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Professional paper

SUSTAINABLE DEVELOPMENT GOALS AS PART OF STUDENTS' ATTITUDES

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Abstract

The challenges we face today, primarily related to the disruption of the natural balance and basic living conditions, underscore the importance of sustainable development as a priority. Just knowing the facts about sustainable development is not enough for an individual to change the attitudes and values that influence their behavior and life decisions; in addition to knowing the facts, it is necessary to change one's attitude and approach towards the environment. In this context, the subject of our research is an examination of the knowledge of the goals for sustainable development by high school students, namely the rational use of water, the preservation of nature, and the reduction of various types of waste. The research was carried out through an online questionnaire, by sharing the QR code with the students to adhere to the goals of sustainable development. The research sample included 222 students in their final years of secondary education who were familiar with the concept of sustainable development. The general hypothesis is that students know the goals of sustainable development. The SPSS statistical package was used to process the data. The data analysis confirms hypothesis H_{01}: Students' attitudes regarding rational water consumption do not depend on the type of school they attend (χ^2 =1,59,df=4,p=0,811) and hypothesis H_{02}: Students' attitudes towards rational water consumption are correlated with their attitude towards reducing various waste (ρ=0.428, p=0.000). These results are important for planning and incorporating sustainable development content into curricula at all levels of education.

Keywords: sustainable development, education, upbringing.

Introduction

The Sustainable Development Goals are defined within the framework of the 2030 Agenda for Sustainable Development, adopted on 25 September 2015 at the 70th session of the United Nations General Assembly. The 2030 Agenda is a long-term strategic development document of the UN for the period 2015-2030, which is defined as “a plan of action for people, planet and prosperity”, which also “seeks to strengthen universal peace in larger freedom”. (Agenda for Sustainable Development, 2030) According to its structure, the 2030 Agenda is an integrated action plan consisting of four components: (1) vision and principles for global transformation set out in the Declaration, (2) Sustainable Development Goals, defined as an elaborate framework with precisely defined targets and results, (3) means of implementation and global partnership, and (4) monitoring and review of the achieved results. (Agenda for Sustainable Development, 2030)

The 2030 Agenda for Sustainable Development defines the following Sustainable Development Goals:

1. End poverty in all its forms everywhere; 2. End hunger, achieve food security and improved nutrition and promote sustainable agriculture; 3. Ensure healthy lives and promote well-being for all at all ages; 4. Ensure inclusive and equitable quality education and promote lifelong

learning opportunities for all; 5. Achieve gender equality and empower all women and girls; 6. Ensure availability and sustainable management of water and sanitation for all; 7. Ensure access to affordable, reliable, sustainable and modern energy for all; 8. Promote sustained, inclusive and sustainable economic growth, full and productive employment and decent work for all; 9. Build resilient infrastructure, promote inclusive and sustainable industrialization and foster innovation; 10. Reduce inequality within and among countries; 11. Make cities and human settlements inclusive, safe, resilient and sustainable; 12. Ensure sustainable consumption and production patterns; 13.Take urgent action to combat climate change and its impacts; 14. Conserve and sustainably use the oceans, seas and marine resources for sustainable development; 15. Protect, restore and promote sustainable use of terrestrial ecosystems, sustainably manage forests, combat desertification, and halt and reverse land degradation and halt biodiversity loss; 16. Promote peaceful and inclusive societies for sustainable development, provide access to justice for all and build effective, accountable and inclusive institutions at all levels, and 17. Strengthen the means of implementation and revitalize the global partnership for sustainable development (United Nations, Agenda 2030).

The realization of the Sustainable Development Goals should be based on a holistic and inclusive approach, taking into account the national specificities of each country. The definition of sustainable development has not yet been harmonized in the world, however, to a large extent, we can talk about the need for such action today, which will not harm tomorrow.

