



Journal Homepage: - www.journalijar.com

INTERNATIONAL JOURNAL OF ADVANCED RESEARCH (IJAR)

Article DOI: 10.21474/IJAR01/18665

DOI URL: <http://dx.doi.org/10.21474/IJAR01/18665>



RESEARCH ARTICLE

"RESEARCH ON THE LEVEL OF AWARENESS OF PUPILS REGARDING SUSTAINABLE DEVELOPMENT ISSUES"

Tengiz Taktakishvili¹, Vakhtang Charaia², Giga Tvauri³, Nino Sachhaleli⁴ and Mariam Lashkhi⁵

1. Professor, Grigol Robakidze University.
2. Professor, Grigol Robakidze University.
3. Assistant-Professor, Grigol Robakidze University.
4. Assistant, Grigol Robakidze University.
5. Assistant, Grigol Robakidze University.

Manuscript Info

Manuscript History

Received: 29 February 2024

Final Accepted: 31 March 2024

Published: April 2024

Key words:-

Sustainable Development, Youth Education

Abstract

The paper studies the level of awareness of pupils regarding sustainable development issues in Tbilisi schools. The research uses a quantitative approach, descriptive statistics and regression analysis. 205 students of Tbilisi schools were interviewed, both from private and public schools. The research was carried out jointly by Grigol Robakidze University and Tbilisi City Hall. The study identified factors that influence students' awareness of sustainability.

Copy Right, IJAR, 2024.. All rights reserved.

Introduction:-

Sustainable development is the challenge for Georgia, also for other countries too. In order to achieve the goals of sustainable development, each person has his responsibility to defend and save natural resources as well as the environment as a valued capital, for the current and future generations. The aim of the presented research is to determine the level of awareness about sustainable development among the pupils of Tbilisi school.

Sustainable development is more than just a trend; it is an absolute necessity for our planet's survival. It calls for a profound change in our viewpoint on economic, social, and environmental issues, highlighting the importance of taking care of the natural world. Every person must take responsibility on their actions, while understanding that no matter the scale of these actions they will have a certain impact on the future of our planet. Embracing the concept of sustainable development is critical for ensuring a good standard of living for present and future generations. By encouraging sustainable practices and sharing the knowledge about sustainability principles, we may help to lessen the effects of climate change. It is also necessary to safeguard the biodiversity in the country and preserve rich and diverse natural resources in the long run.

Young people today will be tomorrow's leaders; thus it is of utmost importance to educate them about sustainable development that will enable future leaders to make well informed decisions and take action to build a more sustainable future. The paper aims to research Tbilisi school students' knowledge and attitudes about sustainable development, providing significant information for future educational activities. The research was made with the collaboration of Grigol Robakidze University and Tbilisi City Hall.

Corresponding Author:- Tengiz Taktakishvili

Address:- Professor, Grigol Robakidze University.

Literature Review

Sustainable development

Education for sustainable development is a vision of education that seeks to balance human and economic well-being with cultural traditions and respect for the earth's natural resources. It emphasizes aspects of learning that enhance the transition towards sustainability including future education; citizenship education; education for a culture of peace; gender equality and respect for human rights; health education; population education; education for protecting and managing natural resources; and education for sustainable consumption (Wals and Kieft, 2010).

Sustainable development (SD) is a complex idea, based on environmental, economic and social dimensions (Berglund et al, 2014). Principle 1 of the 1972 Stockholm Declaration said that 'Man has the fundamental right to freedom, equality and adequate conditions of life, in an environment of a quality that permits a life of dignity and well-being. It further proclaimed the solemn responsibility of governments to protect and improve the environment for both present and future generations. After the Stockholm Conference, several states recognized in their Constitutions or laws the right to an adequate environment and the obligation of the state to protect that environment (Report of the World Commission on Environment and Development: "Our Common Future").

Education for Sustainable Development

Education for Sustainable Development is necessary to save the inhabitants of this Planet for a long time. Awareness as well as fulfillment of commitment is necessary which are taken by UNESCO and other Organizations. All pupils from every corner of the Planet and every section of the society have to put forward their hand for Sustainable World. Education is the best instrument through which present and future generations could be involved. Students are the most powerful weapons of every society. So, it is necessary to inform them about Sustainable Development as they can play an initiative role (Das et al, 2014).

