



PREDISPOSITION TOWARDS SUSTAINABLE BEHAVIOUR AMONG STUDENTS IN THE PRE-SCHOOL EDUCATION STUDY PROGRAMME

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Abstract/Izveček Starting from the importance of sustainable behaviour among educators for sustainability in kindergarten, the aim of this empirical quantitative study was to investigate the prevalence of predispositions towards sustainable behaviour among students from the first cycle of the Pre-school Education study programme at three universities. The connection between predispositions, the existence of a difference between cognitive and non-cognitive predispositions, and the absence of a statistically significant difference between the predispositions of the students in relation to home faculty and place of residence were determined.

Predispozicije za trajnostno vedenje študentov dodiplomskega študija predšolske vzgoje

Cilj empirične kvantitativne študije je bil raziskati razširjenost predispozicij za trajnostno vedenje študentov dodiplomskega študija predšolske vzgoje treh univerz. Izhodišče raziskave je bil pomen trajnostnega vedenja vzgojiteljev v izobraževanju za trajno delovanje v vrtcu. S študijo smo potrdili povezavo med predispozicijami, obstoj razlike med kognitivnimi in nekognitivnimi predispozicijami ter odsotnost statistično pomembne razlike med predispozicijami v raziskavo vključenih študentov glede na domačo fakulteto in kraj bivanja.

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Introduction

Education for sustainable development should begin at an early age, so that children can become people who show responsibility and care for others (Lepičnik Vodopivec, 2006; Lindberg, 2007; Pearson and Degotardi, 2009; Siraj-Blatchford and Pramling Samuelsson, 2016). As an educational precondition for early age learning, situational and contextual learning of sustainable behaviour according to models from adults, parents, and educators are important, models which require adequate professional guidance (Pribišeč Beleslin et al., 2019) and educational programs with an emphasis on pre-schoolers (UNESCO, 2005). In order to achieve this, it is necessary for pedagogical workers to understand and apply the concepts of sustainable development in everyday life (Borić, Jindra and Škugor, 2008), which is achieved by shaping values, behaviour and people's way of life (UNESCO, 2002), through an integrative way of thinking and acting (UNESCO, 2012). Ličen (2015) highlights the UNESCO (2014) conference in Tokyo, which focused on teacher training to evolve education for sustainable development in local settings.

Huckle points out the connection between values and sustainable behaviour (2008), and research on a sample of 480 students at the University of Rijeka confirms this (Anđić and Tatalović Vorkapić, 2015), although the level of understanding and attitudes is more pronounced than actual behaviour for sustainable student development, as indicated by a study conducted on 823 respondents from the UAE University (Al-Naqbi and Alshannag, 2018). Studies conducted with pupils and students in several countries (Spain, Croatia, BiH and Turkey) indicate an incomplete harmonization of knowledge, attitudes and sustainable behaviour among young people and the need for education for sustainable development in the initial stage of pedagogical study for optimal adoption of sustainable knowledge, attitudes and behaviour through effective didactic and methodological settings of the constructivist type (Alvarez Suarez and Vega, 2002; Alvarez et al. 2010; Borić, Jindra and Škugor, 2008; Pribišeč Beleslin et al. 2019, Rončević and Rafajac, 2012). This is especially true, given that we are not fully aware of the role of educators in this process (Kahrman Öztürka and Olgan, 2016). Predispositions towards pro-environmental behaviour are also closely related to situational strength, although Runhaar, Wagenaar, Wesseling, and Runhaar (2019) suggest more research to confirm the relationship between situational strength and predispositions towards pro-environmental behaviour.

Although environmental education is recognized within educational institutions, the research findings of Ntanos, Kyriakopoulos, Arabatzis, Palios, and Chalikias (2018) indicate that support for environmental efforts and higher levels of motivation are more likely to be needed in the context of family and public socialization than within an educational institution. Given that caring for planet Earth is reflected through the ecological, socio-cultural and economic dimensions (Ärlemaln-Hagsér, Berg and Sandberg, 2018; Breßler and Kappler, 2017; Engdahl, 2015; Pramling Samuelsson and Kaga, 2008; Siraj-Blatchford and Pramling Samuelsson, 2016; Somerville, Williams, 2015), approaches both formal and informal, as well as holistic, multidisciplinary, interdisciplinary, intergenerational and lifelong approaches, are important in training through the actions of all individuals in the community (UNESCO, 2005; Borić, Jidra and Škugor, 2008; Brekke, Kipperberg and Nyborg, 2010).

