

## Article

# Bridging the Gap: The Affective Dimension of Learning Outcomes in Environmental Primary and Secondary Education

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**Abstract:** There is growing evidence of the power of the affective dimensions for pro-environmental behavior, as well as of existing gaps between the dimensions of learning outcomes in recent environmental education literature. Based on the need to address that gap, this article explores the integration of the cognitive (ecological knowledge and cognitive skills), the affective and the behavioral domain in the learning outcomes of subjects related to the environment within Serbian elementary and general secondary education. This analysis was performed on the second cycle of the elementary school curricula and the general secondary education curricula for the following compulsory subjects: biology, chemistry and geography. It uses the holistic framework of EE goals, as defined by the Tbilisi Declaration as well as the concept of environmental literacy, as defined by the authors of the National Environmental Literacy Assessment used in the US, which distinguish four components of environmental literacy: ecological knowledge, cognitive skills, environmental affects and pro-environmental behavior. The results clearly show the dominance of the cognitive when compared with the affective and behavioral dimensions in both primary and secondary education. The focus of education on measurable outcomes offers firm structure for planning and evaluation, but underestimates the importance of preferences, values, enjoyment and does not facilitate rewarding the main source of pro-environmental behavior. Starting from the holistic and whole school approach to environmental education, the authors re-emphasize the need to bridge the existing gap and to provide policy support to teachers in developing their own as well as students' environmental engagement and resilience.

**Keywords:** learning outcomes; affective dimension; teachers; environmental education; Serbia

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## 1. Introduction

The huge environmental crisis, social conflicts followed by migrations and economic turbulences, additionally intensified by the effects of the COVID 19 pandemic, have marked the first decades of the “New Millenia”, affecting all aspects of life on the planet. Globally, particular attention has been given to human induced climate change and its consequences.

A number of studies conducted in the last decade report that people show a range of anxiety symptoms, caused by climate change and environmental risks [1–4]. The term ‘environmental anxiety’ has been generally used to describe emotional and psychological responses to wider concerns about “environmental degradation and because of a fear that the future of civilizations is threatened” [1] (p. 3). Environmental education (EE) is therefore seen as powerful in strengthening the coping mechanisms of people, under the concepts of individual or collective ‘socio ecological’, ‘emotional’ or ‘psychological’ resilience [5]. Easton-Gomez, Mouritz and Breadsell [6] argue that both governments and researchers need to more carefully prioritize the needs of children and youth as they are still developing and, as is shown by these studies, often suffering from psychological or emotional distress about the environmental crisis.

Environmental adversity with its effects on health and wellbeing [6] is widely regarded today as an issue of human rights, receiving the attention of researchers in all scientific fields

as well as of global policy. Reflecting the awareness of the magnitude of environmental changes and the need for an integrated and robust action to provide opportunities and coping strategies for all and in all segments of life, the UN General Assembly (UNGA) passed a resolution recognizing the right to a clean, healthy, and sustainable environment as a human right [7], one which should be interrelated with other rights and aspects of international human rights law. A number of key international players in the field, such as IPCC, UN, UNICEF and the World Health Organization argue that the environmental crisis is “a major threat to children’s rights and their health” [8,9].

In a context rich with multiple contradictions, education is undergoing its own crisis. As stated by the UNESCO Secretary-General at the 2022 Summit, transforming education is among the key and urgent political issues that will support the “holistic development of learners throughout their lives” [10] (p. 27). The holistic and humanistic approach, defined decades ago by the famous ‘Delors Report’ identified four ‘pillars’: learning to be, to know, to do and to live together [10,11]. These have been promoted again to show the core orientation between actual politics and policy, with mutually reinforcing impacts on the academic literature. The new ‘social contract’ for education [12] recalls and strongly emphasizes the message that humans are interconnected with all the other inhabitants of the Earth, and that we have a lot to learn from the ‘non-human’ parts of this entire system [12].