During the last few decades the world communities have, under the umbrella of the UN, agreed upon jointly addressing SD. As a response, Education for Sustainable Development (ESD) has been launched as one of the key answers to dealing with sustainability. The underlying idea of ESD is to empower students with sustainability competences through a holistic interdisciplinary perspective of content and pluralistic learner-centered democratic teaching strategies. ESD has been adopted globally as a consequence of the UN Decade for Education for Sustainable Development (DESD; 2005–2014), which has reshaped curricula worldwide.

The focus on ESD has increased in the daily practices of schools (Pauw et al, 2015). The effectiveness of education for sustainable development. Sustainability, 7 (11), 15693–15717. ESD in schools is transformative and learning-oriented (Cottafava et al, 2019), from learning to know, learning to be, learning to do and learning to live together, to learning to transform oneself and society (Delors, 1998) (Makrakis et al, 2012). ESD can be effectively promoted by key actions, such as establishing the awareness, meaning and scope of ESD; reorienting curricula, teaching and learning; capacity building; synergizing ESD with other "adjectival" educations (Unesc, 2012); providing ESD resources and materials; and engaging in international and regional cooperation (Wals and Kieft, 2010). Education for sustainable development: Research overview.) Eight characteristics within schools lead to ESD effectiveness: sustainable leadership, resources, pluralistic communication, supportive relations, collective efficacy, adaptability, democratic decision making and a shared vision (Verhelst et al, 2020). Based on the above-mentioned features, key actions and characteristics, Figure 1 proposes a framework of ESD in schools (Yuan et al, 2021).

Research Methods:-

The aim of the research

The purpose of this study is to determine the level of awareness of pupils of Tbilisi schools in relation to the issues of sustainable development and to develop recommendations for its improvement.

Hypothesis

1. Secondary school pupils' awareness regards sustainable development is not high;
2. A significant part of the students has not involved in a project related to sustainability.

Variables

In the research there is used the descriptive statistics method, which is often found in similar studies (Ridwan et al, 2021), the sampling was carried out with random sampling method. The questionnaire included the environmental

issues in sustainable development. When compiling the questionnaire, the practices used in the research of the mentioned issue were taken into account, namely: attitudes and external factors influence the formation of behavioral components, as well as universal human values, awareness of environmental problems, responsibility for environmental problems and the level of intelligence (Anđić and Vorkapić, 2014). Regression analysis was also used in the study in order to understand the most important factors determining the understanding of importance of being responsible on environment. This part of the analysis is in accordance with the similar researches as well (Holison, 2023). The questionnaire itself includes closed and open questions. Answers to closed questions will be given in the Likert scale format (from 1 to 5). A total of 205 pupils from the 10th and 12th grades participated in the research. The statistical analysis was carried out in SPSS and Excel. Cronbach's alpha coefficient will be used to assess the reliability of the questionnaire, as it is a statistic commonly quoted by authors to demonstrate that tests and scales that have been constructed or adopted for research projects are fit for purpose (The Use of Cronbach's Alpha When Developing and Reporting Research Instruments in Science Education). Based on the literature reviewed following variables were identified as important influencing pupils' understanding of importance of being responsible on environment:

- x_1 – receiving environmental information from media (MEDIA)
- x_2 – having information on a global warming (GIWarm)
- x_3 – being concerned with an air pollution (AirPoll)
- x_4 – being concerned with a water pollution (WaterPoll)
- x_5 – valuing biodiversity (Biodivers)
- x_6 – trying to reduce waste at home (Waste)
- x_7 – avoiding use of polythene bags (Polyth)
- x_8 – reducing use of electricity at home (Electr)
- x_9 – reducing water use at home (WaterUse)
- x_{10} – participating in environmental awareness raising activities (EnvAct)
- x_{11} – often discussing environmental problems with friends (EnvProb)

After conducting autocorrelation tests two variables were excluded from the model: (Electr) and (EnvProb).

All the remaining variable proved to be free from autocorrelation and the following regression formula was developed:

$$Y = B_0 + B_1MEDIA + B_2GIWarm + B_3AirPoll + B_4WaterPoll + B_5Biodivers + B_6Waste + B_7Polyth + B_8WaterUse + B_9EnvAct + \varepsilon$$

Figure 1:- The Framework of ESD Implementation.