In accordance with Huckle's concept, the school's approach to education for sustainable development is based on a discussion of competences among students and teachers (Huckle, 2005). Raditya-Ležaić, Boromisa and Tišma (2018) estimate that only well-trained and competent teachers will be able to cope with environmental education tasks. We consider the issue of competence to be the main source of meaning in school education for sustainable development. Given the relevance of this construct, questions arise about a whole range of competences in students and teachers. Despite the not-too-optimistic conclusions that follow from overall personal analysis, it is not difficult to understand that the issue of student and teacher competences for sustainable development requires, as is commonly acknowledged, to be worked on continuously. The issue of competences for sustainable development needs to be addressed across a lifetime (Mayer, 2004). Of course, this applies to all levels of its activation. The diversity of partners who appear in the school should certainly be added to this. The role of teachers and the school (Erkilic, 2008), as an institution that primarily, in relation to other partners (factors) influences the development of literacy for sustainability, must, of course, be viewed within a broader social context. Kindergarten and school are just two of the factors to which pupils are exposed.

This is especially emphasized by Bronfenbrenner's theory of ecological development. Bronfenbrenner classified the social environment into multiple concentric circles, where the environments of the inner circles have a greater influence on the individual.

The social environments that have the greatest direct impact on the child are the family and the kindergarten (or school). Bronfenbrenner's ecological theory of development describes child development as being affected by five systems that in turn affect each other (Bronfenbrenner, 1994). The basic systems are those in which a child lives and develops and constitute a microsystem. The basic environments for a preschool child are the family and the kindergarten because the child spends most time there (Ljubetić, 2014). In this environment, children establish direct interactions with important people with whom they have long-term relationships (Peklaj and Pečjak, 2015). Educators play an important role in this, as the third most important factor in children's development. Therefore, teacher education at the undergraduate level is considered the most effective way to promote sustainable development. Borić, Jidra and Škugur (2008) state in this regard that if educators learn to implement the content of education for sustainable development in curricula and use pedagogical strategies related to the quality of education for sustainable development, then the next generations will be able to shape a world that will be more sustainable. Birdsall and White (2020) emphasize that in the field of environmental and sustainability education, it is important to go beyond the idea that a good educational program can achieve the sustainable development goals. They stress the importance of understanding the integrity of the individual as a thinking and sensitive being capable of self-reflection and responsibility for their role in society. According to Tatković, Štifanić and Diković (2015), educators are the main implementers and guides of the educational process in kindergartens; therefore, successful implementation of environmental education in kindergarten depends on their practice and competences. All of this points to the importance of training for sustainable development and the need for empirical research to find the most effective approaches to education for sustainable behaviour.

Method

Starting from the value system as an important link with education, in the context of decision-making and shaping the emotional and behavioural aspect of the individual (Anđić and Tatalović Vorkapić, 2015), we conducted research on the predisposition towards sustainable behaviour among students in the first cycle of the Pre-school Education study programme through the Juárez Nájera model of sustainable behaviour (2010).

In a study conducted at two universities (German and Mexican), the author develops a model of sustainable behaviour that contains four categories of predispositions that lead to sustainability. Taking into account Schwartz's (1994) theory, it derives the universal values and value structures essential to sustainability that build the first category of this model and the subtest of the corresponding research instrument. The second category refers to awareness of the consequences of unsustainable action, while the third category refers to accepting personal responsibility and attributing responsibility as essential elements for activating individual norms (Schwartz, 1970; Stern et al., 1999) for sustainable action (second and third subtest). In the fourth category of Gardner's model of multiple intelligences (2005), he views interpersonal and intrapersonal intelligence from the angle of sustainability (fourth subtest) as an important predisposition towards sustainable behaviour.