UNESCO has recently urged that environmental education become a core curriculum component worldwide by 2025 [13], reminding us of the environmental education goals that different educational systems have failed to fully achieve. Despite rising awareness and agreement among both researchers and policy makers on a holistic and transformative approach to education towards more sustainable solutions, there is evidence of a continuing gap or disbalance between the cognitive, affective and behavioral dimensions of learning outcomes in curricula and teaching at various education levels [12,14]. These briefly outlined trends and policy recommendations, as well as increasing evidence of the role of affective aspects in developing the resilience and activism of young generations in coping with environmental changes present a starting point of this inquiry.

The aim of this paper is to explore the representation of learning outcomes belonging to the cognitive (ecological knowledge and cognitive skills), affective and behavioral domain in Serbian elementary and general secondary education. The selected subjects biology, chemistry and geography are compulsory, containing the outcomes that refer to environmental education. This analysis has been performed using the holistic framework of EE goals, as defined by the Tbilisi Declaration [15] as well as the concept of environmental literacy, as defined by Marcinkowski [16].

Since 2017, the Serbian Curricula has been based on learning outcomes, defined as clear expressions of what students are expected to know, understand and be able to demonstrate or do after finishing a certain level of education. The learning outcomes provide the bases for planning, monitoring and evaluating their education [17]. Therefore, by analyzing the outcomes one can get a reliable view of the focus of teaching and learning in the country. This analysis should contribute to reflections on the necessary improvements in curricula and pedagogy in primary and secondary education, so that a holistic approach in EE is applied, to develop emotionally resilient, knowledgeable and active young generations.

## 2. Literature Review

### 2.1. *The Affective Domain of Environmental Education and Literacy*

As mentioned, the affective domain of environmental education and its connections with behavior, in particular of younger generations, has gained particular attention in recent decades in the literature. While some authors are mainly focused on the role of EE to strengthen the capacities of both children and teachers to cope with uncertainty and the magnitude of environmental changes [1,5,6], others are interested in relations between knowledge and emotions in developing a willingness to act, or in the way they motivate and cultivate environmental behavior now and in the future [18]. As noted, EE “can provide

key skillsets for adapting to adverse circumstances at the individual and collective levels, and more importantly, the will to change [5] (p. 21). Despite their specific focus on different aspects of those relations, the authors agree on the need to better incorporate these findings and issues into curricula and teaching strategies at various education levels, but also into the theories of EE and the reflection practices of teachers [1].

Referring to the complex nature of emotions, which are not always simply ‘positive’ or ‘negative’, ‘good or bad’, and which have the capacity to sometimes hinder and at other times (or in other circumstances) stimulate pro-environmental behavior, the authors claim that these emotions may bring “both potentials and problems for environmental education, depending on their manifestations” [1] (p.1).

Research findings clearly indicate that there is a range of emotional reactions to environmental changes, representing both “healthy responses to the threats” and intense experiences of an “unremitting psychological stressor” [2] (p. 864). As evidenced by the study performed in ten countries from different parts of the world, with differing climate exposure, social and cultural factors, nearly 60% of the 10,000 participants aged 16-25 reported that they are ‘very’ or ‘extremely’ worried about climate change, and 45% said that those feelings “negatively affected their daily lives” [2] (p.866). Together with the feelings of worry and despair, children and youth, as shown in protests as well as in research, feel confused and even betrayed by the inaction of adults; therefore, as noted, it is necessary to consider relational factors of climate anxiety, and instead of asking individuals to ‘take action’, to ask that action is taken first of all by ‘those in power’ [2] (p. 871).

Studies on emotional perceptions of climate change in different parts of the globe [7,14] report on the pessimistic prognosis of children and young adults. For example, the research of Tucci et.al, performed in Australia among a group of 10 to 14 year olds, reveals that 27% foresee the end of the world caused by climate change and related risks during their lifetime [3].

