Impact of Environmental Education on Tertiary Level Students' Knowledge, Attitude and Perception

Zeba Farhana[1] & Md. Al-Amin[1]

ABSTRACT

This research discussed the status of environmental knowledge, attitude and perceptions of university students and the relationship between environmental knowledge and attitudes among them. A mixed-method design was adopted to examine tertiary level students' environmental knowledge and attitudes by employing a pre-test and a post-test conducted before and after an Environmental Education (EE) course. Those tests consisted of 15 multiple choice questions and 18 attitude measuring items rated on a five-point Likert scale. For supporting the quantitative data, a Focus Group Discussion (FGD) was also conducted for the purpose of exploring students' perceptions on EE. A total of 88 students (72 for tests and 16 for FGD) participated in this study. The findings showed a significant improvement of the students in terms of knowledge and favorable environmental attitudes. The participants also expressed a positive perception of the EE course. Finding ways of implementing EE for students of all levels can be the next subject for further research.

Keywords: *Impact of Environmental Education on Tertiary Level Students' Knowledge, Attitude and Perception*

Corresponding Email farhanazeba@du.ac.bd

Received 05/09/2021 **Reviewed** 01/12/2021 **Accepted** 18/06/2022

Suggested Citation Farhana, Z. & Al-Amin, M. (2022). Impact of Environmental Education on Tertiary Level Students' Knowledge, Attitude and Perception. *Teacher's World: Journal of Education and Research, 48* (2), 54-66.

Doi: https://doi.org/10.3329/twjer.v48i2.67551

Articles Full available online on:

- *Bangladesh Journals Online (BanglaJOL): https://www.banglajol.info/index.php/TWJER*
- *Dhaka University Journals (DUJ): http://journal.library.du.ac.bd/*
- *IER Website (Under Publication Tab): https://ierdu.edu.bd/*

1 Institute of Education and Research (IER), University of Dhaka

E-ISSN 2959-5738 (Online); ISSN-L: 0040-0521 (Print)

Introduction

The world is facing various environmental issues, such as climate change, pollutions, ozone layer depletion, global warming, sea level rising, etc., and most of these are caused by irresponsible environmental behavior (Meinhold & Malkus, 2005). It was perceived that some widely accepted social values, attitudes, and beliefs were the reasons behind the ecological problems in the late 20th century (Atava, Altunoglu, & Sonmezc, 2015). Environmental Education (EE) seeks to work with all these issues. EE is a process that provides scopes to explore or investigate the outside nature, information about environmental issues, and conservation. It also offers opportunities to gain knowledge and skills that can be used to conserve or restore the environment (Monroe, Andrews, & Biedenweg, 2007). It is a multidimensional area of study which provides the scopes of acquiring knowledge, values, attitudes; fostering awareness, and creating a new pattern of behavior towards the environment (UNESCO, 1980). Some of the most typical outcomes of EE are related to enhancing learners' environmental knowledge, attitudes, and behaviors (Hungerford & Volk, 1990; Powell, Stern, & Ardoin, 2006). EE helps everyone learning about the environment and adjust their attitudes to a more environmental friendly way of living (Rio Declaration, 1993) and thus EE became a part of the educational system.

EE can also be defined as a structured way of teaching natural environment, resources, and ecosystem, and interaction among natural resources, human and other life forms. It is not only the process of delivering the information of the environment but also the process of developing an environment-friendly attitude (Eneji, Akpo & Edung, 2017). Moreover, EE motivates one to develop skills, attitude, and commitment to take decision and action (Stohr, 2013). Warren (2003) mentioned that EE is the process of developing a world aware and worried about environment-related problems. This process includes knowledge, attitude, skills, motivation, and commitments to work to solve and prevent environment-related problems. Environmental knowledge can be shown by one's capacity of recognizing environmental problems, finding the cause and outcome of that problem (Othman, Bennett & Blamey, 2004). There is a relationship between knowledge and attitude. Better knowledge can lead one to develop a positive attitude (Evans & Durant, 1995). According to Schultz and Zelezny (2000), "attitudes of environmental concern are rooted in a person's concept of self and the degree to which an individual perceives him or herself to be an integral part of the natural environment" (p. 368). To increase knowledge and environment-friendly attitude in students, the EE course provides information and offers a proper guideline to the students to implement their knowledge and make a positive change to their attitude.