Recognizing the importance of sustainable behaviour of educators in preschool education for sustainability, we sought, through quantitative empirical research, to explore the predispositions towards sustainable behaviour, such as elements of universal and structural value, awareness of consequences, acceptance and attribution of responsibility, and elements of interpersonal and intrapersonal intelligence. Starting from the model of sustainable behaviour by Juárez Nájér (2010) and reflecting on different learning contexts and environments, the aim of the study was to investigate the prevalence of predispositions towards sustainable behaviour among students in the first cycle of the Pre-school Education study programme at the Faculty of Pedagogy at the University of Koper, the Faculty of Philosophy at the University of Banja Luka and the Faculty of Educational Sciences at Goce Delčev University of Štip and connect it with various contexts of the learning environment. Two research variables stand out: the predisposition for sustainable behaviour (universal and structural values of a person for sustainable development, awareness of the consequences of unsustainable behaviour, acceptance and attribution of responsibility for sustainable action and interpersonal and intrapersonal intelligence components for sustainable behaviour) and elements of social context teachings (state, city, suburb, village).

In the study, we investigated three hypotheses:

H1 There is a correlation between the appearance of the given predispositions towards sustainable behaviour.

H2 The predisposition towards sustainable behaviour is differently represented among students.

H3 There are differences in the prevalence of predispositions towards sustainable student behaviour depending on the given social contexts (country, village, suburbs, or city).

The research sample is appropriate and included 90 respondents, students in the third year of the first cycle of the Pre-school Education study programme, 30 students each from each faculty.

As a research instrument, adaptation of the Juárez Nájér Questionnaire on Sustainable Development (2010) was considered, with a five-point Likert-type scale and four subtests measuring the predisposition towards sustainable student behaviour (universal and structural values of a person in relation to sustainable development, awareness of unsustainable behaviour, acceptance and attributing responsibility for sustainable action, and the interpersonal and intrapersonal components of intelligence in relation to sustainable behaviour). The instrument consisted of 58 items. The first subtest comprised 21 items, the second subtest 8 items, the third 9 items, and the fourth 20 items. We translated the instrument into Slovenian, Serbian and Macedonian. The calculated Alpha Cronbach coefficient, which indicates the internal consistency for the whole instrument, is $\alpha = 0.89$, which is close to the highest reliability on the test. The measured Alpha Cronbach coefficients for each of the four subtests are $\alpha_1 = 0.76$; $\alpha_2 = 0.83$; $\alpha_3 = 0.86$; $\alpha_4 = 0.69$. This is very close to the reliability measured on the same instrument in a study conducted in Croatia (Anđić and Tatalović Vorkapić, 2015), which supports the reliability of the test and measurements in both studies. Anđić and Vorkapić, checking the validity of the instrument, calculated, among other things, the reliability of individual subscales and established that for four subscales, the reliability is $\alpha_1 = 0.80$; $\alpha_2 = 0.87$; $\alpha_3 = 0.65$; $\alpha_4 = 0.69$, which is very close to the reliability measured on the same instrument in our study.

The research procedure was performed in the following manner: respecting the ethics (voluntary participation and anonymity of students), we applied the questionnaire to a sample of 90 respondents in the academic year 2019/2020.

The collected data were statistically processed using IBM SPSS 20.0 by calculating the Alpha Cronbach coefficient, descriptive statistical measures (frequency and arithmetic mean, Kolmogorov-Smirnov normality test), statistical significance of differences between variables (ANOVA analysis and t-test) and correlation between variables (Pearson's coefficient).

Results and discussion

Applying the Kolmogorov-Smirnov test, we found that there was no statistically significant deviation in the spread of the variables from the normal distribution and that we could apply parametric tests for the predisposition variable for sustainable behaviour (universal and structural values of the person in relation to sustainable development, awareness of the consequences of unsustainable behaviour, acceptance of and attribution for sustainable action and interpersonal intelligence and intrapersonal components of sustainable behaviour).

