DIGITIZATION AND ENVIRONMENTAL EDUCATION IN A KNOWLEDGE SOCIETY

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Abstract
This article focuses on the study of environmental education as important aspect of the modern society and actively engaged people. Ecological behavior and citizenship become an essential element of social activity and show the involvement of people of different ages in behavioral and intellectual commitment to nature and the protection of the world. The main thesis of the article is that the formation of skills, values and competencies for living in the community and building environmentally responsible behavior are directly related to the process of socialization of the individual and the role of education and digitalization in this process are indisputable. The analysis traces how the education contributes to gaining knowledge about natural and climate change, as well as the pro-ecological behavior of people around the ecosystems. The paper is based on empirical results from qualitative methods on the topic of environmental citizenship. Two main methods are used: document and policy analysis; this method examines the involvement of political actors with the environmental issue and especially of the Ministry of Education in a national context. The other methods used are also qualitative: interviews (19) with educational experts and students, as well as focus groups (3) with students from different universities. The methods used are aimed at showing the state of the environmental topic in education and digitalization.
The main conclusion is the explication of environmental responsibility and behavior through the prism of the educational institution as a key actor of educational and training approaches to improve the interaction between people and the environment.
Keywords: digitization; environmental education; digitization of education; environmental citizenship.

Objectives
        In the conditions of a knowledge society, digitization becomes a leading characteristic of all social processes. It also becomes a mandatory element of various educational activities. The

introduction of digital platforms contributes to the maintenance of distance learning and to ensuring good quality of learning and teaching. Environmental education is another important aspect of the modern knowledge society and actively engaged people. Ecological behavior and citizenship become an essential element of social activity and show the involvement of people of different ages in behavioral and intellectual commitment to nature and the protection of the world. The main thesis of the article is that the formation of skills, values and competencies for living in the community and building environmentally responsible behavior are directly related to the process of socialization of the individual and the role of education and digitization in this process are indisputable as approach and vision. At the heart of the "environmental citizenship" is the perspective showing the interactions of individuals with nature through the prism of digitalization as a prerequisite for reflection and critical thinking.

The analysis shows the link between digitization and environmental education. The concept of environmental citizenship in the context of environmental responsibility (including intergenerational responsibility) and collective action is followed. In the sphere of collective action, individuals and the environment are interconnected structural units that are functionally interdependent.

The new environment requires the development of digital skills that enable effective information management and the proper use of ICT (Cartelli, 2013; Milenkova, Lendzhova, 2021). Environmental education is related to the development of a literate environment aimed at achieving sustainability (Keranova, 2019). Education is a key factor for the acquisition of knowledge, skills and competencies by individuals as agents of change, for creating harmonious interaction with nature, for achieving sustainability and environmental development (Brundiers, Wiek, & Redman, 2010). Environmental citizenship education (Hadjichambis, Hadjichambi, 2020) is related to the process of empowering citizens to take an active part in the environment and its protection, to be aware of and identify the problems and the reasons for this. The essence of the concept is objectified in the context of social transformations and the sustainable environment and consists in promoting different learning approaches to engage young people as active citizens responsible for the environment (Hollweg et al., 2011).

The literature emphasizes that it is important not only to carry out various environmental activities, but individuals to create pro-environmental understanding from an early age through cognitive and affective learning (Kollmuss, Agyeman, 2002), which develops attitudes towards nature and ecological knowledge, and underpins actions in favor of the environment. In this context, it is important to identify the main structural causes of environmental problems (Dobson, 2007) and their critical consideration. The explication of environmental responsibility and behavior through the prism of the educational institution is a key subject of educational and training approaches to improve the interaction between person and the environment.