Interestingly, while the evidence of the ecological knowledge of environmentally responsible behavior (ERB) is inconclusive, there is strong evidence for the importance of the affective domain [19]. For example, Szczytko and associates [20] find that knowledge and hope (referring to self-efficacy and response efficacy) are predictors of ERB, but the interaction of knowledge and affect was a better predictor. In an Israeli study [21], the complexly measured affective domain of environmental literacy (awareness, willingness to act, sensitivity to environmental issues, affection for nature and a sense of responsibility) established a medium correlation with pro-environmental behavior. On the other hand, the knowledge of global and national environmental issues and general ecological principles was not related to behavior. The same results were obtained in a pilot study on a sample of students from Belgrade, where ecological knowledge developed an insignificant correlation with behavior, but the affective domain had a strong predictive power over pro-environmental behavior [22]. The study relies on the methodological framework of the present study, which the authors will refer to in the following section.

An exploration of the associations between the different coping strategies of Swedish adolescents and environmental efficacy, pro-environmental behavior, and subjective well-being, Ojala [23] identified problem-focused coping, de-emphasizing the seriousness of the threat, and meaning-focused coping. While problem-focused and meaning-focused coping were positively related to felt efficacy and environmental behavior, de-emphasizing the threat—as the emotion-focused strategy—was negatively related [23] (p. 2191). According to these findings, children and adolescents tend to use problem focused coping less than adults, since they usually cannot control their actions or circumstances the way adults can, At the same time, those using de-emphasizing as a coping strategy discussed environmental issues less with their peers and parents [23]. Reflecting on the practical implications of those results for education, the authors invite teachers to encourage young people to express their emotions about climate change and environmental issues, as well as to support them in finding constructive solutions which can lead to their better control over the problems they perceive [23].

Other findings on the vulnerability of children and youth to environmental changes, and particularly to climate changes, also emphasize the need for preventive measures, including educational approaches as well as opportunities for them to openly express their concerns and participate in decision making on relevant issues [6]. Starting from Schultz's concept of the Inclusion of Nature in Self Gradient as a multidimensional approach to environmental attitudes and concern, comprised of environmental apathy, anthropocentrism, ecocentrism (or 'connectedness'), and emotional affinity, the authors developed the scale by measuring the environmental attitudes of Brazilian students. Their results reveal a tendency towards a holistic perspective rather than a strictly anthropocentric or ecocentric views of students [24]. Applying the same instrument in the research of the environmental attitudes and pro-environmental behavior of environmental activists (N = 255) in Serbia, the results confirm that anthropocentric and ecocentric perspectives are not necessarily mutually exclusive, as well as that environmental knowledge is not a predictor of environmental behavior. In addition, respondents show a strong emotional connectedness and affinity to nature [25]. Once again, this indicates the importance of emotional aspects, implicating the need to provide an opportunity to learners and teachers to develop, nurture, express and share both knowledge and emotions, through teaching that includes examples of good practice and direct experience with nature.

As indicated by the studies briefly reviewed above, emotions play a significant role, both in responding to rapid environmental changes and in strengthening the motivation and capacities of young people to participate in the creation of opportunities for more sustainable co-existence in the local and global environment.

## *2.2. Environmental Education Outcomes in Terms of Environmental Literacy Components—Is There a Place for Affect?*

In their search for a definition of the affective component and its place in the curricula, the authors refer to the UNESCO-UNEP frameworks from the Belgrade Charter [26] and later in the Tbilisi declaration [15]. The categories of environmental educational objectives stated in the Tbilisi declaration were: awareness (to help students gain awareness and sensitivity to the total environment and the problems it is confronted with), knowledge (to provide a variety of experience in environmental problems, and understanding of these problems), attitudes (to facilitate acquiring values and feelings of concern, and motivation for active participation in protecting the environment), skills (to help the development of problem identification and problem solving skills) and participation (to provide opportunity to participate actively in solving environmental problems). The Belgrade Charter [26] recognized an additional category of objectives—the evaluation ability, intended to facilitate the ability of individuals and groups to evaluate the measures and programs. Most of the affective domain objectives stated in the two documents are the same: sensitivity for environmental problems, feelings of concern, motivation to act, with the Belgrade charter including a sense of responsibility and urgency regarding environmental problems as well. A more recent UNESCO overview of environmental education goals for middle school contains the following categories of the objectives: the ecological foundations, the conceptual awareness, the investigation and evaluation, and the environmental action skills [27]. The outlined categories contain 23 goals of environmental education, none of them referring to the affective domain. This short overview of the environmental education objectives leads us to the conclusion that the affective domain of the objectives loses its place, becoming suppressed mostly by the cognitive domain.