Note. Adopted from Yuan et al, 2021

Results and Discussions:-

The results of the regression revealed that several variables have significant impact on understanding of importance of being responsible on environment, namely: GIWarm (p-value < 0.05), WaterPoll (p-value < 0.001), Waste (p-value < 0.01), EnvAct (p-value < 0.01). All the coefficients of these variables are positive meaning that improving understanding in the areas that these variables cover will strengthen pupils’ understanding of importance being responsible on environment.

Table 1:- Regression analysis.

SUMMARY OUTPUT								
<i>Regression Statistics</i>								
Multiple R	0.707893							
R Square	0.501113							
Adjusted R Square	0.478087							
Standard Error	0.466878							
Observations	205							
ANOVA								
	df	SS	MS	F	gnificance F			
Regression	9	42.69481	4.743868	21.76332	2.82E-25			
Residual	195	42.50519	0.217975					
Total	204	85.2						
	Coefficients	Standard Error	t Stat	P-value	Lower 95%	Upper 95%	Lower 95,0%	Upper 95,0%
Intercept	1.560747	0.283724	5.500939	1.18E-07	1.001186	2.120308	1.001186	2.120308
x1	-0.09439	0.048957	-1.92805	0.055302	-0.19094	0.002162	-0.19094	0.002162
x2	0.143583	0.057335	2.50429	0.01309	0.030507	0.256659	0.030507	0.256659
x3	-0.05075	0.083949	-0.60459	0.546156	-0.21632	0.114811	-0.21632	0.114811
x4	0.208745	0.079586	2.622893	0.009408	0.051785	0.365704	0.051785	0.365704
x5	0.260514	0.063925	4.075337	6.68E-05	0.134442	0.386587	0.134442	0.386587
x6	0.123712	0.043739	2.828439	0.005166	0.03745	0.209973	0.03745	0.209973
x7	0.007029	0.040828	0.172173	0.86348	-0.07349	0.08755	-0.07349	0.08755
x9	-0.04576	0.041064	-1.11442	0.266472	-0.12675	0.035224	-0.12675	0.035224
x10	0.128004	0.039175	3.267484	0.001282	0.050743	0.205266	0.050743	0.205266

Source: authors’ calculations

These findings will help policy makers, especially those in the Tbilisi City Hall to elaborate the policy that will increase pupils’ awareness on sustainability. One of the factors that is „participating in environmental awareness raising activities (EnvAct)” can directly be addressed by the City Hall as they can organize various informational campaigns and invite school pupils to take part in. Understanding importance of global warming, water pollution and reducing waste by recycling are important factors as well determining understanding of importance of being responsible on environment.

In research 205 pupils have taken part, according to the Likert scale they had to answer 11 statements. The first statement was about understanding the importance of being responsible for the environment, the results showed that 48.8% of pupils strongly agreed with the provided statement and they understand the importance of being responsible for the environment and 42.4% agreed about it (see, the Table 2:- The importance of being responsible for the environment).

Table 2:- The importance of being responsible for the environment.

I understand the importance of being responsible for the environment.					
5 = strongly agree, 4 = agree, 3 = neutral, 2 = disagree, and 1 = strongly disagree.					
	Frequency	Percent	Valid Percent	Cumulative Percent	
Valid	3	18	8.8	8.8	8.8
	4	87	42.4	42.4	51.2
	5	100	48.8	48.8	100.0

	Total	205	100.0	100.0	
--	-------	-----	-------	-------	--

Source: authors' according to the research

The conducted research showed that on the statement about reading the environmental issues in the media 54.1% of respondents answered that they were neutral and the second highest percentage received 18.5%, which was about "agree"(see, the Table 3:- Reading about environmental issues in the media).

Table 3:- Reading about environmental issues in the media.

I often read about environmental issues in the media.					
5 = strongly agree, 4 = agree, 3 = neutral, 2 = disagree, and 1 = strongly disagree.					
		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	1	26	12.7	12.7	12.7
	2	18	8.8	8.8	21.5
	3	111	54.1	54.1	75.6
	4	38	18.5	18.5	94.1
	5	12	5.9	5.9	100.0
	Total	205	100.0	100.0	

Source: authors' according to the research

About the statement knowing the meaning of global warming 54.1% marked as strongly agree, which means that 111 pupils from 205 know the meaning of global warming(see, the Table 4:- The meaning of global warming).

Table 4:- The meaning of global warming.

