



# PROBLEMS AND PERSPECTIVES OF CONTEMPORARY EDUCATION

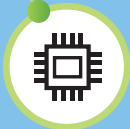
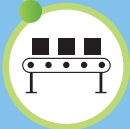


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NIKOLETA  
GUTVAJN

JELENA  
STANIŠIĆ

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RADOVIĆ





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# **PROBLEMS AND PERSPECTIVES OF CONTEMPORARY EDUCATION**

Editors

Nikoleta GUTVAJN

Jelena STANIŠIĆ

Vera RADOVIĆ

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INSTITUTE FOR EDUCATIONAL RESEARCH  
BELGRADE, SERBIA

FACULTY OF PHILOLOGY, PEOPLES' FRIENDSHIP UNIVERSITY OF RUSSIA  
(RUDN UNIVERSITY), MOSCOW, RUSSIA

FACULTY OF TEACHER EDUCATION, UNIVERSITY OF BELGRADE  
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# STUDENTS' ENVIRONMENTAL LITERACY IN THE REPUBLIC OF NORTH MACEDONIA

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Mile SRBINOVSKI

Faculty of Technical Sciences, Mother Teresa University, Skopje,  
Republic of North Macedonia

## INTRODUCTION

Today, we as human beings are being confronted with several environmental problems because of the uncontrolled use of the world's resources, pollution, urbanization, global population explosion, deforestation, economic development, industrialization, and poverty. The development of environmental awareness, knowledge, skills, attitudes, and participation are considered as essential to help minimize environmental problems. From that, environmental Education (EE) and the more recent Education for Sustainability (EFS) have been identified as means or tools for developing environmental literacy- EL (Roth, 1992).

The term EL, has been used for about six decades in professional EE literature, but there is still not one single agreed definition, maybe because of its interdisciplinary nature. Many studies have attempted to define EL by considering their scope of research and the context involved (Shih-Wu, Wei-Ta, Shin-Cheng, Shiang-Yao, Huei-Min, Jui-Yu, & Ng, 2018), or by considering their own context and their research findings (Erdogan, 2009; Stables & Bishop, 2001; Rockcastle, 1989; Bogan & Kromrey, 1996; Daudi, 1999; Coppola, 1999; Zeng, 2004; Morrone, Mancl, & Carr, 2001; Roth, 1992).

The model of environmental literacy developed by Simmons (1995) consisted of seven components and was used in its entirety or in part by scholars in the U.S.A., South Korea, Taiwan, Israel, and Turkey. The components and topics associated with these components were reviewed by Erdogan & Marcinkowskim (2007), Cunningham & Saigo (2001); Enger & Smith (2002), Miller (1998), Raven & Berg (2001), thus, forty-one sub-components are grouped into six major components of EL with regard to their relevance (cit. in Erdogan, 2009: 46).

Many studies have documented the assessment of EL in different parts of the world: Alkaff, Garrison, & Golley, 2005; Bogner, 1999; Culen & Mony, 2003; Chu et al. 2007; Dimopoulos, Parakevopoulos, & Pantic, 2008; Hsu, 2004; McBeth, Hungerford, Marcinkowski, Volk, & Meyers, 2008; Negev, Sagy, Garb, & Salzberg, Tal, 2008; Rovira, 2000; Roberts, 2008; Ruiz-Mallen, Barraza, Bodenhorn, & Reyes-Garcia, 2009; Walsh-Daneshmandi, MacLachlan, Leeming, O'Dwyer, & Bracken, 1995; Uzun, & Keles, 2012; Zsoka, Szerenyi, Szechyi, & Kocsis, 2013 (cit. in Igbokwe, 2016), Goldman, Yavetz, & Pe'er, 2006; Erdogan, Kostova, & Marcinkowski, 2009; Chu, Ryung, Hee, Lee, & Mee Hee, 2007; Karimzadegan, & Meiboudia, 2012 (cit. in Ruggiero, 2016).

## **ENVIRONMENTAL EDUCATION IN THE REPUBLIC OF NORTH MACEDONIA**

The beginnings of environmental education in the Republic of North Macedonia have deep roots. A multitude of diverse activities have been continuously undertaken by several parties involved in order to promote it (UN, 2002).

Ecological contents are present at all educational levels. In preschool education they are integrated into the subject of Science. In primary (elementary) education they are included in Natural Science, Biology, Geography, Chemistry, and elective courses. Also, environmental protection is integrated into an annual program developed by each school. A Green Pack Junior educational kit was produced and disseminated by the Regional Environmental Center (REC) for Central and Eastern Europe country office, as well. In secondary education environmental protection is included to varying degrees in annual programs prepared by the schools, the mandatory subjects of Biology, Geography, Chemistry and Physics. Curricula for vocational education and training vary, depending on the area of specialization. There is no dedicated law on EE or education for sustainable development (ESD). In terms of policy framework, our country has not adopted the national strategy on ESD recommended by the UNECE Strategy on ESD (UN, 2011; UN, 1019). More detailed results about environmental contents in curricula and didactic materials in primary and secondary schools in North Macedonia have been reported Srbinovski & Palmer, 2008; Srbinovski, 2001; Srbinovski, 2002/03; Srbinovski, 2003a, 2003b, 2003c, 2003d; Srbinovski, 2005a, 2005e; Srbinovski, 2013;



Srbinovski, Erdogan, & Ismaili, 2010; Srbinovski, Ismaili, & Abazi, 2010; Srbinovski, Palmer, Ismaili, & Abazi, 2007; Ministry of education and science, 2016, UN, 2011; UN, 2019. Several studies are also dedicated to students' assessment of EL in our country. The main results of both studies about environmental contents and EL will be discussed in the context of this research.