The corresponding definition of environmental literacy, that can be understood as the desired outcome of environmental education, is: having an awareness and sensitivity for environmental issues; a respect and concern for the natural environment and the impact humans make on it; the knowledge and understanding of the natural systems and their impact on humans; an understanding of environmental issues, from the local to global levels; the cognitive skills of analysis, synthesis, and evaluation of environmental issues; a sense of responsibility and personal investment and motivation to contribute to

solving environmental issues; the knowledge of the strategies for solving environmental issues; the skills to create and implement a strategy, and an active involvement in the resolution of environmental issues [16]. The affective domain of environmental literacy largely corresponds to the objectives belonging to the affective domain named by the UNESCO declaration [15,26]. A more recent conceptualization of environmental literacy is broader, including also the knowledge of physical and ecological systems as well as social, cultural and political systems and the dispositions of the locus of control, and self-efficacy [28].

### 3. Materials and Methods

In order to gain insight into the representation of the cognitive, affective and behavioral domain in Serbian curricula, the authors categorized the environmental education learning outcomes defined by three compulsory subjects: biology, chemistry and geography. The analysis included the second cycle of elementary school curriculum and the general secondary education curriculum. Elementary education is mandatory, therefore the analyzed curriculum of elementary education refers to all children attending public elementary schools in Serbia, with the exception of children attending schools for students gifted in mathematics. As far as secondary education is concerned, 33% of students were enrolled in general education secondary schools (gymnasias) in 2021/22 [29]. There are three educational profiles in Serbian gymnasias, and the authors have selected for the analysis the profile with the most emphases on the natural sciences.

The categorization used relies on the operationalization of environmental literacy developed for the purpose of a national survey in the US. Environmental literacy. It was defined through four components, measured in the following way [30]: 1. Ecological knowledge—a knowledge test with items referring to various ecological topics like food webs, circulation of water, substance and energy, pollination, predator-prey relationships etc.; 2. Environmental affect, consisting of three subcomponents: (a) verbal commitment—readiness to engage in behavior contributing to environmental protection; (b) environmental sensitivity—attitudes towards nature, activities in nature, and activities related to nature, and; (c) environmental feelings—how much students love nature. 3. Actual commitment—statements on actual pro-environmental behavior (like recycling, asking for information on solving environmental issues, saving energy); 4. Cognitive skills, containing three subcomponents: (a) issue identification—the ability to identify the environmental issue described in a text referring to a real-life situation; (b) issue analysis—the ability to recognize the values that actors in the text advocate, speaking on a socio-environmental issue; and (c) action planning—the ability to identify the most appropriate solutions to the issue described in the text.

This categorization of environmental literacy was applied in the analysis of Serbian curricula, since it relies on the UNESCO documents on environmental education [15,26] and has been empirically tested in Canada [31], USA [30,32], Greece [33] the Czech Republic [34] and Serbia [25]. The authors had in mind that different operationalizations of the affective dimension are possible. For the purpose of this study, the affective dimension was understood as the desired feelings and attitudes towards: environmental problems, active participation in environmental protection, nature and activities in nature, pro-environmental values and motivation for active participation in protecting the environment.

To achieve the objectives of the study—that is to explore the representation of learning outcomes belonging to ecological knowledge, cognitive skills, environmental affect and behavior in elementary and general secondary school biology, chemistry and geography, the authors have conducted categorization relying on the framework presented above.