Theoretical considerations

Education for environmental citizenship is conceptually developed in two directions: a) environmental justice (including intergenerational) and b) individual and collective action (Hadjichambis et al., 2015). The essence of the concept is objectified in the context of social transformations and the sustainable environment, and consists in promoting different learning approaches to empowering and engaging young people as active citizens responsible for the environment (Hollweg et al., 2011). In the literature emphasizes that it is important not only to carry out various environmental activities, but individuals to form an ecological understanding through opportunities of digital learning, which creates attitudes towards nature and environmental

knowledge supporting actions in favor of the environment (Kollmuss, Agyeman, 2002). In this context, it is important to identify the main structural causes of environmental problems (Barry, 2005) and their critical consideration. In general, environmental citizenship education is aimed at forming a connection with nature, which has three components (Schultz, 2002):
- cognitive, aimed at knowing nature and its multifaceted essences;
- affective, oriented to the emotional side of the relationship with nature;
- behavioral, related to the specific actions for conservation and protection of nature and its integrity.

Globally, the preservation of the environment and the maintenance of ecosystems are seen as closely linked to the understanding of sustainable development (Brundiers, Wiek, & Redman 2010) and the economy (Giddings, Hopwood, & O'Brien, 2002). In this sense, it can be said that environmental education and science have an interdisciplinary nature and are characterized by comprehensiveness and integration of effects and impacts (Du Pisani, 2006).
According to some authors (Dobson, 2007), environmental citizenship education creates a successful symbiosis between the idea of the public good and the environment and brings a sense of stability in time and space. Environmental education is seen as an element of environmental movements and the process of formation of eco-citizenship as a condition for sustainable development. All this in its totality has a responsibility to discuss the state of environmental problems, as well as to build a critical position and participate in dealing with the structural causes that give rise to them as well as to build on and to integrate existing approaches in environmental education and sustainability education.

Within the training itself, different approaches are applied (Hadjichambis, Hadjichambi, 2020), in which the main emphasis is on the development of reflexivity, participation, problem-solving and practical orientation**:**
- *On-site training:* focused on linking environmental issues to the local environment and communities, as well as seeking regional support from various structures and organizations.
- *Problem-based learning:* related to bringing out and discussing in class real environmental problems, including those related to past actions of governments and structures aimed at nature destruction.
- *Civil ecology training:* refers to the discussion of the various subjects of environmental actions and activities - at regional, national and supranational level; from the public and non-governmental sector.
- *Competence training for action:* this approach concerned the formation of competencies related to the environmental topic; this includes skills such as planning, evaluation, decision making, taking action; playing different variants of the stages.
- *Study of participatory actions:* this approach aimed at attracting like-minded people; it is related to the description and systematization of specific public organizations that would cooperate at different levels.
- *Socio-scientific training:* aimed to maintain feedback with different people in the form of opinions and assessments that can be given. The training includes the use of opinion research methods. This approach integrates the formulation and setting of current issues, socio-scientific topics, decision-making for change (Amos, Knippels, Kyza, & Levinson, 2018).

In the context of the definition of environmental citizenship education and based on key educational models, a specific pedagogical approach is promoted (Hadjichambis, Hadjichambi, 2020). The perspective is understood as a potential tool with application in formal and non-formal education, as well as in different educational levels. The pedagogical model of education for

ecological citizenship is illustrated through six stages, each of which is revealed through specific steps for implementation:

1. Research;

2. Planning of activities;

3. Civic participation;

4. Network and scale sharing;

5. Support for environmental and social change;

6. Evaluation and reflection.

The main pathos of these learning approaches is to bring out the individual experience and initiative associated with personal activity and effort, which develop into a collective commitment to socio-environmental change. As the subject of "environmental citizenship" (under Bulgarian conditions) is not part of the curriculum, its topics can be integrated into the curricula of other disciplines of the natural sciences, social and humanitarian spectrum to make the environmental topic a real presence in education. In addition, environmental citizenship is the subject of study in both the formal and non-formal education systems, and on this basis environmental citizenship education is an integrated educational field in terms of its educational and methodological range.

Material and methods

We use several methods to study environmental education and the role of digitalization in it.