## SIGNIFICANCE OF AND JUSTIFICATION FOR THE STUDY

The benefits of evaluation in the field of EE are: evaluation can lead to the improvement of your instructional program, to greater growth in learning by your students, and to a better environment (UNESCO, 1984. p. 6). On the other hand, although there many research studies have been carried out in the field of EL abroad, research studies in this area are rarely observed in North Macedonia (e.g. Srbinovski, 2019b). The absence of this kind of review study encouraged us to collect and systematically analyze the results of environmental literacy research in our country.

## BACKGROUND VARIABLES

The following components and subcomponents were explored for this study: cognitive (environmental knowledge), affective (environmental attitudes), and behavioral (conative) component.

*Environmental knowledge* includes cognitive understandings of the environment and its associated problems (Roth, 1992).

*Environmental attitude* is a psychological construct and refers to a set of values and beliefs dealing with the individuals' feelings, pros or cons, favorable or unfavorable, in terms of particular aspects of the environment and/or objects associated with the environment (Hines, Hungerford, & Tomera, 1986/87).

*The conative component* is a psychological domain of behavior or mental processes associated with goal-directed action (Atman, 1987). It refers to an individual's commitment to invest energy in his/her work in order to reach a specific goal.

For the purpose of this study, environmental education is defined as a developing process of active learning in which individuals and groups acquire

the necessary knowledge, understanding, attitudes, and skills for a determined, motivated, responsible, and above all, joint action towards obtaining and maintaining a dynamic balance in the environment (Srbinovski, 2001).

The key purpose of this study is to assess students' level of EL by considering three key environmental literacy categories as outlined in the literature. Specifically, the following objectives are investigated: 1. To assess the students' level of EL in the Republic of North Macedonia for the following variables: a) cognitive (environmental knowledge), b) affective (environmental attitudes), and c) behavioral (conative) component. This was done by collecting and analyzing EL studies in North Macedonia published over the years of 2000-2020. 2. To identify the relationships between cognitive, affective and conative component in Macedonian context, and 3. To identify the factors affecting students' level of environmental literacy.

## METHOD

The methodology applied in this study is taken from the literature (Erdogan, Uşak, & Bahar, 2013) and appropriately adapted to the context of the study.

*Design.* The content analysis method was utilized both for designing the study, and for a review and analysis of the selected studies.

*Criteria for selecting the research studies.* Five major criteria were pre-determined to limit the study and better portray the nature of education research in North Macedonia. These criteria were: 1) studies presenting qualitative and quantitative data, 2) studies published as journal articles, conference papers, and theses (either master or PhD), 3) studies undertaken over the years 2000–2020, 4) studies involving environmental knowledge, environmental attitudes, and conative environmental components, and 5) studies involving EE in primary and secondary education.

*Sources of research studies.* In order to access relevant studies, several sources were consulted: national and international refereed journals, data bases, selected conference proceedings, and theses available in the faculty library.

*Analysis.* Analysis of the selected studies was undertaken in five steps: 1) conducting a search of determined key words in the selected sources and gathering the studies; 2) developing a coding form; 3) excerpting relevant information

from the studies, 4) constructing a table by considering this information, and 5) analyzing, interpreting, and summarizing the results.

*Search for Studies.* In the first step, the following key words were searched within sources of research studies: “environmental knowledge”, “environmental attitudes”, “conative component”, “schools”, “Republic of (North) Macedonia”. Furthermore, the researcher publishing studies related to EL were contacted and asked to provide satisfying criteria. Substantial efforts and careful search for studies within these sources resulted in more than 60 research papers. These studies were analyzed with regard to five criteria; some of them were found to be irrelevant and provided insufficient information. Consequently, 22 studies (in the appendix) which were seen to satisfy all criteria were considered and selected for this investigation: 5 were published in national journals, 8 in international journals, 5 appeared in conference abstract books or proceeding, 3 were unpublished (master and doctoral) thesis, and 1 was published as a part of a book. For papers that were published in a book of abstracts, we contacted the authors.

*Developing Coding Form.* For establishing the coding form, the paper classification form, which was developed by Sözbili, & Kutu (2008) and revised recently by Kızılaslan, Sözbilir, & Yaşar (2013), was refined with regard to the aim of the present study (cit. in Erdogan et al., 2013). The coding form utilized for analyzing the selected studies consisted of nine dimensions: citation of the reference, purpose of the article, variable/outcome assessed, design of the study, sample –sampling, data collection tools, reliability –validity assurance, data analysis, and results (in appendix).

*Analyzing and Charting the Selected Studies.* In the third step, selected studies were coded, using the coding form, and then a separate coding form was filled out for each study. In the fourth step, a table (see Table 1) was created to better portray and compare the information extracted from the studies in terms of research design, sample characteristics and outcome variables.

## RESULTS

The study reported the collection and analysis of 22 research studies undertaken during years of 2000-2020 assessing research on EL in North Macedonia regarding pre-determined criteria in the selected sources. Current literature

suggests that this study seems to be one of the first attempts to systematically collect and analyze research on EL in North Macedonia.

The results of the studies were grouped under three categories: 1) method, 2) sample characteristics, and 3) outcome variables assessed.

## METHODS OF THE SELECTED STUDIES

Of the selected studies, quantitative research methods (n=19) were observed in majority, and mixed design (Qual. + Quan.) was observed in only three studies.