Creating sustainable living conditions

In the process of discovering, learning, and evaluating the environment, students develop a sense of the environment. They form their own opinion about the environment, learn about the effectiveness of problem-solving strategies, and the critical acceptance of information. Today, environmental protection and nature conservation have become universal topics that test our maturity, the realization of our expectations, and our readiness to face the consequences to which future generations will be exposed. This is closely related to upbringing and education, although environmental issues are slowly coming to our awareness and are being addressed in educational programs. (Hlad 1996a).

A basic prerequisite for making changes in a country and society towards sustainable development is the understanding and acceptance of the concept and principles of sustainable development. In the Republic of Macedonia, there is an insufficiently developed awareness, understanding, and acceptance of the concept and principles of sustainable development, with certain exceptions. (National Strategy for Sustainable Development in the Republic of North Macedonia, p.19)

This paper explores students' attitudes toward two specific sustainable development goals. The first goal focuses on ensuring universal access to safe and affordable drinking water, sanitation, and hygiene, while promoting sustainable water management. It emphasizes the need to end open defecation, improve water quality and efficiency, and encourage the sustainable capture and supply of freshwater. Additionally, protecting and restoring water-related ecosystems such as forests, mountains, wetlands, and rivers is crucial to addressing water scarcity and implementing integrated water resource management. To achieve these objectives, greater international cooperation is essential in supporting water and sanitation-related initiatives in developing countries, enabling local communities to enhance their water and sanitation management. (Sustainable Development Goals, State Statistical Office, Republic of North Macedonia, 2019). Greater international cooperation is needed to support developing countries in water and sanitation-related activities and programs, thus helping local communities to improve water and sanitation management. According to the data of the State Statistical Office published in the Report on Sustainable Development Goals in relation to sanitation, 2% of the

population in the Republic of North Macedonia lacked sanitation in 2018. While more than 90% of the population had access to at least secondary wastewater treatment in 2018. Regarding water quality, the same report stated that the biochemical oxygen demand in rivers in 2018 was 3.6mg O2 per liter, while the phosphate concentration in rivers measured in 2016 was 0.32 PO4 per liter. (Sustainable Development Goals, State Statistical Office, Republic of North Macedonia, 2019).

The second goal is to protect, restore, and promote sustainable use of terrestrial ecosystems, sustainably manage forests, combat desertification, halt and reverse land degradation, and halt biodiversity loss. (United Nations, Agenda 2030). This goal seeks to protect, restore, and promote the conservation and sustainable use of surface waters and mountain ecosystems. This includes efforts and financial resources for the sustainable management of forests and halting deforestation, combating desertification, restoring degraded land and soil, halting biodiversity loss, and protecting threatened species. It also calls for the sharing of benefits arising from the use of genetic resources and promoting access to such resources, as well as reducing the impact of invasive alien species on soil and aquatic ecosystems. The integration of ecosystem and biodiversity values into planning processes and poverty reduction strategies, and international cooperation to combat poaching and trade in protected species, is also considered a priority for protecting life on land. The 2018 report of the State Statistical Office on the Sustainable Development Goals states that 39.2% of the country's total land area is covered by forests. (Sustainable Development Goals, State Statistical Office, Republic of North Macedonia, 2019). Considering the fires that occurred after that, it is justified to believe that today that percentage is lower. In this context, it is important for us to think about the quality of life with an imperative for preserving the natural environment. In doing so, ecological elements are viewed in a long-term perspective, emphasizing the entirety and connection with the ecosystem, interpreting the legality of their functioning. It follows that with this way of living, planet Earth cannot bear the increased footprint of consumption and the increase in the ecological footprint of its numerous inhabitants in its entirety. (Aceska, N., Dadić-Nikoloska, E., Veljanovska-Miladinova, V. 2016).

The need for the public to change its behavior towards the environment has also put the environment itself under pressure by reducing its capacity to bear human pressure. For this purpose, education for sustainable development should be approached as learning for the future, where students and teachers are involved in solving environmental education issues and other problems of the school and the environment, they critically approach, research, solve, and responsibly think about the values of sustainable development.