Table 1 shows Pearson's correlation coefficients for these variables because we calculated the correlations for these variables to determine whether there was an interrelationship between the predispositions of students towards sustainable behaviour. The calculated positive and statistically significant Pearson coefficients (Table 1) indicate that there is a proportional, statistically significant correlation between the variables. In other words, if we have a higher value for sustainable behaviour in students, there is a greater chance that awareness of and responsibility for sustainable behaviour will be more emphasized, as well as the development of interpersonal and intrapersonal intelligence in relation to sustainability. The reverse is also true. The less salient a given predisposition is in students, the greater the chance that others will also be lower. As we can see, there is an interdependence of predispositions towards sustainable student behaviour, thus proving hypothesis H1. This points us to the need to develop all predispositions for sustainable behaviour, that cognitive insight affects the emotional, social and volitional component and desires, and vice versa. This result supports the promotion of education for sustainable development and behaviour through a holistic approach, where the whole personality and numerous aspects of development (not only intellectual) are taken into account, through which an integrative way of thinking and acting is sought and implemented (UNESCO, 2012).

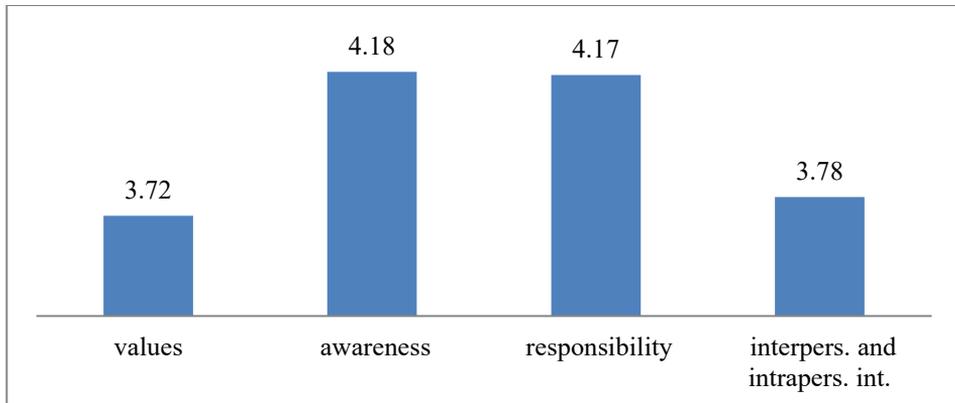
Table 1. Correlation of predispositions towards sustainable behaviour

Predispositions towards sustainable behaviour	values	awareness of the consequences	Responsibility	interpersonal and intrapersonal int.
values	1	0.222*	0.335**	0.339**
awareness of the consequences	0.222*	1	0.521**	0.346**
responsibility	0.335**	0.521**	1	0.546**
interpersonal and intrapersonal int.	0.339**	0.346**	0.546**	1

*. Correlation significant at 0.05 level.

**.. Correlation significant at the 0.01 level.

Graphically, we presented the arithmetic means of the representation of each predisposition individually (Graph 1). Notably, there are differences in representation, and awareness of consequences and attribution of responsibility (mostly cognitive) are more pronounced than universal and structural values of the person and emotional and social dimensions for sustainable behaviour and development (mostly non-cognitive).



Graph 1. Arithmetic mean of predispositions towards sustainable behaviour.

Since the predispositions towards sustainable behaviour were investigated in correlation, to determine whether there was a statistically significant difference between them, we applied the t-test for dependent samples and present the results in Table 2.