In University of Dhaka, EE is taught as a professional core (PC) course for four credit hours to the students of Bachelor of Education (Honors) at Institute of Education and Research (IER, DU). This EE course curriculum includes concept of Environment, Environmental Science, Environmental Education, Environmental Literacy, evolution of EE, elements and organization of EE curriculum, teaching-learning strategies and assessment in EE, opportunities & current

scenarios of EE in Bangladesh, Health and Population Education and Disaster Risk Education in Bangladesh (IER, DU, 2009). Moreover, this course involves the students in different environment-related programs, such as tree plantation, cleanliness program, observing waste management system of nearby areas, campaigning environmental awareness, developing ideas, model for EE project etc. This study endeavors to evaluate the change in students' knowledge, attitude and perception towards the environment after attending this EE course.

Research Objectives:

As expounded earlier, the purpose of this research is to evaluate the change of environmental knowledge, attitude and perception among the students of EE. This purpose is followed by some specific objectives:

1. To measure the impact of EE on students' knowledge about environment.
2. To determine the impact of EE on students' attitude towards environment.
3. To explore students' experience and perception about environment.

Review of Literatures

Environmental Knowledge and Perception

The environment is facing a stage when knowledge of the environment is a mandatory issue to conserve the environment. Industrial and technological development, luxurious living, and reckless attitude are causing the environment a lot of suffering. Environmental knowledge helps us understand the complications and consequences of the environment. It also enables us to take action according to the necessities (Hines, Hungerford, & Tomera, 1987). With good environmental knowledge, one should be able to find out the important factors related to environmental conservation such as concepts, symbols, and patterns of behavior (Laroche, Bergeron, & Barbaro-Forleo, 2001). It enhances one's ability to comprehend and evaluate various influences of society on the ecosystem. It also includes the recognition of factors associated with the environment and recognizing their implications, causes, and results (Gambro & Switzky, 1996). There are many dimensions of environmental knowledge. Lieflander and Bogner (2016) used three dimensions for their study; knowledge of the system which concerns ecosystems' natural processes and human-nature interactions effect: knowledge related to actions that are related to suitable behavioral options for addressing problems within the environment; and knowledge of effectiveness is related to the knowledge of various actions' impact and effectiveness compared to another. In general and special programs of environmental knowledge, enhancement is seen quite effective. Many nations are integrating various newly emerged and increasingly emphasized concepts of environmental knowledge in their national curriculum (Praveen & Nasreen, 2016).

On the other hand, perceptions are considered as the lens of the students about EE (Boka & Saracli, 2019). An international survey was conducted in 1992 by the George H. Gallup International Institute to obtain data on a wide range of environmental perceptions in various economically and geographically diverse nations (Dunlap, Gallup, & Gallup, 1993).

It is important to know students' perception because perception about something can lead a person to action. Additionally, Wallner (2005) mention that universities must be focused on sustainable development and involve them in different activities to develop student's perceptions of environment.

Environmental Attitude

The environmental attitude will let us know the environment-friendly actions of the students (Gifford & Sussman, 2012). The concept of attitude is very much indispensable and distinctive in the field of social psychology. It can be characterized as a mental and neural state of readiness (Allport, 1935). It can also be regarded as how a person evaluates a specific entity (Ajzen & Fishbein, 1977), such as a specific person or a group of people, a specific sport, an educational institution, an activity, or an object. Thurstone's definition of attitude includes the factors associated with a person such as preconceived notions, inclinations and feelings, prejudice or bias, ideas, threats, fears, and other specific topics (Thurstone, 2000). Attitude is also related to what a person likes or dislikes, what s/he favors or disfavors, what s/he supports or opposes, and what s/he views in positive or negative approach (Petty & Brinol, 2010). A person's attitude is developed through experience, social roles, and norms, learnings, conditioning, and observation (Chaiklin, 2011). Two mostly used models to evaluate the attitude of a person are "the Theory of Reasoned Action" (Ajzen & Fishbein, 1975) and "the Theory of Planned Behavior" (Ajzen, 1991). These models include the dimensions and indicators that measure the attitude within a person. For example, Sun, Teh, & Linton, (2018) used "The Theory of Reasoned Action" to evaluate the association between knowledge of the environment and some specific product quality and students' attitude.