Research methodology and results

We are constantly faced with the problem of water shortage, polluted air, and numerous landfills with various waste. The responsibility and awareness of young people who must consider their secure future, considering our current problems, is very important. Therefore, this study aims to investigate the knowledge of high school graduates about sustainable development, whose agenda includes the elimination of problems with water shortage, polluted air and waste management, as well as their habits and skills as part of the agenda for sustainable development. For this reason, the research instrument we used was an online questionnaire that was carried out between March and April 2024 with students in their last year of secondary school. The schools involved include gymnasiums and vocational secondary schools. In order to comply with the rules and to create habits for sustainable development, the questionnaire was distributed by giving a QR code to the students, who then scanned it and accessed the questionnaire and completed it. In this way, the paper was saved, and students gained new experience in the

research process. Students who did not have an internet connection were connected by using their peers' hotspots. The collected data were processed with the help of the SPSS program. The questionnaire was completed by 332 high school graduates, of whom 57% were female; about the school they attended, 28% were gymnasium students, while the rest were vocational secondary school students. Table 1 includes students' responses regarding their preferences for choosing their secondary school.

Table 1. The reason why students chose this specific school

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Society	71	21,4	21,4	21,4
	Proximity of the school	18	5,4	5,4	26,8
	The school has a good reputation	68	20,5	20,5	47,3
	The school offers the brunch I want	158	47,6	47,6	94,9
	The school has conditions for various activities	17	5,1	5,1	100,0
	Total	332	100,0	100,0	

High school is the bridge to determining the profession of young people. This is also the reason for determining and choosing the type of high school. Other factors that influence the selection of a high school should not be excluded. The data is presented in the Table.1 shows that the main factor that has influenced students to choose the school they are graduating from is the programs offered by the schools. If we work towards offering attractive and modern programs, programs that ensure employment and practical preparation of students, then the school will be the place where students will want to spend their time. From the data above, it can be seen that for 47.6% of the students who completed the questionnaire, the curriculum was the factor that influenced their choice of high school. Another influential factor is society, with a representation of 21.4% and the reputation of the school, with a representation of 20.5%. The number of students who responded positively to the question of whether they know what sustainable development is was 67%, while 33% responded negatively. Table 2 includes information about the location from which the information on sustainable development was obtained.

Table 2. Where did students hear about sustainable development?

		Frequency	Percentage	Valid Percentage	Cumulative Percentage
Valid	In school	120	36,1	53,8	53,8
	In associations	4	1,2	1,8	55,6
	From friends	6	1,8	2,7	58,3
	TV, radio	20	6,0	9,0	67,3
	Internet	66	19,9	29,6	96,9
	In home	6	2,1	3,1	100,0
	Total	222	66,9	100,0	
Missing	System	110	33,1		
Total		332	100,0		

As can be seen from the table above, 53.8% of students were introduced to the concept of sustainable development at school, which means that the school is the ground of young people's education and the place where students accumulate knowledge, in this case, knowledge about sustainable development. What information that students have accumulated remains to be researched in more detail in the future. This generation of students is the citizens of the 21st century who need to be prepared for the challenges they will face and for which they need to find solutions. This generation is also the natives of technology and information, and they use the same for the concept of sustainable development. This can be seen from Table 2, where 29.6% of students have obtained information about sustainable development from the internet, while the others from other sources. Also, about 33% of students do not have knowledge about this concept, which is quite important for their future. This number should be worrying, considering the importance of sustainable development for the future of these young people. We believe that this situation is due to the limited inclusion of sustainable development in the curricula, the lack of practical activities, as well as the insufficient training of teachers. Additionally, the inadequate media promotion also limits students' access to these important topics.

Water, as an indispensable need of humanity, requires water conservation to be part of our daily lives. The extent to which this practice is part of our youngsters' lives has been shown in Table 3.