It can be noted that statistically significant differences are present between most predispositions, except between values and interpersonal and intrapersonal intelligence in relation to sustainable behaviour and development, on the one hand (mostly non-cognitive predispositions), and awareness of the consequences of unsustainable behaviour and attribution of responsibility (mostly cognitive predispositions), on the other hand. Thus, the subscale of the instrument related to the universal and structural values of a person in relation to sustainable behaviour explored personality traits and features that are closely related to people's emotional and social nature (discipline, moderation, control, responsibility, honesty, creativity, open-mindedness, leadership, ambition and desires). This could be why the representation of this predisposition does not differ significantly from the representation of the predisposition of interpersonal and intrapersonal intelligence in relation to sustainability. In addition, the predisposition towards awareness of the consequences of unsustainability that arise from the knowledge of endangering nature as well as the predisposition based on responsibility, i.e., on the knowledge of who can influence and by what actions the sustainability of water, for example, depend on information and acquired knowledge. Based on this finding, it can be seen that there is a difference between cognitive and non-cognitive predispositions towards sustainable behaviour in favour of the first, as evidenced by other contemporary studies (Al-Naqbi and Alshannag, 2018; Borić, Jidra and Škugor, 2008), which represents a good direction for upbringing and education for sustainable development. Numerous authors have pointed out that the drivers of human behaviour and related decisions are often those arising from emotions and other non-cognitive processes and that they can be improved by adequate educational procedures (Chabot and Chabot, 2009; Goleman, 2008; Goleman, 2010; Katz and McClellan, 2005; Milivojević, 2008). If we respect the holistic approach in educational work, our findings indicate the need for more attention to be paid to the development of socio-emotional and other non-cognitive predispositions towards sustainable behaviour.

Table 2. T-ratio of arithmetic values of predispositions towards sustainable student behaviour

Predispositions towards sustainable development		<i>M</i>	<i>SD</i>	<i>SEM</i>	<i>t</i>	<i>p</i>
Pair 1	Values	3.72	0.20	0.02	-7.58	0.000
	Awareness	4.18	0.29	0.03		
Pair 2	Values	3.72	0.20	0.02	-8.83	0.000
	Responsibility	4.17	0.38	0.04		
Pair 3	Values	3.72	0.20	0.02	-1.91	0.059
	inter/intraperson. int.	3.78	0.30	0.03		
Pair 4	Awareness	4.18	0.29	0.03	1.10	0.272
	Responsibility	4.17	0.38	0.04		
Pair 5	awareness	4.18	0.29	0.03	6.87	0.000
	inter/intraperson. int.	3.78	0.30	0.03		
Pair 6	responsibility	4.17	0.38	0.04	8.49	0.000
	inter/intraperson. int.	3.78	0.30	0.03		

Based on the results presented graphically (Graph 1) and in tabular form (Table 2), and based on their interpretation, we can conclude that the H2 hypothesis is partially proved.

To investigate the relationship between the prevalence of predispositions towards sustainable student behaviour and the specific learning contexts (village, city, state), we applied one-factor univariate analysis for independent ANOVA samples and calculated the Fisher's coefficients (Table 3 and Table 4).

Table 3 shows, from left to right, the representation of different predispositions towards sustainable behaviour (values, awareness, responsibility, and interpersonal and intrapersonal intelligence in relation to sustainable behaviour) by cities / countries (Koper, Štip, Banja Luka, or Slovenia, Macedonia and Bosnia and Herzegovina) number of respondents (N), mean values of predisposition (M), standard deviation (SD), and for each predisposition a Fisher's coefficient (F) and its statistical significance (p). For all the predispositions, the Fisher's coefficient is statistically insignificant ($p > 0.5$), so the differences, although they exist, are statistically insignificant. Lastly, for the overall predispositions, we see that the prevalence of predispositions towards sustainable behaviour among preschool education students at the faculties in Koper, Štip and Banja Luka, are respectively, $M_k = 16.35$; $M_{\check{s}} = 15.69$; $M_{bl} = 15.68$.

Based on these results (and from other results in Table 3), it can be noted that, although slightly and statistically insignificant, predispositions towards sustainable behaviour in a sample of 30 students at the Faculty of Pedagogy of the University of Primorska (Koper) are more developed than those in students from the samples in Macedonia and Bosnia and Herzegovina. Moreover, it is possible to notice an almost identical representation of these predispositions in the student sample from the Faculty of Educational Sciences at the University of Goce Delčev in Štip and the Faculty of Philosophy at the University of Banja Luka. Furthermore, based on other data, it is evident that students from Koper (although to a statistically insignificant degree) are in the forefront in cognitive predispositions towards awareness of the consequences of unsustainable behaviour and attributing responsibility for sustainable behaviour.