A). *Document analysis.* The curricula of the Bulgarian educational system have been studied. In formal and non-formal education, various practices are applied related to the promotion of: civic education, environmental education, education for sustainable development and global education, intercultural education, health education, etc.

The Law on Preschool and School Education - adopted by the National Assembly of the Republic of Bulgaria in 2015 creates preconditions for the development of forms of environmental education and sustainable development. In the context of environmental education, Decree № 13 of 21.09.2016 is also of interest. It sets the state educational standard for civic, health, environmental and intercultural education. It describes the nature, objectives, methods and forms of training, as well as the framework requirements for results. In school education, environmental education is carried out in the class hours, in the activities of interest within the all-day organization of the school day, within the activities of general support for personal development under the terms and conditions of the state educational standard for inclusive education.

B*). Interviews*: which have been conducted with:

- educational experts: teachers, representatives of the NGO sector, Regional Management of Education, that engaged in environmental education. 9 interviews were conducted in the period September-December 2019 on the topic of education for ecological citizenship;

- with students from majoring in Sociology; 10 interviews were conducted in the period August-September 2020 on the research topic.

C). *Focus groups:* Three focus groups have been conducted in 2019 - 2020 with students from different Bulgarian universities, who present the entry of digitization in education and the relationship with environmental issues.

The three methods used are qualitative, the preferences for them were related to the fact that they aimed at sharing the experiences, views, impressions of people from different age groups and occupations, with participation in educational administration or users of education, as well as with secondary and higher education lecturers.

Results

As a consequence of the methods used, the following results were obtained, which we present:

- Education for environmental citizenship is developed in different aspects of the categories: knowledge, skills, values, attitudes and patterns of behavior, but also focuses on achieving awareness and action at the individual and community level. The concept of "education for environmental citizenship" is considered in the spirit of environmental, civic and global education. The view that personal awareness is at the heart of environmentally responsible behavior is also popular: „The self-consciousness of each individual and his sense of responsibility to himself, others and last but not least nature (as a whole). Society must be educated and have a set of skills and knowledge in order to behave responsibly and to protect/preserve the environment ”(male, 38).

The view is shared that education has the potential to participate in the formation of skills and competencies for sustainable and active life in society and the environment, but also takes into account the fact that this is linked to the individual activity of the teacher who can organize various initiatives for real interaction with the environment (D.M., education expert-teacher). It is recognized that the practices, efforts and measures taken in the school environment are important to be "sustainable rather than temporary" and to be an integral part of the school culture.

As relevant subjects from the curricula, suitable for acquiring competencies for sustainable development and formation of the ecological citizen, the respondents indicate: "human and nature", "human and society", "physics", "chemistry", "biology", "geography and economics", class hours, elective classes. At the same time, the subject "ecology" itself may appear as an optional subject in secondary education (universities train teachers of ecology). This means that in some schools, ecology education can be taught as an optional subject, but in other schools it does not happen. It all depends on the preferences of the students, but also on the available staff - teachers who have the necessary pedagogical qualification, in accordance with which they offer elective discipline to students. According to the students, the non-inclusion of the subject "Ecology" in the compulsory curricula provokes ambivalent assessments.

On the one hand, "it is good that the teachers in all subjects are responsible for teaching ecology and pro-ecological behavior" (female, 34), but on the other hand "they can often miss environmental topics when they are not included in their compulsory program and then there is simply no talk of important things related to ecology ”(female, 34). Some of the students emphasized that "it is the duty of the principal, of the entire management to have a responsibility to build environmental awareness and to hold lectures once a month in each class on the topic of environmental protection and pollution, inviting experts from the municipality or at the national level ”(male, 29).

Regarding the teaching methods applied in environmental education, experts from the non-governmental sector share that they know the "cognitive content", which is good to be characterized by more freedom and fragmentation, effectiveness and interactivity to make the disciplines interesting and attractive ”(V.A., NGO expert).