**Table 1.** Methodology of the studies.

	<b>Author(s) and date</b>	<b>Outcome variables</b>	<b>Design of the study</b>	<b>Sample/ sampling</b>	<b>Data collection tool (s)</b>	<b>Data analysis</b>
1	Idrizi A., Srbinovski M., Jonuzi I. & Murati-Sherifi K. (2015).	conative	Quantitative, non-experimental	484/ non-random.	Developed by other(s)	Quantitative, descriptive
2	Ismaili, M., Abazi, A. & Srbinovski, M. (2009)	knowledge, attitudes, conative	Quantitative non-experimental	450 /non-random	Self-developed	Quantitative, descriptive
3	Ismaili, M., Srbinovski, M. & Sapuric S. (2014)	conative	Quantitative, non-experimental	1478/ non-random	Self-developed	Quantitative, descriptive
4.	Jonuzi I. (2009).	knowledge, attitudes, conative	Quantitative non-experimental Qualitative, non-interactive	484/ non-random	Developed by other(s)	Quantitative, Descriptive Qualitative
5	Jonuzi I. (2012)	knowledge, attitudes, conative	Quantitative non-experimental Qualitative, non-interactive	484/ non-random.	Developed by other(s)	Quantitative, descriptive, qualitative
6	Jonuzi, I., Ismaili, M., Srbinovski, M. & Zenki, V. (2009).	knowledge	Quantitative, non-experimental	120/ non-random	Self-developed	Quantitative, descriptive
7	Memeti H., Srbinovski M. & Hasani N. (2008)	knowledge	Quantitative, non-experimental	150/ non-random	Self-developed	Quantitative, descriptive

	<b>Author(s) and date</b>	<b>Outcome variables</b>	<b>Design of the study</b>	<b>Sample/ sampling</b>	<b>Data collection tool (s)</b>	<b>Data analysis</b>
8.	Srbinovski M. (2020).	attitudes	Quantitative non-experimental	251/ non- random	Developed by other(s)	Quantitative, descriptive
9.	Srbinovski, M. (2001)	knowledge, attitudes, conative	Quantitative non-experimental Qualitative, non- interactive	1003/ non- random	Self-developed	Quantitative, descriptive and inferential data analysis, qualitative
10	Srbinovski, M. (2002/03).	knowledge, attitudes, conative	Quantitative non-experimental	515/ non- random	Self-developed	Quantitative, descriptive
11.	Srbinovski, M. (2004).	knowledge, attitudes, conative	Quantitative non-experimental	488/ non- random	Self-developed	Quantitative, descriptive
12	Srbinovski M. (2005a)	knowledge, attitudes, conative	Qualitative, non- interactive	4650/ non- random	Self-developed, developed by others	Qualitative
13	Srbinovski M. (2005b).	knowledge, attitudes, conative	Quantitative, non-experimental	1003/ non- random	Self-developed	Quantitative, Descriptive, inferential,
14	Srbinovski, M. (2005c).	knowledge, attitudes, conative	Quantitative non-experimental	1003/ non- random	Self-developed	Quantitative, inferential,
15.	Srbinovski, M. (2005d).	attitude	Quantitative non- experimental	1003/ non- random	Self-developed	Quantitative, descriptive
16	Srbinovski M, & Memeti H. (2008).	knowledge	Quantitative non-experimental	150/ non- random	Self-developed	Quantitative descriptive.
17	Srbinovski M., Pollozhani A. & Ismaili M. (2019).	attitudes	Quantitative, non-experimental	161/ non- random	Developed by other(s)	Quantitative. Descriptive
18	Srbinovski M. (2016).	attitudes	Quantitative, Non- experimental	448/ non- random	Developed by other(s)	Quantitate, descriptive, Inferential
19	Srbinovski M. (2019a)	knowledge	Quantitative, non- experimental	1003/ non- random	Self-Developed	Quantitative, descriptive and inferential analysis
20	Srbinovski M. (2019b).	attitudes	Qualitative, Non-interactive	6387/ non- random	Self-developed, developed by other(s)	Qualitative/ Content analysis

	<b>Author(s) and date</b>	<b>Outcome variables</b>	<b>Design of the study</b>	<b>Sample/ sampling</b>	<b>Data collection tool (s)</b>	<b>Data analysis</b>
21	Srbinovski M. & Stanišić J. (2020).	attitudes	Quantitative, Non- experimental	448/ non- random	Developed by other(s)	Quantitative, descriptive,
22	Srbinovski M. (2020).	attitudes	Quantitative non-experimental	251/ non- random	Developed by other(s)	Quantitative, descriptive

Random selection was not observed in any of the studies. Systematic and convenience types of non-probability sampling methods are the most commonly used sampling techniques. Various types of data collection tool (questionnaires, n=4; scales, n=17; and achievement test, n=12) were used, and more than one tool was used in many of the studies (n=8). 13 instruments were self-developed instruments by the author/s, and 8 were developed by other researchers. Instrument development process, especially in terms of validity and reliability, in some of the studies were not explicitly reported. Cronbach's (1951) procedure was usually used to examine internal consistency of dimensions. "Pencil and paper" method is the basic method of data collection in all selected studies. Mostly descriptive and relatively less inferential statistic procedures were performed in the analyzed studies. Descriptive statistics often included frequency (f), percentage (%), mean (M) and standard deviation (SD), whereas inferential statistics included correlation, t-test, 2, Chi- square contingency (C), ANOVA, a principal components factor analysis (PCA) with varimax rotation and principal axis factoring (PAF) methods.

## SAMPLE CHARACTERISTICS

Demographics (sex, age, grade, place of residence) in the studies were preferably used for describing the sample characteristics. Sample size was "500 and lower" in 13 studies, "501-1000" in one study, and "higher than 1000" in eight studies. Most of the studies include students from both primary and secondary education (n=11).

## OUTCOME VARIABLES

Considering outcome variables assessed in the selected studied, three main themes appeared, such as 1) environmental knowledge, 2) environmental attitudes, and 3) environmental (conative) behavior.

## Environmental Knowledge

Environmental knowledge is the subject of research in 13 studies. Multiple choice test questions were used as an instrument for measuring knowledge in all studies. Almost all of these studies were dedicated to general environmental knowledge. Environmental knowledge is at the lowest level compared to affective and conative variables in all selected studies. The percentage of points scored by students on the knowledge test ranged from 33.23% (Srbinovski & Memeti, 2008) to 42.17% (Memeti, Srbinovski, & Hasani, 2008). Both elementary and secondary students scored almost identical results on the questions about human resources, natural systems, and resources (Srbinovski, 2019a). Environmental knowledge, was most often due to the degree of memorization and recognition.