Methodology and Sample

This research followed a sequential explanatory mixed method design. For the quantitative part, a "one group pretest-posttest design" was used in this study. As there is "no control group" in this experimental study, therefore, this research has adopted both pre-test and post-test to measure the impact of intervention properly (Allen, 2018). There are two phases in this study for collecting data. The first one is evaluating the knowledge level of the students with 15 multiple-choice questions and the second section has 18 items of 5-point Likert scale for evaluating the level of attitude towards the environment. Data have been collected from 72 students studying EE as a PC course of Bachelor of Education (Honors) at IER, DU. Environmental knowledge and attitude of these students were evaluated both immediately before and after the course. All of the data have been analyzed in the light of descriptive (mean, standard deviation) and inferential statistics (Correlation, Paired sample t-test) by using SPSS software. Here, data were taken twice and a paired-samples t-test compares the mean scores of a single group, examined at two different points in time (Ross & Willson, 2017).

Besides, a focus group discussion was conducted with the students of EE to know about their perception on environment. Two groups of 16 students shared their views and experience

about the environmental issues and practices. The students were from science and non-science backgrounds to get viewpoints from both the backgrounds. These students were selected following convenience sampling and data was analyzed through thematic analysis process.
To maintain the ethical issues, respondents were informed that their participation would be completely voluntary and no monetary value or any kind of advantages would be provided to them. Respondents, therefore, had to fill out a consent form before participating. Here is the demographic table for the quantitative and qualitative samples.

Table 01:

Demographic Data

Sample for quantitative data	Sample for qualitative data	
Total (Pre-test and Post-test): 72 Male: 40 (56%) Female: 32 (44%)	Total (FGD): 16 Male: 09 (56%) Female: 07 (43%)	 Science: 08 (50%) Non- Science: 08 (50%)

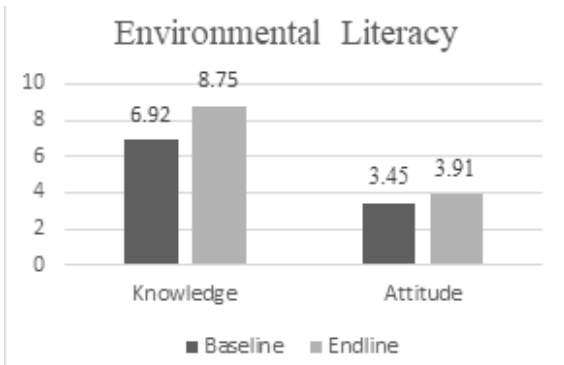
Data analysis and findings

Quantitative data analysis

The descriptive statistics of the mean for students' knowledge implied that the mean after the intervention was higher (mean=8.75, sd=1.98) than before intervention (mean=6.92, sd=2.31). In terms of the attitude level of the students, the mean after interventions (mean=3.91, sd=0.54) has significantly improved. The mean attitude level before the intervention was medium (mean= 3.45, sd=0.98). The improvement has been shown in the figure 02.

Figure 01:

Environmental literacy



This study also tried to conduct paired t-test for the mean score of the knowledge test of 72 students. This study tested the environmental knowledge of the students before and after the

intervention and the findings are given below:

Table 02:

Paired differences for the knowledge level

Pair	Mean	Std. deviation	t	df	Sig. (2 tailed)
Knowledge Test 2 & knowledge Test 1	1.83	2.60	5.983	71	.000

At 5% level of significance with degrees of freedom 71, the critical value is 1.99 (for two-tailed test). So, there was a significant difference ($p<.05$) in terms of environmental knowledge of the students in the pre-test and post-test.

Moreover, there were 18 items for evaluating the attitude of the students towards the environment with two tests. The paired t-test finding for the mean of 18 criteria is given below.