I know the meaning of global warming.					
5 = strongly agree, 4 = agree, 3 = neutral, 2 = disagree, and 1 = strongly disagree.					
		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	2	2	1.0	1.0	1.0
	3	22	10.7	10.7	11.7
	4	70	34.1	34.1	45.9
	5	111	54.1	54.1	100.0
	Total	205	100.0	100.0	

Source: authors' according to the research

The pupils also answered the statement about air pollution and the results showed that 63.9% strongly agree that they are concerned about air pollution(see, the Table 5:- Air pollution).

Table 5:- Air pollution.

I am very concerned about air pollution.					
5 = strongly agree, 4 = agree, 3 = neutral, 2 = disagree, and 1 = strongly disagree.					
		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	3	20	9.8	9.8	9.8
	4	54	26.3	26.3	36.1
	5	131	63.9	63.9	100.0
	Total	205	100.0	100.0	

Source: authors' according to the research

According to the research about pollution of rivers 64.4% strongly agreed that they are worried about this issue (see, the).

Table 6:- Pollution of rivers).

Table 6:- Pollution of rivers.

I am very worried about the pollution of rivers.					
5 = strongly agree, 4 = agree, 3 = neutral, 2 = disagree, and 1 = strongly disagree.					
		Frequency	Percent	Valid Percent	Cumulative Percent

Valid	2	2	1.0	1.0	1.0
	3	22	10.7	10.7	11.7
	4	49	23.9	23.9	35.6
	5	132	64.4	64.4	100.0
	Total	205	100.0	100.0	

Source: authors' according to the research

About biodiversity the results demonstrated that 48.3%, which is the highest points distribution "strongly agreed" that they value biodiversity (see, the Table 7:- Biodiversity).

Table 7:- Biodiversity.

I value biodiversity very much.					
5 = strongly agree, 4 = agree, 3 = neutral, 2 = disagree, and 1 = strongly disagree.					
		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	2	4	2.0	2.0	2.0
	3	22	10.7	10.7	12.7
	4	80	39.0	39.0	51.7
	5	99	48.3	48.3	100.0
	Total	205	100.0	100.0	

Source: authors' according to the research

The carried research showed that 45.4 % of pupils are neutral about collected things to be recycled. (Table 8:- Collecting things that can be recycled)

Table 8:- Collecting things that can be recycled.

I always try to reduce the amount of waste at home by collecting things that can be recycled. 5 = strongly agree, 4 = agree, 3 = neutral, 2 = disagree, and 1 = strongly disagree.					
		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	1	6	2.9	2.9	2.9
	2	36	17.6	17.6	20.5
	3	93	45.4	45.4	65.9
	4	42	20.5	20.5	86.3
	5	28	13.7	13.7	100.0
	Total	205	100.0	100.0	

Source: authors' according to the research

According to the conducted research 35.6% of pupils disagree that they never use polythene bags to pack things (See, the Table 9:- Using polythene bags for packing).

Table 9:- Using polythene bags for packing.

I never use polythene bags to pack things.					
5 = strongly agree, 4 = agree, 3 = neutral, 2 = disagree, and 1 = strongly disagree.					
		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	1	38	18.5	18.5	18.5
	2	73	35.6	35.6	54.1
	3	56	27.3	27.3	81.5
	4	26	12.7	12.7	94.1
	5	12	5.9	5.9	100.0
	Total	205	100.0	100.0	

Source: authors' according to the research

The conducted research showed that 33.2% are neutral about trying to reduce electricity at home(see, the

Table 10:- Reducing electricity at home).

Table 10:- Reducing electricity at home.

I always try to reduce the use of electricity at home.					
5 = strongly agree, 4 = agree, 3 = neutral, 2 = disagree, and 1 = strongly disagree.					
		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	1	26	12.7	12.7	12.7
	2	46	22.4	22.4	35.1
	3	68	33.2	33.2	68.3
	4	32	15.6	15.6	83.9
	5	33	16.1	16.1	100.0
	Total	205	100.0	100.0	

Source: authors' according to the research

What about reducing water at home, the highest percentage 35.1% agreed that they are neutral about reducing water usage at home and 27.3% disagreed(See, the Table 11:- Reducing water at home).

Table 11:- Reducing water at home.