Table 3. Difference in the prevalence of predispositions towards sustainable behaviour among students from three universities (F)

Predispositions towards sustainable behaviour		City/country	N	M	SD	F	p
Values		Koper	30	3.73	0.19	0.796	0.454
		Štip	30	3.74	0.20		
		Banja Luka	30	3.68	0.21		
Awareness		Koper	30	4.47	0.48	2.946	0.058
		Štip	30	4.09	0.28		
		Banja Luka	30	4.15	0.40		
Responsibility		Koper	30	4.34	0.36	2.745	0.070
		Štip	30	4.06	0.39		
		Banja Luka	30	4.10	0.36		
Inter/intrapersonal Intelligence		Koper	30	3.81	0.35	0.256	0.775
		Štip	30	3.79	0.34		
		Banja Luka	30	3.75	0.25		
Predispositions in total		Koper	30	16.35	0.98	2.685	0.074
		Štip	30	15.69	1.19		
		Banja Luka	30	15.68	1.17		

To determine whether there are differences in the prevalence of predispositions towards sustainable behaviour in relation to the place of permanent residence of students from the sample being a village, suburb or city, we applied ANOVA, the results of which appear in Table 4. The Fisher's coefficient is statistically insignificant ($F = 0.134$; $p = 0.875$), and we can conclude that there is no statistically significant difference in the prevalence of predispositions towards sustainable behaviour among students coming from villages, suburbs or cities.

Table 4. Difference in the prevalence of predispositions towards sustainable behaviour among students with different places of residence (village, suburbs, city)

Predisposition towards sustainable behaviour	City/country	<i>N</i>	<i>M</i>	<i>SD</i>	<i>F</i>	<i>p</i>
Values	village	33	16.00	1.7	0.134	0.875
	suburb	12	15.84	1.43		
	city	45	15.91	1.21		

Although both formal and informal approaches, together with holistic, intergenerational, and lifelong approaches through the actions of all individuals in the community are important for the adoption of sustainable behaviour and the formation of predispositions (UNESCO, 2005; Borić, Jidra and Škugor, 2008; Brekke, Kipperberg and Nyborg, 2010), we did not confirm statistically significant differences in the development of predispositions towards sustainable behaviour in third-year students, given the different types of research communities in which students live and work (state, city, suburbs and village). Based on the results in Table 3 and Table 4 and their interpretation, we can conclude that we have not proved hypothesis H3, and we can therefore reject it.

Conclusion

To study the predisposition towards sustainable behaviour among students in the first cycle of the study programme Pre-school Education, as a starting base for creating an additional university program for sustainability, we conducted empirical quantitative research with students in the first cycle of the study programme Pre-school Education at the Faculty of Pedagogy at the University of Koper, the Faculty of Philosophy at the University of Banja Luka and the Faculty of Educational Sciences in Goce Delčev University of Štip. The results indicate that there is a statistically significant correlation between predispositions towards sustainable behaviour (values, awareness, responsibility, and interpersonal and intrapersonal intelligence related to sustainable behaviour) that encompasses the intellectual, emotional and social aspects of personality, as well as traits and features of personality essential to sustainable behaviour. The pedagogical implication of this finding unequivocally indicates the need for a holistic approach to upbringing and education for sustainable behaviour.

The result, which indicates the difference between the prevalence levels of cognitive and non-cognitive predispositions towards sustainable behaviour in students, shows the need for additional training for sustainable development in the direction of encouraging non-cognitive predispositions towards sustainable behaviour and for the creation of optimal training programs. It confirmed that there was no statistically significant difference between students in relation to their society and community, whether by state (Slovenia, Macedonia, Bosnia and Herzegovina) or place of residence (city, suburbs or village).

This paper also raises additional research questions. It indicates the need to study predispositions towards sustainability in the context of other learning environments such as colleges, schools, special courses, electronic media, written literature, organizations that promote sustainability, etc., organizing small action research studies on the effectiveness of specific activities and content in developing and improving sustainable student behaviour.

While acknowledging the recommendation that study programs be updated with the content and learning outcomes of education for sustainable development (UNESCO, 2017), this paper and its results provide valuable guidelines for more effective training programming in this area by shedding light on the representation of and relations among current predispositions towards sustainable student behaviour.

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