### 4. Results

The analysis of the learning outcomes for biology, chemistry and geography for elementary school provided the results presented in Table 1. There were 15 learning outcomes in biology that referred to environmental education, nine of them belonging to the

knowledge domain (e.g., To identify the difference between responsible and irresponsible behavior towards living beings and their surroundings—Grade 5 [35]; To relate the causes of the degradation of the environment with their consequences for the environment itself and human health and act in order to protect the environment—Grade 6 [31]; To identify the trophic level in a food web—Grade 7 [36]).

**Table 1.** Dimensions of learning outcomes (LOs) in environmentally related subjects—elementary education.

Subject	LOs Total	Knowledge	Cognitive Skills	Behavior	Environmental Affect
Biology	15	9	3	3	0
Chemistry	7	3	1	3	0
Geography	10	7	3	0	0

There were three learning outcomes belonging to cognitive skills, all of them in the 8th grade (e.g., To make a critical assessment of human actions towards Earth’s resources [37]). There were also three outcomes that referred to behavior (e.g., To suggest actions of care for plants and animals in their surroundings and participate in those actions—Grade 5 [35]). No outcomes were categorized as belonging to the affective domain.

Regarding chemistry, introduced in the 7th grade, three learning outcomes belonged to the knowledge domain (e.g., To identify and explain the terms that relate chemistry with other sciences and professions and with sustainable development—Grade 7 [36]). One referred to cognitive skills (To make a critical estimation of the consequences of human activities that cause pollution) and three to behavior (To handle laboratory equipment and substances appropriately and display a responsible attitude towards health and the environment—Grade 7 [36]). There were no outcomes belonging to the affective domain.

Concerning geography, 10 learning outcomes referred to environmental education, all of them focused on the cognitive domain. Seven outcomes belonged to knowledge (e.g., To name the examples of human influence on water pollution and to foresee the consequences of such behaviors—Grade 5 [35], To relate the position of commercial facilities with the quality of the environment—Grade 6 [35]), while three belonged to cognitive skills (To draw conclusions on the possible solutions for using clean sources of energy in the countries whose economies are based mostly on the exploitation of oil and coal—Grade 7 [36]). No environmental learning outcomes in geography referred to values, emotions, motivation or behavior.

In the curricula for general secondary education, the focus on the cognitive domain of environmental literacy is even more emphasized, as presented in Table 2. For biology, there are nine learning outcomes referring to environmental education, all of them belonging to the cognitive domain (five outcomes were categorized as knowledge, e.g., to relate the key phylogenetic changes (changes of structure and function) of living beings with environmental factors (influence on survival, reproduction and prevalence—Grade 2, To identify the key ecosystem services on natural ecosystems examples, and to evaluate their significance for the human community—Grade 4 [38]). Four outcomes belonged to the cognitive skills domain (e.g., To analyze the components and the key processes of ecosystems on examples—Grade 4).

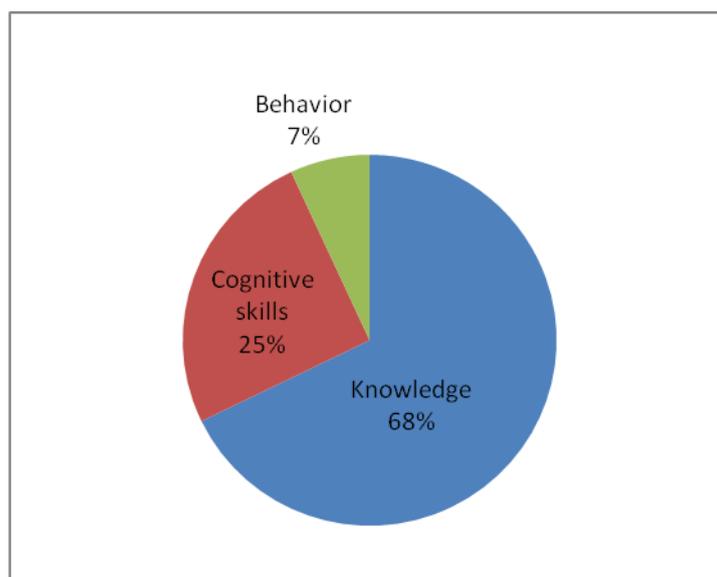
**Table 2.** Dimensions of learning outcomes (LOs) in environmentally related subjects—general secondary education.