I always try to reduce the use of water at home.					
5 = strongly agree, 4 = agree, 3 = neutral, 2 = disagree, and 1 = strongly disagree.					
		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	1	24	11.7	11.7	11.7
	2	56	27.3	27.3	39.0
	3	72	35.1	35.1	74.1
	4	22	10.7	10.7	84.9
	5	31	15.1	15.1	100.0
	Total	205	100.0	100.0	

Source: authors' according to the research

What about participating in the environmental awareness raising activities 28.3% of pupils are neutral about it (see, the Table 12:- Participation in environmental awareness raising activities)

Table 12:- Participation in environmental awareness raising activities.

I often participate in environmental awareness raising activities.					
5 = strongly agree, 4 = agree, 3 = neutral, 2 = disagree, and 1 = strongly disagree.					
		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	1	41	20.0	20.0	20.0
	2	50	24.4	24.4	44.4
	3	58	28.3	28.3	72.7
	4	24	11.7	11.7	84.4
	5	32	15.6	15.6	100.0
	Total	205	100.0	100.0	

Source: authors' according to the research

Regarding discussing environmental problems, the results showed that 36.1% are neutral about it and 27.3% disagreed on the provided statements (see, the Table 13:- Discussing environmental problems).

Table 13:- Discussing environmental problems.

I always discuss environmental problems with my friends.					
5 = strongly agree, 4 = agree, 3 = neutral, 2 = disagree, and 1 = strongly disagree.					
		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	1	32	15.6	15.6	15.6

	2	56	27.3	27.3	42.9
	3	74	36.1	36.1	79.0
	4	26	12.7	12.7	91.7
	5	17	8.3	8.3	100.0
	Total	205	100.0	100.0	

Source: authors' according to the research

In the table 14, there are demonstrated the statements with the highest percentage, the respondents only agreed with the statemen about polythene bags, and this can be caused by active marketing campaign and also by the factor that packages are not free.

Table 14:- The results with demonstrating the highest percentages.

Statement	Percentage	Result
I understand the importance of being responsible for the environment	48.8%	strongly agree
I often read about environmental issues in the media. 1 =	54.1%	neutral
I know the meaning of global warming.	54.1%	strongly agree
I am very concerned about air pollution.	63.9%	strongly agree
I am very worried about the pollution of rivers.	64.4%	strongly agree
I value biodiversity very much.	48.3%	strongly agree
I always try to reduce the amount of waste at home by collecting things that can be recycled	45.4 %	neutral
I never use polythene bags to pack things.	35.6%	disagree
I always try to reduce the use of electricity at home.	33.2%	neutral
I always try to reduce the use of water at home.	35.1%	neutral
I often participate in environmental awareness raising activities.	28.3%	neutral
I always discuss environmental problems with my friends.	36.1%	neutral

Source: authors' according to the research

Table 15:- Case Processing Summary.

Case Processing Summary			
		N	%
Cases	Valid	205	100.0
	Excluded ^a	0	.0
	Total	205	100.0

Source: authors' according to the research

Table 16:- Reliability Statistics.

Reliability Statistics	
Cronbach's Alpha	N of Items
.915	11
Result: Alpha ≥ 0.9 excellent	

Source: authors' according to the SPSS

The SPSS reliability statistics showed that the provided questionnaire was excellent.

Table 17:- Item Statistics.

Item Statistics			
	Mean	Std. Deviation	N

I understand the importance of being responsible on environment. 5 = strongly agree, 4 = agree, 3 = neutral, 2 = disagree, and 1 = strongly disagree.	4.40	.646	205
I often read about environmental issues in the media. 5 = strongly agree, 4 = agree, 3 = neutral, 2 = disagree, and 1 = strongly disagree.	2.96	1.009	205
I know the meaning of global warming. 5 = strongly agree, 4 = agree, 3 = neutral, 2 = disagree, and 1 = strongly disagree.	4.41	.720	205
I am very concerned about air pollution. 5 = strongly agree, 4 = agree, 3 = neutral, 2 = disagree, and 1 = strongly disagree.	4.54	.668	205
I am very worried about the pollution of rivers. 5 = strongly agree, 4 = agree, 3 = neutral, 2 = disagree, and 1 = strongly disagree.	4.52	.725	205
I value biodiversity very much. 5 = strongly agree, 4 = agree, 3 = neutral, 2 = disagree, and 1 = strongly disagree.	4.34	.747	205
I always try to reduce the amount of waste at home by collecting things that can be recycled. 5 = strongly agree, 4 = agree, 3 = neutral, 2 = disagree, and 1 = strongly disagree.	3.24	.995	205
I never use polythene bags to pack things. 5 = strongly agree, 4 = agree, 3 = neutral, 2 = disagree, and 1 = strongly disagree.	2.52	1.110	205
I always try to reduce the use of electricity at home. 5 = strongly agree, 4 = agree, 3 = neutral, 2 = disagree, and 1 = strongly disagree.	3.00	1.241	205
I always try to reduce the use of water at home. 5 = strongly agree, 4 = agree, 3 = neutral, 2 = disagree, and 1 = strongly disagree.	2.90	1.205	205
I often participate in environmental awareness raising activities. 5 = strongly agree, 4 = agree, 3 = neutral, 2 = disagree, and 1 = strongly disagree.	2.79	1.322	205