Table 3. Rational consumption of water is necessary for sustainable development.

		Frequency	Percentage	Valid Percentage	Cumulative Percentage
Valid	Strongly disagree	8	2,4	3,6	3,6
	Disagree	7	2,1	3,2	6,8
	Neutral	57	17,2	25,7	32,4
	Agree	61	18,4	27,5	59,9
	Strongly agree	89	26,8	40,1	100,0
	Total	222	66,9	100,0	
Missing	System	110	33,1		
Total		332	100,0		

The above table shows that 40.1% of students who declared that they have knowledge about the meaning of sustainable development fully agree that saving water is necessary for sustainable development, while 27.5% agree that saving water is necessary. Table 3 also shows the number of students who declared themselves neutral. This number is worrying, because 27.5% of the students who declared that they have knowledge about sustainable development declared themselves neutral regarding saving water consumption. This calls into question the understanding of the concept of sustainable development, which prompts us to alarm our educational institutions, institutions for environmental protection, and other state institutions, which should be sensitized regarding the education of young people regarding sustainable development. Table 4 presents the students' responses to the question of whether they agree that preserving nature is not necessary for sustainable development.

Table 4. Nature conservation is not necessary for sustainable development.

		Frequency	Percentage	Valid Percentage	Cumulative Percentage
Valid	Strongly disagree	107	32,2	48,4	48,4
	Disagree	21	6,3	9,5	57,9
	Neutral	39	11,7	17,6	75,6
	Agree	24	6,9	10,4	86,0
	Strongly agree	31	9,3	14,0	100,0
	Total	222	66,9	100,0	
Missing	System	110	33,1		
Total		332	100,0		

The data presented in the table above shows that 48.4% of those who have knowledge about sustainable development completely disagree that preserving nature is not necessary for sustainable development, while 9.5% disagree. From this, it can be seen that 57.9% of students are aware of the importance of nature in the well-being of humanity. The remaining students who have chosen one of the other options are approximately 40%, which is something that relevant institutions should consider both in terms of raising the awareness of young people in preserving nature and in their education. This is feasible if educational institutions and policymakers have the creation of qualitative educational cadres on their agenda, who will be part of the realization of sustainable development goals (Iljazi, T., & Pandiloska Grncharovska, S., 2024).

Environmental problems are global problems, one of which is the waste of all kinds. Developed countries invest in reducing waste in their environments, but they also invest in raising and educating the population to reduce waste. One of the questions of our research is whether students think that people should contribute to reducing waste of all types to maintain sustainable development. The processed data have been presented in Table 5. The data in Table 5 shows that 44.8% of the students who declared that they have knowledge about sustainable development completely agree that people should reduce each type of waste, while 25.8% only agree. These two values show that about 70.6% of the students are in favor of reducing waste, while 23.5% of the students have maintained a neutral position.

Table 5. Sustainable development calls for reduction of all types of waste.

		Frequency	Percentage	Valid Percentage	Cumulative Percentage
Valid	Strongly disagree	8	2,4	3,6	3,6
	Disagree	6	1,5	2,3	5,9
	Neutral	52	15,7	23,5	29,4
	Agree	57	17,2	25,8	55,2
	Strongly agree	99	29,8	44,8	100,0
	Total	222	66,9	100,0	
Missing	System	110	33,1		
Total		332	100,0		

Waste (management) is one of the most serious problems of the globe. This is also supported by the fact that globally, every second, 310 kg of toxic substances are released into the air, soil, and water by the industrial sector. This means that approximately 10 million tons of toxic chemical substances are released into the environment yearly, of which 2 million tons are

carcinogenic. The situation is alarming, and everyone must provide a safe environment for new generations, including them in this undertaking, so that the contribution is shared.
After processing the results obtained within the framework of this work, we have managed to confirm the following hypotheses:
H_{01}: The attitude of students regarding the rational use of water does not depend on the type of school they attend. (χ^2 =1.59, df=4, p=0.811).