Table 03:

Paired differences for attitude level

Pair	Mean	Std. deviation	t	df	Sig. (2 tailed)
Attitude Test 2 & Attitude Test 1	0.455	0.867	2.225	17	.040

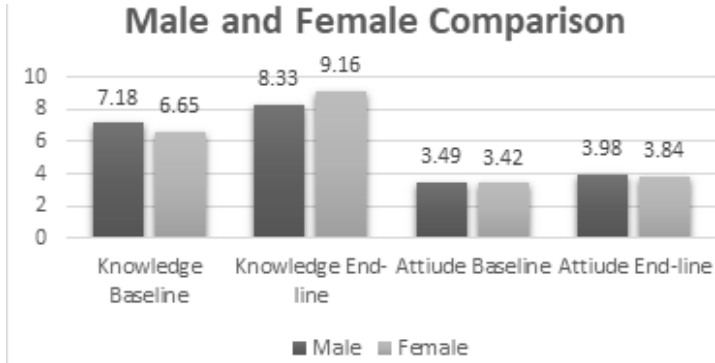
At 5% level of significance with degrees of freedom 17, the critical value is 2.11 (for two-tailed test). So, table: 02 reveals a significant difference in the attitude towards the environment by the students in the pre-test and post-test.

However, the Pearson Correlation Analysis for knowledge and attitude of the students at the end of the course was not strong. It showed a "very weak" but positive correlation (Pearson r = 0.19) between students' knowledge and attitude.

In this study, there were 72 students attended the pre-test and post-test. Among them, 40 (56%) students were male and 32 (44%) students were female. The mean for male and female students in terms of knowledge and attitude has been shown below:

Figure 02 :

Male female comparison



The aforementioned figure implies that improvement is visible for both male and female students' environmental knowledge and attitude level in the post-test. The improvement of knowledge level was more significant for the female students than the male. However, male students were ahead of the female students in attitude towards the environment by a very small margin.

Qualitative data analysis

This Qualitative analysis section has demonstrated students' views, perceptions, and experiences about environment. Students perceived that after receiving the environmental education they started to think anew about the environment what they should have done before. They also found this course was very interesting. Before attending the environmental education course, students thought this area of study was only about nature and its various problems. But when students attended the environmental education course, they realized that they had responsibilities to do with the environment. Moreover, this course is very much practical. One of the participants said,

"We only focus on ourselves and think that environment is a macro affair. But we are part of it. We can also contribute something from our part for this environment. Environmental education has helped me realize that"

Students have also learned a lot about environmental terms through this course. They learned about the environment, ecosystem, pollution, waste disposal, etc. This course made students not only aware of environmental issues around them but also around the world. After attending the course, they have started gathering news of different environmental issues and crises happening around the world. This course has made them aware of multiple areas and the future of the environment. One of the students expressed in this way,

"Environmental education led me to know that many aquatic creatures will have vanished,

more land will go underwater besides departure inland due to lack of cultivation area because of our various deleterious activities. So, this incaution reveals a question for our next generation for safe earth."

Moreover, students came to know about the policies and purposes of environmental education. They also learned about different declarations, laws, and conventions of the environment. Another respondent said,

"We have learned about different environmental agreements, laws, conventions and the declaration in this course. For example, Declaration of the United Nations Conference, Rio Declaration, Tbilisi Declaration, Belgrade Charter, Earth Charter, etc."

Students have also sensed their change of attitude towards the environment after the environmental education course. They started to be habituated with environment-friendly activities. For instance: forsaking single-use plastic products, using environment-friendly bags instead of polythene, arranging tree plantation programs, using dustbins, practicing reduce-reuse-recycle in real life etc. One of the students expressed his words in this way,

"Environmental education has taught us how we would practice environmental knowledge and how knowledge can be turned into environment-friendly attitude. After attending the course, I feel like conserving the environment is my duty. So, I plant trees, use dustbin, try to reuse products."