Source: authors' according to the SPSS

Table 18:- Item-Total Statistics.

Item-Total Statistics				
	Scale Mean if Item Deleted	Scale Variance if Item Deleted	Corrected Item-Total Correlation	Cronbach's Alpha if Item Deleted
I understand the importance of being responsible on environment. 5 = strongly agree, 4 = agree, 3 = neutral, 2 = disagree, and 1 = strongly disagree.	35.22	55.584	.633	.911
I often read about environmental issues in the media. 5 = strongly agree, 4 = agree, 3 = neutral, 2 = disagree, and 1 = strongly disagree.	36.66	50.863	.710	.905
I know the meaning of global warming. 5 = strongly agree, 4 = agree, 3 = neutral, 2 = disagree, and 1 = strongly disagree.	35.20	55.272	.589	.912
I am very concerned about air pollution. 5 = strongly agree, 4 = agree, 3 = neutral, 2 = disagree, and 1 = strongly disagree.	35.08	54.906	.682	.909
I am very worried about the pollution of rivers. 5 = strongly agree, 4 = agree, 3 = neutral, 2 = disagree, and 1 = strongly disagree.	35.10	54.416	.669	.909

I value biodiversity very much. 5 = strongly agree, 4 = agree, 3 = neutral, 2 = disagree, and 1 = strongly disagree.	35.28	53.939	.693	.908
I always try to reduce the amount of waste at home by collecting things that can be recycled. 5 = strongly agree, 4 = agree, 3 = neutral, 2 = disagree, and 1 = strongly disagree.	36.38	51.804	.650	.908
I never use polythene bags to pack things. 5 = strongly agree, 4 = agree, 3 = neutral, 2 = disagree, and 1 = strongly disagree.	37.10	50.171	.681	.907
I always try to reduce the use of electricity at home. 5 = strongly agree, 4 = agree, 3 = neutral, 2 = disagree, and 1 = strongly disagree.	36.62	47.394	.771	.902
I always try to reduce the use of water at home. 5 = strongly agree, 4 = agree, 3 = neutral, 2 = disagree, and 1 = strongly disagree.	36.72	47.988	.759	.903
I often participate in environmental awareness raising activities. 5 = strongly agree, 4 = agree, 3 = neutral, 2 = disagree, and 1 = strongly disagree.	36.83	47.002	.736	.906

Source: authors' according to the SPSS

Table 19:- Item-Total Statistics.

Scale Statistics			
Mean	Variance	Std. Deviation	N of Items
39.62	62.100	7.880	11

Source: authors' according to the SPSS

Conclusions:-

According to the results pupils understand the importance of being responsible. The conducted research showed that media is not an effective source of information and it another sources of information can be used, e.g., social media. The first hypothesis was approved as study showed that secondary school pupils' awareness regards sustainable development is not high, moreover even though part of them say that they understand importance of sustainability still their actions are showing different (less actions against waste, reducing electricity and water use, using polythene bags and others). As for the second hypothesis it can be seen that a significant part of the students has not involved in a project related to sustainability meaning that the second hypothesis was confirmed as well.

The regression results showed that GIWarm, WaterPoll, Waste and EnvAct all have a significant impact on recognizing the importance of environmental responsibility. All of the coefficients for these factors are positive, indicating that enhancing understanding in the domains covered by these variables will enhance students' understanding of the necessity of being environmentally responsible.

The study creates good starting point for the Tbilisi City Hall and GrigolRobakidze University to elaborate joint or independent programs and projects that will improve pupils' awareness about sustainability issues.

References:-

1. Anđić, D., & Vorkapić, S. T. (2014). Interdisciplinary approaches to sustainable development in higher education: A case study from Croatia. In Handbook of research on pedagogical innovations for sustainable development (pp. 67-115). IGI Global.