A low level of environmental knowledge was also reported by others authors, e.g. Shih-Wu et al., 2018; Wardani, Karyanto, & Ramli, 2018; Williams, 2017; Kuhlemeier, Van Den Bergh, & Lagerweij, 2010; low to moderate level reported Varisli, 2009; a moderate level was reported O'Brien, 2007; Erdogan, 2009; Negev et al., 2008.

The most important question is why our students have a low level of environmental knowledge? It was recognized by all stakeholders in the country that there is a lack of EE in both formal and non-formal education (Spiroska, 2011). Key problems are: EE is not consistently anticipated in the curricula and in didactic materials, the environment is mainly considered through its natural aspect, and the other hand, the teaching process usually takes place in traditional classrooms (Srbinovski, 2003a, b, c, d, e, 2004c, 2005e, 2013). However, very a important factor in its implementation are teachers. Unfortunately, most teachers have not been trained in experiential teaching methods, and do not know how to assess experiential learning. Insufficient time spent in classroom teaching and in preparation are key obstacles experienced by teachers in infusing EE (Arba'at & Mohd Zaid, 2011).

Srbinovski M. (2004a, b, c, d) reported statistically significant correlations between environmental knowledge and ecological atmosphere in the school, the object of teaching, students' motivation for learning environmental issues, students' interest in studying environmental contents, students' activity during class, students' personal responsibility about the environment, and teachers' interest in implementing environmental content.

According to the selected studies, statistically a significant correlation existed between knowledge and affective component ( $r = .35$ ) and on the other hand, there is a positive correlation ( $r = .16$ ) between knowledge and conative component (Srbinovski, 2005c). A positive correlation between cognitive and affective components was also reported by other authors, e.g. O'Brien, 2007; Hines, Hungerford, & Tomera, 1986/87; very weak Kuhlemeier, Van Den Bergh, & Lagerweij, 2010; but no significant correlations reported Shih-Wu et al., 2018. Negev et al. (2008) did not find a significant correlation between knowledge and behavior.

### Environmental attitudes

We cannot separate affective components from cognitive ones because the processes of cognition are emotional and cognitively motivated, from perception to conclusion. Attitudes about the environment was the subject of research in 16 studies. All instruments used to collect data in the selected studies are 5-point, two-way Likert scale.

Students' environmental attitudes are within the range 56.61% (Srbinovski, 2016; Srbinovski, & Stanišić, 2020), and 77,2% (Srbinovski, 2005d). The mean of students' level of environmental attitudes for the period under review is approximately 68.07%. The majority of the students consider humans to be the most responsible factor of environmental protection. Compared with other countries such as the United Kingdom (Pahl, Harris, Todd, & Rutter, 2005), the United States (Kortenkamp & Moore, 2006), Australia (Blaikie, 1992), Turkey (Erdogan, 2009), Brazil (Schultz et al., 2005) (cit. in Ogunbode, 2013, p.1486), Belgium, Zimbabwe, Vietnam (Van Petegem & Blicck, 2006; Boeve & Van Petegem, 2012), India (Ponmozhi & Krishnakumari, 2017), France (Le Hebel, Montpied & Fontanieu, 2014), Bulgaria (Bostrom, Barke, Turaga, & O'Connor, 2006), Greece (Ntanos, Kyriakopoulos, Skordoulis, Chalikias & Arabatzis, 2019), Israel (Negev et al., 2008), Taiwan (Shih-Wu et al., 2018), Germany (Kuhlemeier, Van Den Bergh, & Lagerweij, 2010), and Indonesia (Wardani, Karyanto, & Ramli, 2018), findings of this study suggest that the respondents are characterized by moderately positive attitudes towards the environment.

Robottom & Hart (1995) believe that historical, social, and political contexts within which individual and group actions take place are key factors which



must be included in this type of research. "Schools with a strong orientation towards environmental studies seem to transmit environmental information more effectively than schools with no environmental policies" (Barraza & Walford, 2002: 171). Despite all, the efforts made by our community (some of them are listed in the previous text) EE in our countries is not consistently treated, either as a separate subject or as a principle. Too little time (3.04% in 2001, and 2.18% in 2012) is devoted to EE in our schools. In the curricula dominate goals connected with the education "about" the environment- 93%. On the other hand, there are very few goals regarding the education "in/from" (2%) and education "for" (5%) the environment (Srbinovski, Palmer, Ismaili, & Abazi, 2007).

Apart from socio-demographics, there are also other factors that affect environmental attitudes, such as environmental knowledge (e.g., Schahn & Holzer, 1990). A statistically significant correlation between knowledge and attitudes in the Macedonian context was reported by Srbinovski, (2005c). Kundačina (1991) received similar results in his research conducted in the previous period. There is an increased positive effect on children's attitude when they are taught about the environment in an outdoor/hands-on setting versus an indoor traditional classroom setting (Khawaja, 2003). Significant or positive correlations between attitudes and behavioral components have been reported by many authors in different parts of the world (e.g. Chan, 1996; Hines, Hungerford, & Tomera, 1986/87; Makki, Abd-el-Khalick, Boujaoude, 2003).

### Environmental (conative) behavior

The conative component (willingness to react to one's own commands) is the subject of research in 11 studies, and it is within the range 64% (Ismaili, Abazi, & Srbinovski, 2009) and 67.68% (Srbinovski, 2004). The mean of the students' conative component is approximately 66.16% which indicates that most students are ready for action in situations where their environment is threatened. Self-initiative active modality is a dominant level of students' conative component (39.78%).

According to selected studies, there are more predictors of a conative component in the Macedonian context: ecological atmosphere in the schools, participation in schools' sections, objects of learning, interest in studying environmental contents, using additional literature, students' personal responsibility

for the environment, students' motivation to learn environmental contents, and teachers' interest in the realization of environmental contents.