Experts argue that students could be encouraged through methods and approaches that allow them to be proactive, to engage "with greater interest". In the interviews it was shared that the education for ecological citizenship in its practical aspect should include specific actions that students should perform, such as "afforestation of places and areas", "cleaning school and extracurricular areas, only in this way skills and habits aimed at pro-ecological behavior and ecological citizenship could be acquired "(NG, pedagogue, psychologist).

In this way, the teaching methods are evaluated in a more practically oriented range, which incorporates not only the knowledge, but the specific "doing", i.e, in order to learn to protect nature, you must take care of its restoration and in a direct, practical way to engage in environmental actions. And one more thing, these actions should not be sporadic and accidental, but repetitive and persistent, related to awareness.

The organizing of training is considered in the focus of partnerships between different socialization agents - family, school, government agencies and NGOs. Emphasis is also placed on extracurricular projects and activities, practical lessons, considered as potential factors for increasing the motivation and interest of students. "Partnerships with various institutions - nature parks, reserves, ecological clubs; exchange of experience with other schools, participation in projects "(V.T., educational expert-teacher). The promotion and acquisition of pro-environmental competencies could also be achieved by organizing in-school events related to environmental protection.

According to one of the students, the more important thing is "The education system clearly shows students that environmental education is not some kind of exact science, but a way of life" (female, 30).

One of the participants in the focus groups shared: "It is good for all educational activities in kindergarten and all school subjects to be subordinated to the idea of building ecological awareness of the individual" (male, 32), which is in line with the understanding for social interaction, solidarity and community life. Educational programs need to provide children with "full communication with nature, to create conditions for children to be close to nature, to encourage the implementation of "green schools", outings" (woman, 33).

Education experts outline the need to improve resource security and investment in human capital: providing "increasingly accessible resources to explain the values and concepts that are essential for teaching environmental citizenship education (curriculum and interesting teaching methods). According to NGO experts, teachers need "increasingly accessible resources with methodologies and tools that teachers can use - they need less theoretical discussion and more practical tools".

In this regard, it can be noted that if in secondary education environmental knowledge and topics are not included (as a discipline) in the compulsory curriculum, in higher education there is a specialty "Ecology and Environmental Protection" in the most Bulgarian universities. Graduates of the specialty receive a professional qualification "ecologist". The training includes:

- compulsory subjects such as: chemistry, botany, mathematics, geology, geomorphology, hydrology, urbanization, etc.

- profiling compulsory disciplines, such as: basics of ecology, management and environmental protection, fluid purification, soil science, soil pollution, environmental requirements and norms, treatment of solid waste, air pollution and impact on ecosystems, water pollution and impact on ecosystems, protection of biological balance, etc.

The main goal of the training is aimed at the formation of knowledge of theoretical and factual nature related to ecology and environmental protection, focused on the study of natural

phenomena and processes, on modern achievements and high results for the conservation of ecosystems. Graduates of the bachelor's program can find realization as ecologists, experts, consultants, analysts, researchers in ecology and environmental protection, associates in the management of European projects and programs in the state and municipal administration - Ministry of Environment and Water and its divisions, Executive Environmental Agency, National Parks Directorate, as well as in all departments and institutes related to environmental issues. The training of qualified personnel and professionals for the public sector, science, non-governmental organizations are an argument for achieving meaning the environmental issues and its integration into university education.

Students define responsible environmental behavior as the formation of a "value-oriented attitude towards nature". According to young people, environmentally responsible behavior can be attributed first to "solving the environmental problem in their own locality" (female, 31); "Setting a personal example" (female, 34) and active citizenship. "Change will come when each of us contributes to nature conservation in our daily lives", "personal example" and "joint effort" (female, 34) are needed. Special emphasis was placed on the intergenerational responsibility that "we need to pass on a model for future generations" (female, 27); as well as the need to pass on pro-ecological values between generations.