Students have experienced environment-friendly projects during this course. They participated cleanliness program and tree plantation program. Moreover, they tried to develop ideas for environment-friendly activities. One of them said,

"I with my group members made a biogas plant from scrap materials. We tried to make a project which can keep our environment more secure"

Students had views and suggestions for this course. They think the course should be implemented and evaluated throughout four years of university life. So that their knowledge and attitude become more sustainable. Participants perceived that the goal of this course should be to make everyone aware of the environment and to habituate them with environment-friendly activities. Some of the students think that the EE subject should be introduced at the primary level and should be introduced as practical learning. Moreover, the course should be evaluated through a rigorous process and environmentally active students should be awarded. One of the students perceived that teachers may get special training for teaching environmental education courses. She said,

"Primary and secondary level is very crucial for accustoming students to any specific activities. So, if students of the preliminary level get proper environmental education, they will possess a more environment-friendly attitude. Therefore, it is important to train the teachers of primary and secondary schools so that the teachers can transfer environmental knowledge

and practice to the students"

Participants have also suggested that schools can collaborate with different environmental organizations to provide training to the teachers and students. Moreover Govt. Organizations and NGOs can arrange different training sessions and workshops for school-level students and teachers.

Discussion and Conclusion

This study portrayed a clear contrast of change in knowledge, attitude, and perception between students before and after having environmental education. The study found that there is a significant level of change in knowledge and attitude after the course has been completed. The knowledge level of students increased in a noteworthy portion. Their attitude also increased significantly upon completion of the course. There is a weak but positive correlation between students' knowledge and attitude. It implies that students always do not act according to their knowledge; students having proper knowledge may not be enough environment-friendly, while students having not much knowledge might have a good environment-friendly attitude. Previous research shows that intervention increases both knowledge and attitude. Vicente-Molina, Fernández-Sáinz, & Izagirre-Olaizola (2013) conducted a study to explore the influence of environmental knowledge and other variables on pro-environmental behavior. Their study reveals that post-test subjective knowledge mean is higher than pre-test subjective knowledge means, which is a significant increase. The findings that 'there is a weak but a positive correlation between students' knowledge and attitude' is also supported by previous studies. He, Hong, Liu, & Tiefenbacher (2011) found that students having lower environmental knowledge have a positive environmental attitude. Liefländer & Bogner (2016) even found no correlation between knowledge and attitude. Previous researchers also assumed that knowledge is an important factor affecting good environmental attitudes but it is not a sufficient condition (Kollmuss & Agyeman, 2002; Kaiser & Fuhrer, 2003). Researchers also concluded that it is not reasonable to have an assumption that a person's attitude level can be used to determine his/her environmental knowledge (Sutton, 1998; Liefländer & Bogner, 2016). There are other cultural factors that also affect the behavior (Lozano, 2006; Kennedy, Beckley, McFarlane, & Nadeau, 2009).

This study shows that female participants have a higher post-test knowledge level than male participants. Female participants' knowledge level was significantly lower than male participants at pre-test and it was surpassed at the post-test. On the other hand, male participants have a slightly higher level of attitude than female participants upon completion of the course. The trend in endline attitude remained nearly the same as the baseline; male participants were higher and female participants were slightly lower at both periods. The finding regarding knowledge is supported by many previous studies. Many studies found that female possesses higher knowledge and attitude than male (Sarkar, 2011; Varoglu, Temel, & Yılmaz, 2018; Sarkar, Ara, Raihan, & Ozaki, 2008). In the case of attitude, the findings of many studies go

against the findings of this study (Sarkar, 2011; Varoglu, Temel, & Yılmaz, 2018; Sarkar, Ara, Raihan, & Ozaki, 2008); that female participants have lower attitude than male. Many studies were conducted on the influence of gender on knowledge and attitude. Several studies found that gender doesn't have a significant influence on knowledge and attitude and it's not universal (Kose, 2010; Varoglu, Temel, & Yılmaz, 2018). However, students agreed that EE has changed their perceptions and activities towards the environment.

So, it can be concluded that a constructive policy should be developed to make the environmental education sustainable and lifelong. Education administration should provide materials and training for teachers to teach students from the earlier part of their academic years about EE so that they can implement the knowledge in their daily life. It is also suggested that environmental knowledge and attitude should be evaluated throughout four years of university. In that case, the universities can collaborate with different organizations working to ensure a better environment. The researchers also suggest that more research on environmental education should be conducted on students of different levels in Bangladesh context.