Srbinovski (2005c) reported low positive correlation (.16) between cognitive and conative components, and a weak positive correlation (.28) between attitudes and conative components. Scott & Willits (1994) concluded that the reason for the low correlation between knowledge and behavior could be due to inconsistency between what people say and what they actually do (cit. in Erdogan, 2009). Negev (2008) identified a significantly low correlation between behavior and attitude. A positive correlation between attitudes and behavior (or intention to act) was reported by Kuhlemeier, Van Den Bergh, & Lagerweij (2010) in the Dutch context. Hines, Hungerford, & Tomera (1986/87) conducted a meta-analysis of 128 studies, and found attitudes to be strongly associated with behavior (0.35) or intention to act. It is important to note that in our studies we measured students' willingness for action based on their expressed attitudes, but not on real action and behavior.

## CONCLUSIONS

Random selection was not observed in any of the studies, which is an obstacle to the results generalization. Instrument development process, especially in terms of validity and reliability, in some of the studies were not explicitly reported. Mostly descriptive and relatively less inferential statistic procedures were performed in the analyzed studies.

Environmental knowledge is at the lowest level compared to other components of EL. Statistically significant correlation existed between knowledge and the affective component in the Macedonian context, but between knowledge and conative component there exists a low positive correlation. Like many others countries in the world, Macedonian students are characterized by moderately positive attitudes towards the environment. Between affective and conative component there exists a significant positive correlation. Respondents have a moderate level of conative component. For all participants in this survey, the mean EL score is at intermediate level (57.2%).

Schools appear to have only a modest effect on environmental literacy among Macedonian children. Several school factors are significantly related to students' levels of all EL components in the Macedonian context (curricula, textbooks,

ecological atmosphere, students, teacher, teaching). Having in mind the overall situation in the field of EE in our country, there is a need for developing a model for EE, National strategy on EE and/or education for sustainable development, Environmental Literacy Plan (ELP), and Law on EE or ESD. In terms of assessment of EL, the ELP should describe the methods that the state education agency will use annually to measure environmental literacy (NAAEE, 2008, p. 9).

## IMPLICATIONS

In the situation of limited EL studies in North Macedonia, these results provide insights into what is needed to enhance the EE program for effective EL, and can help in shaping the country's education policy in terms of improving, clarifying, and modifying curriculum goals, instructional material, and instructions in the field of EL. Finally, results from this study could contribute towards further relevant policy discussion and decision-making in this field.

## LIMITATION

There were several limitations to this study that should be considered before any generalization of the results. First, this study has some limitation with regard to methodology of selected studies: a) random selection was not observed in any of the selected studies, b) reliability and validity evidences were not explicitly reported in some studies, c) complexity of the research problem requires more complex statistical procedures, and d) assessment of EL levels is based on a relatively small number of EL subcomponents. Second, in our country there are no objectively determined criteria by which we could more accurately and reliably evaluate the results obtained. Despite these limitations, our results provide an intriguing insight into students EL in the Republic of North Macedonia.

## RECOMMENDATIONS

Comprehensive environmental literacy assessments are needed throughout the state to improve the understanding and status of environmental literacy. Also, further research should be conducted to survey university teacher education

preparation programs to determine the extent to which environmental education is incorporated into the teacher preparation programs.

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## APPENDIX 1.

### SELECTED RESEARCH FOR ANALYZING IN THIS STUDY

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## APPENDIX 2.

**Table 1. Coding Form for Article Classification\***

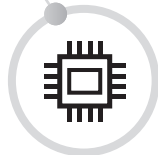
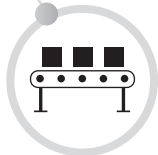
<b>A. CITATION OF THE REFERENCE</b>				
<b>B. PURPOSE OF THE ARTICLE</b>				
<b>C. VARIABLES / OUTCOMES ASSESSED</b>				
Cognitive	Affective	Conative	Other (any combination)	
<b>D. DESIGN OF THE STUDY</b>				
( ) Quantitative		( ) Qualitative		( ) Mixed
( ) Experimental	( ) Non-Experimental	( ) Interactive	( ) Non-Interactive	( ) Mixed
( ) 1.True Exp ( ) 2. Quasi Exp. ( ) 3. Weak Exp. ( ) 4. Single Subject ( ) 5. Other.....	( ) 1. Descriptive ( ) 2. Comparative ( ) 3. Correlational ( ) 4. Survey ( ) 5. Other .....	( ) 1. Ethnographic ( ) 2. Phenomenology ( ) 3. Case Study ( ) 4. Grounded Theory ( ) 5. Other.....	( ) 1. Concept Analysis ( ) 2. Historical Analysis ( ) 3. Other.....	( ) 1.Explanatory (Quan / Qual) ( ) 2. Exploratory (Qual / Quan) ( ) 3. Triangulation (Quan + Qual)
<b>E. SAMPLE / SAMPLING</b>				
<b>Sample</b>	<b>Demographics</b>			<b>Sampling</b>
	( ) Random Sampling		( ) Non-Random Sampling	
( ) 1. Elementary Ed. (1-5) ( ) 2. Elementary Ed. (6-8) ( ) 3. Secondary Ed (9-12) ( ) 4. Undergraduate ( ) 5. Graduate ( ) 6. Teachers ( ) 7.Other.....	Sample / subject size (n) = ..... Gender: .....male .....female Age: ..... Grade(s) (if students): ..... Fields (if teachers): ..... Province: ..... Other: .....	( ) 1. Simple Random ( ) 2. Stratified Random ( ) 3. Cluster Random ( ) 4. Two-Stage Random ( ) 5. Other .....	( ) 1. Systematic ( ) 2. Convenience ( ) 3. Purposive ( ) 4. Other.....	
<b>F. DATA COLLECTION TOOL(S)</b>				
1.....	Adapted ( ), Self-Developed ( ), Developed by others ( )			
2.....	Adapted ( ), Self-Developed ( ), Developed by others ( )			
3.....	Adapted ( ), Self-Developed ( ), Developed by others ( )			

