where rural schools do not have material for work, no writing boards, no pupils, no teachers; superficial learning; the potential of too much citizenship and not enough understanding of how nature works (remaining shallow and not going into the ethics of environmental protection); and an undeveloped environmental educational system on a country level.

19.4 Opportunities of Education for Environmental Citizenship in Serbia

19.4.1 Obligatory education

This level of education starts with the preschool curriculum (age 6 to 7) comprising of the mother tongue language, knowledge of nature and society, and artistic and musical education. By incorporating the ecosystem into the curricula of individual subjects, they become an integral and inseparable part of the programme.

The preparatory preschool programme is part of a compulsory nine-year education, realised within the framework of preschool education and prescribed by the

legislation. Getting to know the natural and social environment is one of the fields of work in the preparatory preschool programme, where the contents from the environmental protection are incorporated and goals are prescribed by the Order on the General Principles of the Preschool Programme. Some of the objectives include: knowledge of the common habitats of certain plants and animals and their connection to 'food chains'; the concept of living beings that adapt to living conditions (simple examples); knowledge of the ways in which the person affects the environment and the consequences; the methods of polluting water, soil and air, and the procedures where pollution is reduced or avoided; an awareness of how we can benefit from forests and ways to preserve and restore them; knowledge of noise as an kind of the environmental pollution and how to solve it; the knowledge that every individual has the ability to contribute to the preservation of the environment and have an elementary understanding of the ecological message 'Think globally, act locally'; awareness to respect and love nature, living beings, and the motivation of keeping and improving these values. These goals are set through various activities, such as workshops, observation, interviews, excursions in nature, etc. Still, the most appropriate activity is the game that provides the learning situation.

In the first cycle of elementary education, environmental content is often intertwined by correlation through almost all subjects. However, they are mostly represented in primary school subjects that are called "The world around us" in the first and second grade (age 7 and 8) and "Nature and society" in the third and fourth grade of elementary-primary education (from 9 to age of 11). The main goal is to make a basis about environment issues and to development environmental awareness. In the first and second grade (from age of 7 to age of 9), the most important aims include: forming basic knowledge about nature and society; encouraging children's interests, questions, ideas regarding the environment; supporting, developing research activities and encouraging the perception of causal relationships, phenomena and processes around us and developing a responsible attitudes toward ourselves and the environment respecting the others. Most of these goals are achieved through the realisation of the subject content that treats natural phenomena and processes in the environment. The curriculum of the subject "Nature and Society" is realised in the third and fourth grades (age of 9 up to age of 11). The general goal of this integrated teaching is getting to know yourself, your own natural and social environment and developing the capacity for a responsible living. This subject represents the continuity of previously acquired knowledge from younger grades and is realised through acquiring elementary scientific literacy, developing the ability to perceive basic properties of objects, phenomena and processes in the environment, and observation of their connection. Ecological content in older grades of elementary education, from grades 5 to 8, are represented through teaching subjects of natural sciences: biology, geography, chemistry and physics.

In the biology curriculum, environmental content is studied or interlaced through teaching content in grades 5 to 7. During the school year 2018/2019, a reform of education in Serbia started, and under this reform digital textbook for biology for the 5th grade was created, according to contemporary trends and it should fully correspond to the contents of the new Teaching and Learning Program for the

subject of biology (<https://www.adriadaily.com/drustvo/predstavljen-digitalni-udzbenik-biologija-5-izdavacke-kuce-novi-logos/>).

In the prescribed goals intended to be realised are a love for nature and a sense of duty to guard and protect it. These goals are achieved through the set of tasks in biology subject: students develop a sense of responsibility towards the state of the environment; they understand the degree of vulnerability biosphere and the role of each individual in protecting and promoting it. These tasks are being implemented through theoretical lessons, as well as during the exercises and practical work. In the grade of 7 the aims of the teaching biology are: understanding of ecology and its importance, understanding of environmental conditions and their importance; the realization of the system of environmental organizations in the nature and relationships within it; respecting the interrelations of living beings and the environment and the dynamics of the relationship between matter and energy; understanding the continuity of ecosystem maintenance; identification of causes and consequences of changes in them; understanding the importance of ecological balance for maintaining ecosystems; learning the basic types of ecosystem and the environment in them; developing ecological awareness and ecological culture; and understanding of the position and role of man in the biosphere.

Geography is taught in all grades of the second cycle, from grades 5 to 8. Environmental contents are mainly studied through the content of physical geography (lithosphere, atmosphere, hydrosphere, biosphere). The main task of this curriculum is that students should understand the need to preserve, improve and protect the nature and complex geographical environment in which humans exists. One of the goals of teaching geography is to educate students about the importance of protecting all Earth's spheres as an ecological framework for life on Earth and to form responsible attitudes towards the environment.

Chemistry is taught in grades 7 and 8 in elementary-primary education. General chemistry is studied in grade 7 (age 13 to age of 14), and inorganic and organic chemistry in grade 8 (age 14 to age of 15). One of the main goals of subject chemistry is to develop awareness of the importance of responsible and rational use and disposal of the various substances in everyday life. The goals are achieved through educating students to acquire knowledge about the properties of substances and to understand the importance of chemistry in everyday life. Teaching chemistry is realised through theoretical lessons, exercises and demonstration experiments.