"The example set by family members educates and ... if adolescents have a good example of how to care for and protect the environment, they will be useful both to themselves and to those around them. Although difficult, children are caring and dedicated. They could pass on to others their care and love for nature" (femalep 37). The change is seen as difficult, one of the students likened it to "an image of a steep road, but it is also possible only when it is in our consciousness" (male, 38).
The summarized focus groups discussions stressed the need for partnerships between parents and the educational institutions in this direction.

On the topic: *how to create pro-environmental behavior*, respondents express the position that it is possible; real policies, tighter control and sanctions for violators are needed (male, 32). Emphasis is also placed on the role of business, it is important that "it functions in an environmentally responsible way, to develop without adversely affecting the local or global environment, without harming local communities and society, and the products produced are environmentally safe" (male, 34). According to NGO experts, there is a need to "talk more" on issues related to the interaction with the environment - not only nationally, but globally. Achieving publicity is seen as an important step. As the way to encourage activity is the promotion of various campaigns, students assess it as a resource for environmental behavior and social networks. Various practical suggestions were made, including: setting up landfills and plants for waste processing and recycling, division by day by type of waste, engaging volunteers to patrol places with concentrated tourist visits, reducing car use, responsible management of energy resources, domestic and wastewater, biodiversity conservation activities, etc.

As environmental *challenges*, the students who participated in the discussions point to overbuilding, the perception of nature as a "given", indiscriminate deforestation, pollution with plastic waste, irrational use of natural resources, global warming, destruction of water pools. Specific affective states (caused by the eco-crisis) related to feelings of fear or insecurity were often shared.
Raising the topic of emotional and affective intentions is a significant moment of social reflection. To describe such conditions, students used terms such as "blindness", "carelessness", "ignorance", „unconsciousness". They definitely refer to a negative connotation that creates a sense of risk,

uncertainty, threat; these are emotions that show insecurity. At the same time, young people expressed optimism that they have the resources to become agents of change, emphasizing in their speeches that "everything is in our hands".

In this regard, the "citizen who develops the environment" or the "ecological citizen" is perceived as a bearer of different values and attitudes, but is mainly a bearer of pro-ecological behavior. Students describe him/her as interested and creative in finding new solutions on the path to a greener existence. The ecological citizen is defined as a "responsible", "tolerant, able to save environmental resources and not be ashamed to use a shopping bag and a reusable coffee cup, tends to spend more money on food, consumables, clothes, cars, produced with care for the environment" (female, 35). In general, the environmental citizen is described as a young person.

In summary, the interviews with different groups of respondents show similarities in the opinions expressed and shared assessments regarding environmental behavior, education, methods and approaches to learning and its organizing. Educational experts pay attention to encouraging children and students to extracurricular forms of education related to environmental behavior. They believe that "their strong commitment to the acquisition of compulsory learning content" could have an impact on the motivation for extracurricular activities.

There is a common attitude towards the need for partnerships. Education experts emphasize that there are good practices in formal education that can become a potential positive for the development of education for environmental citizenship. They emphasize the entry into force of the new Law on Preschool and School Education and how environmental education becomes part of the education of students in all types of school preparation. In general, young people are involved in the topic of environmental citizenship and behavior. Their favorite topics are organic foods and natural ingredients in the products they use, as well as the way they are produced.

Thus, a situation is formed in which pro-environmental citizenship emerges from the state of abstraction and becomes a real, everyday topic, and respectively education for environmental citizenship begins to be perceived as a necessity. In this way, environmental justice is articulated by all respondents, both in terms of obtaining information about environmental imbalances and as shared responsibility for nature and its protection by generations. There is a common view that the interaction between person and the environment can be considered, on the one hand, in the cultural aspect - the formation of value understanding, and on the other hand - in social terms. Acquired competencies are associated with the formation of environmental sensitivity, behavior and culture, but also with commitment to the environment in the broadest sense, achieving understanding and activity, creative attitude and awareness of the need to transform behavioral patterns.

The vision that expands the concept of education for environmental citizenship as a potential resource in the context of societal needs and the current situation of globality, a model from which a real practical orientation and value is expected, is confirmed. The attitude that each form of education provides certain knowledge, forms skills, habits and contributes to the acquisition of social experience in adolescents is consolidated.