Table 6. Chi square tests for H_{01}

	Value	df	Asymptotic Significance (2-sided)
Pearson Chi-Square	1,590[a]	4	,811
Likelihood Ratio	1,558	4	,816
Linear-by-Linear Association	,885	1	,347
N of Valid Cases	222		

From table 6, we have χ^2 =1.59, df=4 and p=0.811, According to the obtained values, we conclude that the null hypothesis is accepted, and we conclude that there is no dependence between the type of school and rational water consumption. This data also tells that the school curricula should include topics related to sustainable development. The realization of sustainable development goals is related to the secure future of all young people, who will be challenged during their near future. H_2 is the other hypothesis confirmed with the help of the Pearson coefficient given as follows:

H_2: The students' attitudes about the rational consumption of water are correlated with the attitude about the reduction of various waste (ρ=0.428, p=0.000).

Table 7. Correlation between water consumption and reduction of various waste

		Q24	Q27
Q24	Pearson Correlation	1	,428**
	Sig. (2-tailed)		,000
	N	222	221
Q27	Pearson Correlation	,428**	1
	Sig. (2-tailed)	,000	
	N	221	221

**. Correlation is significant at the 0.01 level (2-tailed).

Table 7. Presents the correlation of students' attitudes towards rational water consumption with the reduction of waste of each type presented with the value of the Pearson coefficient ρ=0.428, with p=0.000. From this, it is clear that the knowledge that students possess regarding sustainable development influences the development of their attitudes towards the realization of each sustainable development goal. This should also be related to the daily statistical data at the global level that shows (World Health Organization) that the number of deaths caused by cancer for the year 2024 was 349300, or the same source gives the number of 4.

Conclusions, discussions and proposals

This paper represents one of the few papers that are dedicated to and deal with the research of the realization of the goals of sustainable development in our society, namely, in the educational process. The data obtained show that young people have a passion for sustainable development, but the number of young people needs to be increased so that the attitudes, skills, and behaviors of young people correspond to the goals of Sustainable Development. The safest, best, and long-term way to achieve this is by introducing teaching topics for Sustainable Development as a mandatory part of the curricula of every subject, every school, and every level of education. Also, educational institutions, among others, should create a long-term policy for the realization of the goals of Sustainable Development, where teachers, students, and institutions will be involved so that, through the curricula and various projects, the goals of Sustainable Development will be realized.

In 2010, the Republic of North Macedonia adopted the National Strategy for Sustainable Development (2009-2030), which is based on the principles of sustainable development accepted at the global level and defined at the UN Conference on Environment and Development (Rio de Janeiro, 1992) to put Agenda 21 into operation. The national strategy, among other things, emphasizes in one paragraph the importance of the need for significant improvement and strategic guidance of the education sector, but the seven strategic objectives of the document do not contain any specific proposal for the manner of implementation of education for sustainable development. Despite the existing National Strategy for Sustainable Development, the general conclusion when analyzing high school and vocational education is that the programs are conceptually, structurally, and content-wise inconsistent, and there is no consistency and systematicity in the inclusion of elements of education for sustainable development either between different subjects or within individual subjects. Namely, there are parts of the curricula for certain subjects where there is visible potential that can contribute to the realization of the concepts and principles of education for sustainable development, but they are not recognizable as such, that is, their connection with the realization of the goals of education for sustainable development is not sufficiently visible.

The sustainable development agenda includes goals that will reduce the negative trends that are present and alarming about the global situation in economic, environmental, and social aspects. Knowledge, skills, and attitudes for sustainable development must be present in every sphere of life. Young people as part of our society need knowledge, skills, and attitudes in accordance with the goals of sustainable development, since this part of society is most at risk from today's threats. Raising awareness for sustainable development is not just about one goal of the sustainable development agenda, but they are intertwined, and attitudes and behaviors become habits among young people that ultimately bring hope for a more secure future.

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