<b>G. RELIABILITY</b>		<b>VALIDITY</b>	
<input type="checkbox"/> Cronbach's Alpha <input type="checkbox"/> Kudher Richardson KR 21 / KR20 <input type="checkbox"/> Other.....		<input type="checkbox"/> Content Validity <input type="checkbox"/> Face Validity <input type="checkbox"/> Construct Validity <input type="checkbox"/> Criterion Validity / Concurrent – Predictive <input type="checkbox"/> Other.....	
<b>H. DATA ANALYSIS</b>			
<b>QUANTITATIVE DATA ANALYSIS</b>		<b>QUALITATIVE DATA ANALYSIS</b>	
		<input type="checkbox"/> Content Analysis <input type="checkbox"/> Descriptive Analysis <input type="checkbox"/> Other.....	
<b>DESCRIPTIVE</b>		<b>INFERENTIAL</b>	
<input type="checkbox"/> 1. Frequency <input type="checkbox"/> 2. Percentage <input type="checkbox"/> 3. Mean <input type="checkbox"/> 4. SD <input type="checkbox"/> 5. Graphs <input type="checkbox"/> 6. Other.....		<input type="checkbox"/> 1. Correlation <input type="checkbox"/> 2. t-test <input type="checkbox"/> 3. ANOVA / ANCOVA <input type="checkbox"/> 4. MANOVA / MANCOVA <input type="checkbox"/> 5. Repeated Design Analyses <input type="checkbox"/> 6. Regression <input type="checkbox"/> 7. <input type="checkbox"/> 8. Non-Parametric Tests <input type="checkbox"/> 9. Other.....	
<b>I. RESULTS and more extra information (if needed)</b>			

\*This form was adapted from Sözbilir & Kutu (2008) and Kızılaslanet al. (2013), cit. in Erdogan, M., Uşak M. & Bahar, M. (2013).

# AUTHORS' BIOGRAPHIES

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### **Karina AVAGYAN**

PhD, is a linguist, Russian language teacher and translator, Center for Russian Studies, Faculty of Political Science, Belgrade, Serbia. Her fields of research are: cognitive linguistics, ethnic stereotype, contrastive analysis, conceptualisation, associative experiment.

E-mail: karinka2576@mail.ru

### **Sanja BLAGDANIĆ**

PhD, associate Professor of natural and social sciences teaching methodology and vice-dean for Scientific research at the Teacher Education Faculty, University of Belgrade. Her fields of research are: science and history teaching in primary education, pupils' misconceptions, and science literacy.

E-mail: sanja.blagdanic@uf.bg.ac.rs.

### **Marija BOŠNJAK STEPANOVIĆ**

PhD in early science education, associate professor at the Faculty of Education in Sombor, Serbia. Her fields of research are: inquiry-based learning, project-based learning, and science concept development.

E-mail: 96marija.bosnjak@gmail.com

### **Lidija BUKVIĆ BRANKOVIĆ**

MA, is a defectologist, PhD student at the University of Belgrade – Faculty of Special Education and Rehabilitation, Serbia. Her fields of research are: problem behaviour prevention, positive youth development, protective and risk factors in schools.

E-mail: lidija\_bukvic@yahoo.com

### **Ariunsanaa BYAMBAA**

PhD, is a microbiologist and a pedagogist, professor of the Department of Microbiology, School of Bio-Medicine, Mongolian National University of Medical Sciences, Ulaanbaatarm Mongolia. Her field of research is qualitative methodology in educational research.

E-mail: ariunsanaa.b@mnums.edu.mn.

### **Sonja ČOTAR KONRAD**

PhD, is a psychologist, associate professor of Psychology at the University of Primorska, Faculty of Education, Koper, Slovenia. Her fields of research are ICT in education, university teaching, teacher competence, and development of preschool children.

E-mail: sonja.cotarkonrad@upr.si

### **Ivana ĐERIĆ**

PhD, is a pedagogist, research associate at the Institute for Educational Research, Belgrade, Serbia. Her research interests are: reflexive practice in professional learning, project-based learning, student motivation and autonomy, and qualitative methodology in educational research.

E-mail: ivana.brestiv@gmail.com

### **Jelena ĐERMANOV**

PhD, associate professor of pedagogy, University of Novi Sad, Faculty of Philosophy, Department of Pedagogy, Serbia. Her fields of research are General and School pedagogy, Pedagogical Axiology (evaluation in education, interactions, communication and interpersonal relations in education, hidden curriculum, class and school climate, school culture).

E-mail: jdjer@ff.uns.ac.rs

### **Rajka ĐEVIĆ**

PhD, is a pedagogist, research associate at the Institute for Educational Research, Belgrade, Serbia. Her fields of research are: inclusive education, social relationships of students with developmental disabilities, teacher professional development, teaching methods.

E-mail: rajkadjevic@gmail.com

### **Maia GELASHVILI**

is a PhD student and research assistant at the Centre for International Higher Education, Boston College, USA. Her fields of research are quality assurance of higher education, international and comparative education, college teaching and assessment.

E-mail: gelashvi@bc.edu

### **Batbaatar GUNCHIN**

Academician Member of Mongolian Academy of Medical Sciences, Doctor of Philosophy Degree in Medicine; Vice president for Academic Affairs at the Mongolian National University of Medical Sciences; President of Mongolian National University of Medical Sciences, Ulaanbaatar, Mongolia. His fields of research are: education development, reference value of physiology, biochemistry, immunology in Mongols, improving medical service by advancing pre-graduate study for fundamental and medical microbiology for medical students and by updating residents and medical doctors in Mongolia.

E-mail: batbaatar@mnums.edu.mn

### **Nikoleta GUTVAJN**

PhD, senior research associate and director of the Institute for Educational Research, Belgrade, Serbia. Her fields of research are: identity, school underachievement, and qualitative methodology in educational research.

E-mail: gutvajnikoleta@gmail.com

### **Ljeposava ILIJIC**

PhD, is a special education teacher, research fellow at the Institute of Criminological and Sociological research. Her fields of interest are a focus on criminological and penological issues, the problems of execution of the prison sentence, treatment and convicts, education and professional training of prisoners, and social reintegration of ex-offenders.