Subject	LOs Total	Knowledge	Cognitive Skills	Behavior	Environmental Affect
Biology	9	5	4	0	0
Chemistry	7	2	3	2	0
Geography	7	2	5	0	0

The gymnasia curriculum for chemistry contains seven outcomes referring to environmental education, two belong to knowledge (e.g., To describe the presence of inorganic substances in living and non-living systems, the origin of pollutants and their influence on health and the environment—Grade 2), three to cognitive skills (e.g., To analyze the relationship between chemical scientific principles and technological processes and to make critical analyses of the influence of chemistry and the chemical industry on the individual, society and according to green chemistry principles—Grade 3) and two to behavior (To apply safe laboratory techniques in handling, storing and disposing laboratory tools and chemicals according to the principles of green chemistry—Grade 2 [38]).

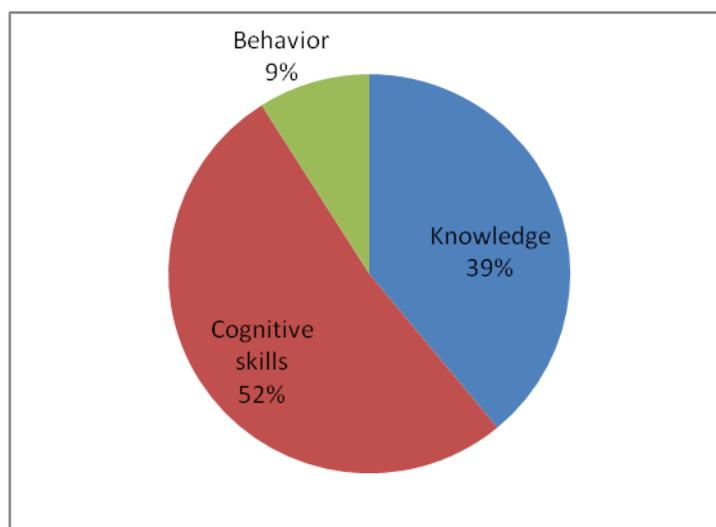
Finally, geography, like biology, contained no learning outcomes belonging to the affective and behavioral domain of environmental literacy. Out of seven cognitive outcomes, two were categorized as knowledge (e.g., To define geoheritage and make arguments for its protection—Grade 1), and five as cognitive skills (e.g., To analyze successful examples of sustainable development in different areas and to suggest solutions for the application of the proper models for the local environment—Grade 3 [38]).

This overview of the outcomes defined by the three compulsory subjects related to environmental education outcomes shows that environmental issues are incorporated in Serbian elementary and general secondary education in every grade subjected to the analysis, with higher prevalence in elementary education. Still, basing the analysis according to the four components of environmental literacy reveals the absolute prevalence of outcomes belonging to cognitive domain, with 19% of outcomes belonging to behavior in elementary education (Figure 1), and only 9% in secondary education (Figure 2).



**Figure 1.** Elementary school learning outcomes.

The overall analysis indicates that about 60% of outcomes refer to knowledge, mainly demanding from students to show understanding of the human influence on the surroundings. Cognitive skills are represented by 27% of environmental education outcomes, and behavior by 14%. Importantly, there were no outcomes referring to the desired values, motives, feelings and attitudes towards nature, environmental problems, and protection.