References

Ajzen, I. (1991). The theory of planned behavior. *Organizational behavior and human decision processes, 50*(2), 179-211. Retrieved January 13, 2021, from https://www.dphu.org/uploads/attachements/books/books_4931_0.pdf

Ajzen, I., & Fishbein, M. (1975). A Bayesian analysis of attribution processes. *Psychological Bulletin, 82*(2), 261–277. https://doi.org/10.1037/h0076477

Ajzen, I., & Fishbein, M. (1977). Attitude-behavior relations: A theoretical analysis and review of empirical research. *Psychological Bulletin, 84*(5), 888-918. https://doi.org/10.1037/0033-2909.84.5.888

Allen, M. (2018). O*ne-Group Pretest–Posttest Design.* The Sage Encyclopedia

Allport, G. W. (1935). Attitudes' in Murchison, C (ed.) Handbook of Social Psychology. *Clark University Press, Worchester,* MA, 798, 844.

Atav, E., Altunoğlu, B. D., & Sönmez, S. (2015). The determination of the environmental attitudes of secondary education students. P*rocedia-Social and Behavioral Sciences, 174,* 1391-1396.

Boca, G. D., & Saraçlı, S. (2019). Environmental education and student's perception, for sustainability. *Sustainability,* 11(6), 1553.

Chaiklin, H. (2011). Attitudes, behavior and social practice. *The Journal of Sociology & Social Welfare, 38(*1), 31-54. Retrieved January 13, 2021, from https://scholarworks.wmich.edu/jssw/vol38/iss1/3

Dunlap, R. E., Gallup Jr, G. H., & Gallup, A. M. (1993). Of global concern: Results of the health of the planet survey. *Environment: Science and Policy for Sustainable Development, 35*(9), 7-39.

Eneji, C. V. O., Akpo, D. M., & Edung, A. E. (2017). Historical Groundwork of Environmental Education (Fundamentals and Foundation of Environmental Education). *International Journal of Continuing Education and Development Studies, 3*(1), 110-123.

Evans, G., & Durant, J. (1995). The relationship between knowledge and attitudes in the public understanding of science in Britain. *Public Understanding of Science, 4*(1), 57-74.

Gambro, J., & Switzky, H. (1996). A national survey of high school students' environmental knowledge. *Journal of Environmental Education, 27*(3), 28-33. https://doi.org/10.1080/00958964.1996.9941464

He, X., Hong, T., Liu, L., & Tiefenbacher, J. (2011). A comparative study of environmental knowledge, attitudes and behaviors among university students in China. *International Research in Geographical and Environmental Education, 20*(2), 91-104. http://dx.doi.org/10.1080/10382046.2011.564783

Hines, J., Hungerford, H., & Tomera, A. (1987). Analysis and synthesis of research on responsible environmental behavior: A meta-analysis. *The Journal of Environmental Education, 18*(2), 1-8. https://doi.org/10.1080/00958964.1987.9943482

Hungerford, H. R., & Volk, T. L. (1990). Changing learner behavior through environmental education. *The journal of environmental education, 21*(3), 8-21.

Kaiser, F., & Fuhrer, U. (2003). Ecological behaviour's dependency on different forms of knowledge. *Applied Psychology, 52*, 598-613. https://dx.doi.org/10.1111/1464-0597.00153

Kennedy, E., Beckley, T., McFarlane, B., & Nadeau, S. (2009). Why we don't walk the talk: Understanding the environmental values/behaviour gap in Canada. *Human Ecology Review, 16*(2), 151-160. Retrieved from https://jstor.org/stable/24707539

Kollmuss, A., & Agyeman, J. (2002). Mind the gap: Why do people act environmentally and what are the barriers to pro-environmental behaviour? *Environmental Education Research, 8*(3), 239-260. https://dx.doi.org/10.1080/13504620220145401

Köse, E. Ö. (2010). The factors that affect attitudes towards environment of secondary school students. *Journal of Turkish Science Education, 7*(3), 198–231.