Discussion and Conclusion
This article shows how important the topic is environmental education and building environmentally responsible behavior and activities. We have shown that the role of educational institutions in this process is great, as training in environmental citizenship is a long process, associated with the creation of good examples, participation in good practices aimed at nature conservation, to maintain everyday behavior, which is responsible for the environment in which we live.

In the interviews and focus groups, the participants emphasized that education has the potential to form skills and competencies for sustainable and active life, pointing the leading role of the teacher, who can organize various initiatives for real interaction with the environment. Respondents said that efforts and measures for environmental citizenship must be sustainable and become an integral part of school culture. Regarding the teaching methods applied in environmental education, the experts emphasize the need for the curriculum on environmental topics to become more interactive, to engage the activity of students. In addition, to be combined with practice and "doing", including specific actions aimed at nature conservation and ecosystems protection.

In this context, the meaning of digital skills is of great importance, as they are related to obtaining information about what is happening in different parts of the global world in terms of environmental disasters, pollution, but also good examples, like a responsible attitude to the sea, the ocean and the rivers, to the air, the forests and the soil. In different parts of the world, people of different ages carry out a variety of activities aimed at protecting life and the environment; this is exactly what needs to be learned and promoted. Digital skills are also important not only to know what is happening, but also to show what is being done in a particular university, community, region. Only in this way, through a network, the others understand the specific environmental initiatives and examples. In this sense, the network and digital skills are a good mediator of the information environment, but also a prerequisite for meeting people and communities working on one or another environmental topic. The connection of people who share the same views, have a similar attitude to things, is achieved most optimally through the network, through social media and online groups. Thus, thanks to digitalization, people from different places, ethnicities, races, with different education and professions can be connected, who have a responsible attitude to nature, share identical values for maintaining environmental awareness and have an understanding of the importance of environmental issues. In this way, the role of digitalization and digital skills becomes clear, which contribute to environmental awareness, understanding and focus in the behavior, thinking and actions of generations, in the socialization of responsible and sensitive young people.

Ecological citizenship as a concept is related to the views of ecological behavior, ecological literacy, ecological education, ecological knowledge, awareness and sustainability and has an integrative character, referring to the active position of people towards the environment and its center of efforts of various actors. According to the respondents, all efforts need to go through the focus of partnerships between family, school, public institutions and NGOs, through the personal example of famous people and politicians. Respondents - students talked about responsible and value-oriented behavior towards nature. Transparency and sustainability of actions are very important.

In the context of economic development and growth, accompanied by the process of globalization, a number of challenges have an impact on environmental protection. The theory of ecological citizenship is considered in the context of ecological responsibility (including intergenerational) and collective action. Responsibility between generations as a topic discussed by the respondents is rethought as what kind of world and ecological environment is passed on to children and young generations. Reflection on the intergenerational issue creates a sense of risk, insecurity and threat. It reveals the interaction between nature and society in a broader sense, adapted to global postmodern realities. Emphasis is placed on social change in society and the search for bridges to prosperity and improving the quality of life. In the field of sociability and

collective action, individuals and the environment are emphatically interconnected structural units that are functionally interdependent.

In general, the conducted interviews and focus groups with different respondents showed similarities in the shared views and assessments on environmental behavior, as well as expectations for education, applied methods and approaches. Based on the analysis of political documents and the conducted field work, it can be said that pro-environmental citizenship is not an abstraction, and it becomes a real, everyday topic, which is a shared responsibility for nature and its protection from generations.

In this context, education is proving to be a significant factor. Learning is constantly involved in people's lives, and education is understood as an important value and practical model in relation to the prosperity of the individual and society as a whole, in relation to the generation of environmental justice in the intergenerational plan. In modern realities, the view of a "knowledge society" and the promotion of not only formal but also non-formal education and self-study, as well as lifelong learning, is being affirmed.

Acknowledgements

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