**Figure 2.** Secondary school learning outcomes.

## 5. Discussion

It seems that in developing the curriculum and defining the expected outcomes of education, Serbian experts give absolute priority to the cognitive domain, overlooking the main predictor of environmentally responsible behavior—environmental affect [16,39]. The very definition of learning outcomes seems to overlook the importance of the affective dimension, including emotions, values, attitudes and motivation. It is not hard to explain, since the affective domain is less susceptible to evaluation [40]. When the system inclines towards numeric evaluation, it becomes even harder to introduce the affective dimension into the outcomes domain. Nevertheless, it is possible to recognize and reward motivation, values and intentions that are reflected through initiatives and actions. For example, behavioral outcomes, outnumbered by the cognitive ones, do speak of “proposing biodiversity protection actions and participating in them”, which can be considered as an indicator of developed pro-environmental affect. The question remains—whether the overall educational context supports and provides conditions for such behaviors, or whether this remains just an initiative of the individual. There is evidence that affective behavior can develop, when the children are exposed to the proper learning experiences [40]. Littleldyke [41] proposes the integration of the cognitive and affective domains in environmental learning, as a way towards fostering environmental care and informed pro-environmental behavior. Schools should foster the affinity and curiosity towards nature and empathy for the animal world, that children usually have at young age, and emphasize affective concern and care. Therefore, he suggests the curricula that supports biophilic attitudes towards the environment [41].

Love for nature, affinity towards spending time in nature, the readiness to sacrifice one’s own comfort and convenience in order to preserve it, can and should be listed among the desired outcomes of environmental education. These outcomes cannot be directly measured, but must not be neglected for that reason alone, and can be rewarded through grades and appraisal. Having in mind that environmentally responsible behavior is the most important outcome of environmental education [16], and that the entire educational effort should be oriented towards creating active and responsible citizens, the policy should bear in mind the predictive power and the importance of affect when creating the curricula.

The studies of affect related to environment show the different roles it has in our life, each of them deserving the attention of teachers. Emotional reactions to the environmental crisis and problems, like worry or despair [14] should also be addressed through education. Fear can have an inhibitive, paralyzing role [36], especially when there is not the knowledge or skills necessary for appropriate action. On the other hand, these reactions have the potential to motivate an individual to action, since they feel endangered [36], while a

complete lack of fear and ignoring the problems can be an indicator of a lack of awareness in a country addressing numerous and severe environmental problems. The feeling of hope can overcome fear, and Kleres and Wettergren [42] point to “the fundamental necessity of hope for human action; perhaps regardless of the circumstances we need hope to act toward a future and we act because it creates hope” [42] (p. 517).

The value of examples and best practices shared to cultivate the connectedness and environmental activism of children and youth, has been strongly recognized by authors to promote a more optimistic rather than apocalyptic response. Authors using the concept of hope argue that sharing and modifying (to the particular context) successful examples of best practice, may influence abilities to think critically and define learners’ goals, leading to environmental action [43,44]. As seen by Kelsey, for Generation Z “the environment is no longer a movement, it’s an embodied value, a lived ethic” [43] (p. 101).

The feeling of de-emphasizing the threat, a negative correlate of pro-environmental behavior [23] is an indicator of environmental apathy. Environmental apathy, the attitude of a lack of care for the environment, and the absence of nature from the perception of self [24] is also negatively related to pro-environmental behavior [39]. Underestimating the problem can be perceived as a threat for environmental activism, and it should also be addressed in classroom discussions. In cases when nature is perceived as part of the self and when we feel related to nature, there is a positive correlation with environmentally responsible behavior [39], which is in line with the findings relating environmental affect and ERB. In this case, affect has the role of motivator for action and for proper behavior.

Naturally, a holistic approach in defining learning outcomes needs transformative and participative pedagogies, providing a learning environment which is not limited to classrooms or to schools alone and is organically intertwined with the surrounding environment. As seen from these research findings [22,24,39], connection with nature plays a significant role in nurturing emotions and motivating pro-environmental behavior. Outdoor education, as stated, can have multidimensional implications on the achievement of environmental goals; it can “improve students’ perceptions of the ecosystem and the environment, arouse their curiosity and observation, make them take the initiative to explore and discover environmental problems, cultivate their willingness and determination to cherish and protect the environment, motivate them to care about their surroundings and take active environmental actions” [45] (p. 256).