2. Berglund, T., Gericke, N., & Chang Rundgren, S. N. (2014). The implementation of education for sustainable development in Sweden: Investigating the sustainability consciousness among upper secondary students. *Research in Science & Technological Education*, 32(3), 318-339. (accessed on 20.03.2024)
3. Boeve-de Pauw, J., Gericke, N., Olsson, D., & Berglund, T. (2015). The effectiveness of education for sustainable development. *Sustainability*, 7(11), 15693-15717.
4. Cottafava, D., Cavaglià, G., & Corazza, L. (2019). Education of sustainable development goals through students' active engagement: A transformative learning experience. *Sustainability Accounting, Management and Policy Journal*, 10(3), 521-544
5. Das, S. K., Halder, U. K., & Bairagya, S. (2014). Awareness of school students about sustainable development in education. *PolySciTech*, 1, 112-116.
6. Delors, J. (1998). *Learning: The treasure within*. Unesco.
7. Holison, Joel Edem, "Assessing the Knowledge on Sustainability and Barriers to Daily Sustainable Practices Among Faculty and Students in Higher Education: the Case of Eastern Illinois University" (2023). Masters Theses. 4982.
8. Makrakis, V., Kostoulas-Makrakis, N., & Kanbar, N. (2012). Developing and validating an ESD student competence framework: A Tempus-RUCAS initiative. In *Proceedings of the 5th Conference on eLearning Excellence in the Middle East ñ Sustainable Innovation in Education* (p. 585ñ594).
9. Pauw, J.B.D.; Gericke, N.; Olsson, D.; Berglund, T. The effectiveness of education for sustainable development. *Sustainability* 2015, 7, 15693–15717.
10. Report of the World Commission on Environment and Development: "Our Common Future". p.163. Available online:
http://www.channelingreality.com/Documents/Brundtland_Searchable.pdf (accessed on 20.03.2024)
11. Ridwan, I. M., Kaniawati, I., Suhandi, A., Samsudin, A., & Rizal, R. (2021, March). Level of sustainability awareness: where are the students' positions?. In *Journal of Physics: Conference Series* (Vol. 1806, No. 1, p. 012135). IOP Publishing.
12. The Use of Cronbach's Alpha When Developing and Reporting Research Instruments in Science Education. <https://link.springer.com/article/10.1007/s11165-016-9602-2> (accessed on 20.03.2024)
13. UNESCO. *Shaping the Education of Tomorrow. Full-Length Report on the UN Decade of Education for Sustainable Development*. 2012.
14. Verhelst, D., Vanhoof, J., Boeve-de Pauw, J., & Van Petegem, P. (2020). Building a conceptual framework for an ESD-effective school organization. *The Journal of Environmental Education*, 51(6), 400-415.
15. Wals, A. E., & Kieft, G. (2010). Education for sustainable development: Research overview.
16. Yuan, X., Yu, L., & Wu, H. (2021). Awareness of sustainable development goals among students from a Chinese senior high school. *Education Sciences*, 11(9), 458.

Appendix 1:-

Questionnaire

Closed questions

1. I often read about environmental issues in the media.
2. I know the meaning of global warming
3. I am very concerned about air pollution.
4. I am very worried about the pollution of rivers.
5. I always try to reduce the amount of waste at home by collecting things that can be recycled.
6. I value biodiversity very much.
7. I never use polythene bags to pack things.
8. I always try to reduce the use of electricity at home.
9. I always try to reduce the use of water at home.
10. I often participate in environmental awareness raising activities.
11. I understand the importance of being responsible for the environment.
12. I always discuss environmental problems with my friends.
13. Would you participate in a project that covers the topic of sustainable development?
14. Would you participate in sustainable development activities outside the school?
15. Are you familiar with the activities implemented by Tbilisi City Hall to support sustainable development?
16. Would you like a sustainable development learning course to be taught at school?

Appendix 2

Open Questions

1. Would you accept or participate in a grant project that covers the topic of sustainable development? What kind of project would you do?
2. Would you like a sustainable development curriculum to be taught at school? What specific subjects would you study?
3. Would you participate in sustainable development extracurricular activities? specify.
4. What do you think the school should do to promote sustainable development?
5. In your opinion, what should the City Hall do to promote sustainable development?