Physics is taught in grades 6 to 8 (age from 12 to age of 15). The physics curriculum is designed to teach pupils basic physical laws and phenomena that prevail in nature. One of the teaching goals is to understand the connection between physical phenomena and ecology and develop awareness of the needs to protect, restore and improve the environment. The goals are achieved by educating about natural laws and forces, types of energy, and to understand these phenomena in nature.

19.4.2 Elective courses in compulsory education

Based on environmental content, the elective subject in the first cycle of primary education is Nature safeguards. Environmental contents are interwoven also through other elective subjects, such as Hand in Dough and National Tradition, etc. The subject Nature safeguards is offered as an elective in grades between 1 and 5 grade. The objective of the course is to develop awareness of the need and possibilities of personal engagement in the protection of the environment, the adoption and application of the principles of sustainability, ethics and the rights of future generations to live in preserved environment. The subject Hand in dough is offered as an elective in grades 1 to 4. The basic idea of introducing this elective course is to cultivate, encourage and develop natural child curiosity. The aim is the development of basic concepts of natural science and their interconnection.

The main aim of these elective subjects for the first grade pupils is to introduce kids with the basic elements of the environment, to spot and describe the basic concepts and changes in environment, threats to the environment, and to develop a responsible relationship with environment and the habit of rational use of natural resources. In the second grade the tasks are more complex and students are asked to master the concept of the environment, to recognise and describe the most striking changes, to acquire knowledge about problems and to develop responsible attitudes towards themselves and the environment. In the third class, the tasks to be accomplished include being able to recognise negative effects of the human relationship to the environment, notice the causal and consequential relationships, acquire the habits of responsible behaviour towards animals, and to solve the simple problem of the situation independently or in the team. Similar tasks are presented in the fourth grade.

In addition to the above-mentioned compulsory and elective subjects, the environmental education can be realized through optional activities. Such activities include teaching natural sciences through additional lessons ‘‘sections’’ (ecological, biological, geographical, and hiking) mainly once or twice per week, as well as through ‘‘school in the nature’’. These activities can include: eco actions, ecological corners, ecological excursions, and ecological workshops, etc.

Environmental content allows pupils in primary school to become familiar with the basic concepts such as the notion of disturbance of ecological balance and degradation of the environment, and how to acquire knowledge of the negative effects of the pollution and about prevention and protection of negative impacts. A modern environmental education requires that the teaching subjects that study the environmental issues should compile the standards and skills in ecology, and to strive to form valuable environmental orientation of the pupils. The structure of the eco-value system is influenced by other factors: the education system, global society, technological development, ecological movements and traditions. The family and collective contribute significantly to creation of ecological value system of the young population.

19.4.3 Secondary education

Environmental content is studied through general educational subjects (chemistry, physics, biology and geography) in most of the secondary schools. As a special separated teaching subject, ecology appears for the first time in particular secondary vocational schools. But generally the ecological content studied in secondary schools depends for what profession the students are educated. In grammar and language a school that belongs to a group of general educational secondary schools, ecology as a special teaching subject is not present. However, ecological contents are represented through the natural sciences subjects (chemistry, biology, physics and geography). Secondary vocational schools cover a large number of areas and wide range of educational profiles: art and craft, health and social welfare, agriculture and food processing, forestry and woodworking, economy, law and administration, trade, tourism, mechanical engineering and metalworking, engineering, geology, mining, metallurgy, chemistry, transport, textile and leather goods, etc. The inclusion of environmental content in the curricula depends on the educational profile and how close it is with natural science and environmental issues.

In four-year and three-year educational profiles, in almost all secondary schools content related to environment is studied through general education subjects (chemistry, physics, geography) and as special teaching subject ‘ecology and environmental protection’. In the most of the educational profiles this subject is studied during one school year. In three-year educational profiles that are directed to the topic of ecology and environment, knowledge on environmental protection are acquired through vocational subjects. Environmental content should ensure that students through secondary education acquire environmental knowledge which can be used in professional tasks, but also that after secondary vocational education we get ecologically educated personnel. Staffs that are trained for vocational educational profiles related to environmental protection must be trained to monitor measure and analyse pollution and take necessary preventative and protective measures. The educational process in secondary schools represents a conscious and planned development of environmental responsibility. This aims to develop an awareness of the basic characteristics of the environment, the relationship in it and to it, on the basis that a person will seek to preserve and improve the environment. At this level, eco-education should provide a reliable knowledge of the basic ecological issues of contemporary society; it should develop a critical attitude towards growing environmental degradation and point to the necessity of rational use of natural resources.

19.4.4 Higher education

The intention to reduce the negative consequences of various activities on the environment significantly influenced the growing interest of young people to study environmental issues. In the bachelor, specialist, master's and doctoral studies, study programs in the field of environmental protection are represented at many universities in the Republic of Serbia, in greater or lesser extent (Ćurčić et al, 2012).