Considering the socio-emotional aspects of environmental and sustainability education, authors pose important and complex questions on how “the risky business of dealing with emotions (can) be turned into a teaching opportunity” ([45], according to [44], p. 15). If determined to create ‘emotionally literate classrooms’ ([46], according to [44], p. 15) teachers might use some of the strategies suggested: “supporting group cohesion through good relationships, creating an atmosphere that is warm and supportive, engagement in learning activities that are perceived as meaningful, and humor given its importance in bonding and building trust” [44] (p. 15).

While those and similar strategies are embedded in most of the contemporary teaching theories and approaches, the question is whether teachers are ready to apply them in the specific context of the environmental crisis, when, as evidenced, “an alarming number of environmental educators are in danger of burnout and other serious mental states because of the relentless exposure to ecological damage and the perpetual pressures to do more about it” [1] (p. 2).

Not only the education of children and youth, but both the pre-service and in-service education of teachers still misses the opportunity to strengthen their capacities to cope and reflect on their own knowledge, feelings, and attitudes as well as actions related to environmental issues. This creates yet another gap between the expectations from education and teachers and the support provided by policy and society for their efforts to create a stimulating learning environment, increasing the emotional resilience and pro-environmental behavior of the young generation.

## 6. Conclusions

A number of recent research findings indicate the power of affective dimensions for pro-environmental behavior, and the individual and collective resilience of children and youth. Yet, in the environmental education literature as well as in analyses informing global policy, there is evidence of existing gaps between the dimensions of learning outcomes at different education levels. The results of the analysis of learning outcomes in primary and secondary education in Serbia also clearly show the dominance of the cognitive in comparison with the affective and behavioral dimensions in both primary and secondary education. The focus of education on measurable outcomes offers firm structure for planning and evaluation, but underestimates the importance of preferences, values, enjoyment and does not facilitate rewarding the main source of pro-environmental behavior. In a system that recognizes the importance of learning facts and notions regarding the environment, but not having respect, sensitivity and affective engagement with it, we can expect no change of the actual praxis. To achieve change in the domain of environmental affect, the schools need to be oriented towards outdoor activities, providing direct learning experiences about nature in the nature.

Formulated by the experts engaged by governmental institutions, learning outcomes in all the fields of formal education in Serbia, including the environmental, are delivered 'from the top' to teachers who are expected to implement them with limited space for freedom to modify them in accordance with the specific context and their teaching approach.

The main limitation of this analysis is related to its sample regarding secondary school curricula. Beside general secondary schools, there is great variety of vocational schools curricula, that should be subjected to the analysis in the future research efforts. Further on, the analyzed learning outcomes belong only to the field of the natural sciences. This decision reflects the fact that environmental issues are still not integrated across the curricula and are rarely found in other subjects in Serbian primary and secondary education. Also, the analysis has been made on the curricula of one country only, though its results reflect the trends briefly described in the literature preview. And finally, the analysis has been focused on the domains of learning outcomes as formulated in the curricula, while its implementation through the teaching practice could not be assessed by this research. Still, these results and their discussion might be inspirational for other researchers to focus on when considering the affective aspects of environmental education, as well as for policymakers as they develop strategies to overcome existing gaps between the domains in formulating learning outcomes.

The integration of the affective dimensions into the curricula of primary and secondary education requires the framework of the whole-school approach, to promote the synergy between curricula (including the approach to teaching), governance, community, and action learning [47]. Therefore, it is not possible, even in an analysis dealing specifically with learning outcomes, to neglect the affective dimension's close and multiple connections with policy, including the professional development of teachers.

Both pre-service and in-service education programs for teachers need to integrate aspects of the environmental affect, not only because of its importance for children and youth, but also for educators, their competences, and opportunities to develop their own resilience and to reflect on their performance as teachers and role models. If teachers in environmental education are expected to contribute to emotionally resilient and proactive children and youth, they need better support, in terms of carefully designed professional development and organized exchange of best practice experiences, instead of the overemphasized burden of responsibility and expectations from policymakers and the society as a whole.

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