Laroche, M., Bergeron, J., & Barbaro-Forleo, G. (2001). Targeting consumers who are willing to pay more for environmentally friendly products. J*ournal of Consumer Market, 18*(6), 503-520. https://doi.org/10.1108/EUM0000000006155

Liefländer, A., & Bogner, F. (2016). Educational impact on the relationship of environmental knowledge and attitudes. *Environmental Education Research, 24(*4), 611-624. http://dx.doi.org/10.1080/13504622.2016.1188265

Lozano, R. (2006). Incorporation and institutionalisation of SD into universities: Breaking through barriers to change. *Journal of Cleaner Production, 14*(9-11), 787-796. https://dx.doi.org/10.1016/j.jclepro.2005.12.010

Meinhold, J. L., & Malkus, A. J. (2005). Adolescent environmental behaviors: Can knowledge,

attitudes, and self-efficacy make a difference?. *Environment and behavior, 37*(4), 511-532.

Monroe, M. C., Andrews, E., & Biedenweg, K. (2008). A framework for environmental education strategies. *Applied Environmental Education & Communication, 6*(3-4), 205-216.

Othman, J., Bennett, J., & Blamey, R. (2004). Environmental values and resource management options: a choice modelling experience in Malaysia. *Environment and Development Economics,* 803-824.

Petty, R., & Brinol, P. (2010). Attitude structure and change: implications for implicit measures.

Powell, R. B., Stern, M. J., & Ardoin, N. (2006). A sustainable evaluation framework and its application. *Applied Environmental Education and Communication, 5*(4), 231-241.

Praveen, H., & Nasreen, N. (2016). Status of environmental education at secondary scool level in India. *Semantic Scholar*, 00(0), 1-13. Retrieved January 13, 2021, from https://www.semanticscholar.org/paper/STATUS-OF-ENVIRONMENTAL-EDUCATION-AT-SECONDARY-IN-Praveen-Nasreen/b31a399001c203f546c080169927960b4065ed07

Ross, A., & Willson, V. (2017). *Paired Samples T-Test. In: Basic and Advanced Statistical Tests.*: Sense Publishers

Sarkar, M. (2011). Secondary students' environmental attitudes: the case of environmental education in Bangladesh. *International Journal of Academic Research in Business and Social Sciences, 1*(3), 106-116. Retrieved December 18, 2020, from https://www.research.monash.edu/en/publications/secondary-students-environmental-attitudes-the-case-of-environmen

Sarkar, M., Ara, Q., Raihan, J., & Ozaki, K. (2008). An explorative study on environmental literacy among the secondary level students in Bangladesh. *Educational Research, 10,* 5-16. Retrieved December 18, 2020, from https://www.eric.ed.gov/?id=ED504058

Schultz, P. W., & Zelezny, L. C. (2000). Psychology of promoting environmentalism: Promoting environmentalism. Journal of social issues, 56(3), 365-371.

Stohr, W. (2013). Coloring a green generation: The law and policy of nationally-mandated environmental education and social value formation at the primary and secondary academic levels. *JL & Educ., 42*, 1.

Sun, H., Teh, P., & Linton, J. (2018). Impact of environmental knowledge and product quality on student attitude toward products with recycled/remanufactured content: Implications for environmental education and green manufacturing. *Bus Strat Env, 1-11. https://doi.org/10.1002/bse.2043*

Sutton, S. (1998). Predicting and explaining intentions and behavior: How well are we doing? *Journal of Applied Social Psychology, 28*(15), 1317–1338. https://dx.doi.org/10.1111/j.1559-1816.1998.tb01679.x

UNESCO. (1980). *Directory of governmental bodies and institutions dealing with educational*

planning and administration.

Varoglu, L., Temel, S., & Yılmaz, A. (2018). Knowledge, attitudes and behaviours towards the environmental issues: Case of northern cyprus. *EURASIA Journal of Mathematics, Science and Technology Education, 14*(3), 997-1004. https://dx.doi.org/10.12973/ejmste/81153

Vicente-Molina, M., Fernández-Sáinz, A., & Izagirre-Olaizola, J. (2013). Environmental knowledge and other variables affecting pro-environmental behaviour: Comparison of university students from emerging and advanced countries. *Journal of Cleaner Production, 61*, 130-138. http://dx.doi.org/10.1016/j.jclepro.2013.05.015

Wallner, E. (2005). Accelerating universities focus on sustainable development through student Involvement. *Chalmers University of Technology.*

Warren, L. S. (2003). *American environmental history.*, MA: Blackwell Pub.