Many faculties have departments that are specialized in providing higher education in eco-safety and environmental protection (i.e. Faculty of Physical Chemistry, Faculty of Biology, and Military Academy). Highly-qualified personnel must have a scientific potential that will create a strategy of ecological security as a comprehensive and durable programme that can successfully fight against environmental threats. Academic community and all interested parties must create a basis for the planning of ecological security. This issue is important in the process of creation emergency management system where employees have to have specific knowledge and skills. In the area of environmental emergency management in cross border this issue is one among the most important. The concept of EC could be a new tool which can help the border population without waiting the response of political elite (Jovanovic and Radovic, 2018).

Basic importance of programs and activities raising the level of higher education eco knowledge and skills should be to foster visionary, interdisciplinary research and participatory approach. High quality education will affect the construction of the system of values, encouraging the formation of attitudes to produce positive forms of behaviour and responsible decision-making. It is concluded that 'protection for the environment will be more successful if it is implemented as quickly as possible'. If the academic and scientific community, who should help in creating the basis for planning the development of society, do not seriously and responsibly understand the dangers that impend this world and if it does not vigorously warn society and decision makers, then the consequences of an irresponsible attitude towards the environment will become a threat to civilization. Educating on how to solve complex problems in a timely manner is a matter of knowledge, experience and training. In order to realise the concept of sustainable communities, i.e. secure the future and prevent a planetary catastrophe produced by society, it is necessary to make a profound education transformation in all fields of present social pattern of eco-security. The goal of the process is to ensure the quality of education and to make learning a pleasure and a joy. Teachers must always be able to discuss with students and attain experience and be able to measure their achievements. Environmental education requires being re-inventive (in economic terms, innovation represents applying new ideas, since every appearance of a new idea makes an invention) (Adamović, 2009).

If we want to avoid it and become a low-cost economy, then the government must do everything in its power to provide investment in environmental education and permanent learning. This will transform the educational system and result in a high-quality education institution. Philosophy is adapted to the ultimate goal of achieving perfection and this will greatly affect the different political and social environment. How much a country will develop largely depends on how much it invests in education. Money invested in education will reap rewards soon afterwards and this is why it is necessary to encourage the introduction of the environmental, sustainability and ethic principles into environmental education (Adamović, 2009).

Education played a major role in the development of human civilization and also is crucial for the achievement of sustainable development. UNESCO explains: "A key feature of the 2030 Agenda for Sustainable Development is its universality and

indivisibility. It addresses all countries – from the Global South and the Global North – as target countries and numerous influential international organizations (Al Zubi and Radovic, 2018 from United Nations Educational, Scientific and Cultural Organization [UNESCO], 2017, pg. 6).

19.5 Threats of Education for Environmental Citizenship in Serbia

According to interviewed experts, in Serbia we need better laws and role models (both people and organisations) to help raise the level of environmental awareness. There is overall insensitivity of political structures to educational issues in Serbia, especially regarding environmental education. Overall economic situation precludes necessary funding of education in general/reactive poverty of local communities. It is hard to implement education because of the lack of motivation, and there is also lack of competent well trained and well educated educators in the field. There is a progress, changes in the education system in accordance with the needs of the 21st century, primarily in making network of schools; modern programs are expected in the framework of dual education and reduction of regional inequality. It is about writing and providing textbooks for national minorities and SDG 4 (Sustainable development goal 4 – quality education) based on Agenda 2030 UN.

19.6 Conclusion

Despite the difficult historical legacy of communism and socialism in which the individual and the environment were neglected, in the last two decades, that is, after 2000, progress has been made. The legislations is slowly moving toward recognition of the importance of the individual and the environment. The private system at all levels has influenced the strengthening of competitiveness and the improvement of programs in the field of education, as well as in the area of EE and EEC.

It can be concluded that despite environment and ecology as a separate teaching subjects is not present in the compulsory education system, there is continuity in the study of ecological contents from the pre-school age. How much environmental content will be represented in the obligatory, electoral and optional activities depends on the affinities and interests of pupils, teachers, as well as the educational system as a whole. The weaknesses of EEC in Serbia are the dependences of possibilities to create a participative and motivating learning environment, lack of understanding of the environmental and social consequences of the own actions and sustainable responsibilities. The pace in which the Serbia is changing, demands matching ability of citizens to be better educated. It is the duty and job for policy makers, parents, teachers, businessmen, and all interested parties.

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Environmental Citizenship has been an influential concept in many different arenas such as economy, policy, philosophy, organizational and corporation management and marketing and could be better exploited and established furthermore in the field of education as well.

This report examines the Strengths, Weaknesses, Opportunities and Threats of Education for Environmental Citizenship in Europe. In the first part of the report, the need for Education for Environmental Citizenship, is examined along with the methodology and results of an extensive research from more than 157 experts in 28 European countries and Israel. In the second part of the report, the country chapters for the 23 European countries and Israel emphasise the similarities, differences and special features of these case studies.

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