Email: lelalela\_bgd@yahoo.com

### **Tijana JOKIC ZORKIC**

psychologist, is a PhD student and a researcher at the Centre for Education Policy, Belgrade, Serbia. Her fields of research are inclusion and diversity in education, appropriation of education policy, qualitative methodology in educational research.

E-mail: tijana.zjokic@gmail.com

### **Sergey KOKHAN**

Candidate of Medical Sciences, Associate Professor, director of the Regional Center for Inclusive Education, Transbaikal State University, Chita, Russia. His



fields of research are: inclusive education, psychological and pedagogical support of students with disabilities, the development of socio-cultural capabilities and adaptive sports, modern aspects of medical and social rehabilitation.

E-mail: ispsmed@mail.ru

### **Isidora KORAC**

PhD in Pedagogy and PhD in Teaching Methodology. Professor in the scientific field: Pedagogical and Didactic group of subjects at Preschool Teacher Training and Business Informatics College of Applied Studies Sirmium, Sremska Mitrovica, Serbia. Her fields of research are: school and preschool teacher's professional development, class/school and preschool climate, and aesthetic education.

E-mail: oisidora@gmail.com

### **Marina KOVAČEVIĆ LEPOJEVIĆ**

PhD, is a special education teacher, research associate at the Institute for Educational Research, Belgrade, Serbia. She participates in research projects related to students' behavioral problems, positive youth development, socioemotional learning, school, and family climate.

Email: marina.lepojevic@gmail.com

### **Witold KOWALSKI**

Professor WSG: The University of Economics in Bydgoszcz. The fields of his research are: the introduction of health-saving technologies among the younger generation and student youth, especially recreational opportunities that contribute to human longevity.

E-mail: wiciukow@interia.pl

### **Jason LAKER**

PhD, is a professor of counselor education at San José State University, California, USA; and Affiliated Research Faculty with the Center for Research and Education on Gender and Sexuality at San Francisco State University. His fields of research are: international and comparative higher education studies, counseling, student psychosocial development and support programs, and gender studies.

E-mail: jlaker.sjsu@gmail.com

### **Emilija LAZAREVIĆ**

PhD, is a defectologist speech therapist and defectologist for Education and Rehabilitation Hearing Disability Persons, Principal Research Fellow, Institute for Educational Research, Belgrade, Serbia. Her fields of research are: speech-language development, speech-language disorders, early literacy development, reading and writing disorders, specific learning disabilities.

E-mail: elazarevic@ipi.ac.rs

### **Dušica MALINIĆ**

is a research associate at the Institute for Educational Research, Belgrade, Serbia. She has a PhD in education from the University of Belgrade. Her research focus is the causes of students' academic failure, teachers' pedagogical and methodical competence, and leadership in education.

E-mail: malinic.dusica@gmail.com

### **Marija MALJKOVIĆ**

PhD, is a special education teacher, Assistant professor at the University of Belgrade – Faculty of Special Education and Rehabilitation. Her interests are focused on the fields of special education and rehabilitation, treatment of juvenile delinquents, systemic family therapy, addiction, and behavioral disorders.

Email: mara.maljkovic@gmail.com

### **Milica MARUŠIĆ JABLANOVIĆ**

is a psychologist and doctor of andragogy, senior research associate employed at the Institute of Educational Research in Belgrade, Serbia. Her fields of research interest are teacher education and career development, personal values, scientific and environmental education and literacy.

E-mail millica13@yahoo.com, milica.m.jablanovic@gmail.com

### **Olga MIKHAILOVA**

PhD, Assistant Professor of the Department of Psychology and Pedagogy, Faculty of Philology, Peoples' Friendship University of Russia (RUDN University), Moscow, Russia. Her fields of research are: personality development psychology, psychology of innovation, acmeology and adragogy.

E-mail: olga00241@yandex.ru; mikhaylova-ob@rudn.ru

### **Mihaylo MILOVANOVITCH**

is senior policy specialist for system change and lifelong learning with the European Training Foundation, Italy, and a pro-bono affiliate and education integrity expert for the Center for Applied Policy and Integrity, Bulgaria. His current work and publications focus on policy appropriation experiences in education, integrity of education policy and practice, and stakeholder-driven education policy improvement in countries of Eastern Europe, Central Asia and Northern Africa.

Email: [mihaylo@policycenters.org](mailto:mihaylo@policycenters.org)

### **Snežana MIRKOV**

PhD, is a pedagogist, research associate at the Institute for Educational Research, Belgrade, Serbia. Her fields of interest are: different aspects of the learning process in academic settings (learning goals, learning strategies, self-regulation, epistemological beliefs), and their relations with the learning effects achieved in the teaching process.

E-mail: [smirkov@ipi.ac.rs](mailto:smirkov@ipi.ac.rs)

### **Gordana MIŠČEVIĆ**

PhD, is a full professor in the field of social, environmental and scientific education (SESE) teaching methodology at the Teacher Education Faculty, University of Belgrade, Serbia. Her fields of research are: environmental education methodology, primary school teacher education (elementary science), preschool teacher education (elementary science), innovative models of work with children in the field of in elementary science, development of pupils' metacognition.

E-mail: [gordana.miscevic@uf.bg.ac.rs](mailto:gordana.miscevic@uf.bg.ac.rs)

### **Kornelija MRNJAUS**

PhD, is associate professor at the University of Rijeka, Faculty of Humanities and Social Sciences, Department of Education, Rijeka, Croatia. Her fields of research are: vocational education and training, career counseling, values education, and intercultural education.

E-mail: [kornelija.mrnjaus@uniri.hr](mailto:kornelija.mrnjaus@uniri.hr)

### **Andreas OIKONOMOU**

PhD, is a psychologist, associate professor of the Department of Education at the School of Pedagogical and Technological Education, Thessaloniki, Greece. His fields of research are: educational psychology, developmental psychology, teacher education, environmental education.

E-mail: aoikonomou@aspete.gr

### **Kristinka OVESNI**

PhD, is an andragogist, full-time professor at the Department for Pedagogy and Andragogy, Faculty of Philosophy, University of Belgrade, Serbia. Her fields of research are: human resource development, theories of adult learning, professional development, adult education planning.

E-mail: kovesni@gmail.com; kovesni@f.bg.ac.rs

### **Jelena PAVLOVIĆ**

assistant professor at the Department of Psychology, Faculty of Philosophy, University of Belgrade. Research interests: learning and development in organizations, coaching psychology, qualitative research methods.

Email: jelena.pavlovic@f.bg.ac.rs

### **Branislava POPOVIĆ-ĆITIĆ**

PhD, is a special pedagogist, full professor at the University of Belgrade – Faculty of Special Education and Rehabilitation, Serbia. Her fields of research are: prevention science, positive youth development and school-based prevention programs.

E-mail: popovb@eunet.rs

### **Vera RADOVIĆ**

PhD, is a pedagogist, associate professor at the Teacher Education Faculty, University of Belgrade, Serbia. Her fields of research are: general didactics, professional education, and development of teachers.

E-mail: vera.radovic@uf.bg.ac.rs

**Elena ROMANOVA**

PhD, Associate professor in the Department of Physical Education, Altai State University, Russian Federation. Her fields of research are: Motivation of young people to engage in physical culture and sports, physical culture and sports at university, inclusive education, modern aspects of medical and social rehabilitation.

E-mail: romanovaev.2007@mail.ru

**Mile SRBINOVSKI**

PhD, Associate Professor, Faculty of Technical Sciences, Mother Teresa University, Skopje, Republic of North Macedonia. His fields of research are: environmental education, education for sustainability, ecology, environmental protection, biology education.

E-mail: mile.srbnovski@unt.edu.mk

**Jelena STANIŠIĆ**

PhD, is a pedagogist, research associate at the Institute for Educational Research, Belgrade, Serbia. The fields of her research are: environmental education, science study, teaching methods, and learning strategies.

E-mail: jstanisic@ipi.ac.rs

**Jelena STEVANOVIĆ**

PhD, is a philologist, senior research associate in the Institute for Educational Research, Belgrade, Serbia. Her fields of research are: language culture/ language competence and functional literacy, Serbian language in primary and high school level, stylistics and orthography of Serbian language, critical literacy and theoretical and empirical research into textbooks.

E-mail: jelena.stevanovic.jelena@gmail.com

**Danijela ŠĆEPANOVIĆ**

PhD, is Education Policy Analyst and Education Technologist working on research and developmental projects in the area of digital education. She works at the Ministry of Education, Science and Technological Development in Serbia. She is an evaluation expert for the H2020 research program and member of the European Commission ET 2020 Working Groups

related to Digital Education development since 2014 - Digital and Online Learning (2013-2015), Digital Skills and Competences (2015-2017), Digital Education, Learning, Teaching and Assessment (2018-2020).

E-mail: danijela.scepanovic@mpn.gov.rs

### **Tina ŠTEMBERGER**

PhD, is a pedagogist, associate professor of Educational Research and a vice dean research at the University of Primorska, Faculty of Education, Koper, Slovenia. Her fields of research are educational research, alternative research methods, teacher competence, and inclusion.

E-mail: tina.stemberger@upr.si

### **Milja VUJAČIĆ**

PhD, is a pedagogist, senior research associate at the Institute for Educational Research. Her fields of research are: inclusive education, teacher professional development, cooperative learning, school effectiveness.

E-mail: mvujacic@ipi.ac.rs

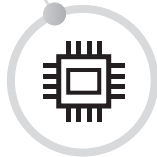
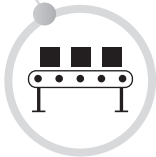
### **Janja ŽMAVC**

PhD, is a linguist, research associate, and the head of the Centre for discourse studies in education at the Educational Research Institute, Ljubljana, Slovenia. Her fields of research are: rhetoric, argumentation, classics, multilingualism, curriculum design, didactics, discourse in education.

E-mail: janja.zmavc@gmail.com

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## FROM REVIEWS

Main aim of the monograph titled *Problems and perspectives of contemporary education*, is to thorough explore, critically analyze and elaborate complex, dynamic, multilayers and reciprocal relationship between significant changes in educational social environment and readiness, of educational system to anticipate, recognize, understand and adequately respond to those challenges. All contributing authors enthusiastically embraced the notion that education presents an important and proactive agent of social changes and consequently accepted all challenges as an opportunity for improvement and development of both society and educational system.

**Professor Emeritus Djuradj Stakic**  
Pennsylvania State University, USA

The monograph is dedicated to looking into extremely significant and current concerns within educational policy and educational practice. The selected topic is viewed from the perspectives of contemporary theoretical approaches, but it is also empirically researched. A very large and relevant literature was used both for explaining the selected research subject and discussing the obtained results. A diverse, contemporary methodology was applied in researches, and the authors of works, starting from the existing results, analysed issues at a deeper level and illuminated some aspects that had not been studied thus far.

**Professor Marina Mikhailovna Mishina**  
Russian State University for the Humanities, Russia

The main topics covered by the monograph can be classified as traditional to some extent — related to approaches to learning, language culture etc., and modern — connected with the andragogical view, coaching in teacher training, also the problem of distance learning during the covid pandemic, and models for preventing problem behaviors...The main leitmotif that permeates the content of all presented articles is the topic of the development of key skills, attitudes, experience, creativity — by both subjects in the educational process, and it gives semantic integrity to the monograph.... In view of the new social realities, a reasonable emphasis is placed on the continuing education and development of the teachers themselves, dictated by the accelerated pace of social change.

**Professor Teodora Stoytcheva Stoeva**  
University of Sofia „St. Kliment Ohridsky“, Bulgaria

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