

## Investigation on Environmental Awareness Level of Teachers

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**Abstract:** The purpose of this study is to determine the environmental knowledge, attitudes towards the environment and environmentally friendly behaviors, i.e., the level of environmental awareness of in-service teachers and to understand whether certain variables such as major, gender, duration of experience affects these issues. The study was carried out in 2016-2017 academic year with 302 voluntary teachers who are in different education stages and majors in the city of Etimesgut in Ankara. In addition, the area of the study, represents the regions of Turkey where citizens are from different socioeconomic levels. In this regard, this study will be instrumental in having a general idea of the teachers in Ankara. Data were collected with a quantitative scale called "Environmental Awareness Scale". The scale starts with a section consisting of 13 questions which are about demographic information of participants and the environment. The scale consists of 3 chapters which each of them contain 20 questions to measure knowledge, attitude and behavior towards the environment. Analysis of the data was performed with SPSS 22.0; frequency, percentage, mean, standard deviation values, t test, analysis of variance (ANOVA) and correlation analyzes were applied. With the aim of testing the reliability, Co. Alpha analysis was applied, as a result Co. Alpha coefficient was found to be 0.98. In addition, factor analysis was performed with the aim of testing the construct validity of the scale. According to the research findings, participants' genders were found to have an effect on attitude and knowledge levels but not on their behaviors. The attitudes towards the environment of those who are interested in plants and animals in their childhood have been positively influenced. Moreover, it has been observed that attitude and knowledge do not have a positive effect on behavior alone but knowledge and attitude have a positive effect on each other.

**Keywords:** Environmental education, Environmental awareness, Environmental knowledge, Environmentally friendly behavior

### Introduction

The environment is a place in which living and non-living factors coexist in harmony and congruity (Erten, 2000). From the early ages to the present, the relationship with the environment of the human being varied day by day; nutrition, needs for marriage have been evolved, the trail left to nature has been increasing with every new technological development.

New ways of life, daily routines and unsustainable habits of today's people, are increasingly damaging the right to life of future generations and leading to the destruction of the livable world heritage (O'Gorman & Davis, 2012). Improving the relationship with the environment of the person who is a part of the environment and changing the course of this negative scene can only be made possible through education. With an effective environmental education that will appeal to every segment of the society, the individual will take part in the solution of environmental problems as well as prevent the emergence of new problems from the root (Tanrıverdi, 2009).

The main objective of the countries' forming an education system is to ensure that individuals become conscious consumers, productive and responsible citizens, with the development of their academic competences at the end of the training period (Hungerford & Volk 1990).

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- Selection and peer-review under responsibility of the Organizing Committee of the Conference

The main objective of the countries' forming an education system is to ensure that individuals become conscious consumers, productive and responsible citizens, with the development of their academic competences at the end of the training period (Hungerford & Volk 1990). With effective environmental education, environmentally friendly individuals who have high environmental awareness will grow up so that strong steps can be taken to overcome environmental problems. It is expected that individuals who receive environmental education should have the knowledge and right attitude and behavior towards the environment namely environment literacy about how human activities affects the nature (Teksöz, Şahin and Ertepinar, 2010).

The environmental problems that are on the agenda of the world have become a concern for everyone. From the beginning of the 70s, state administrators met with scientists and brought these problems and their results to the agenda (Ünal ve Dımişki, 1999). The Tbilisi Declaration, which was published in 1977, defined environmental education and expressed its aims. After this declaration, it is elaborated on how to reach the aims stated in all environmental education studies (Gökçe et al., 2007). For an effective environmental education, teachers need to have a high level of environmental knowledge, environmental attitude and environmentally friendly behavior. According to Ertürk (1970), the influence of teacher behavior on students' learning is becoming increasingly important.

When the literature is examined, it is seen that the studies related to environmental education are mostly carried out with the students and the studies about the teachers are few in number. Environmentally friendly behavior, which is the most important indicator of environmental awareness, has not been taken into consideration in most studies. The aim of this study is to determine environmental knowledge, environmental attitude, environmentally friendly behaviors and environmental awareness of in-service teachers and to determine whether they have an effect on certain variables such as major, gender, duration of experience.

### **Environmental Awareness**

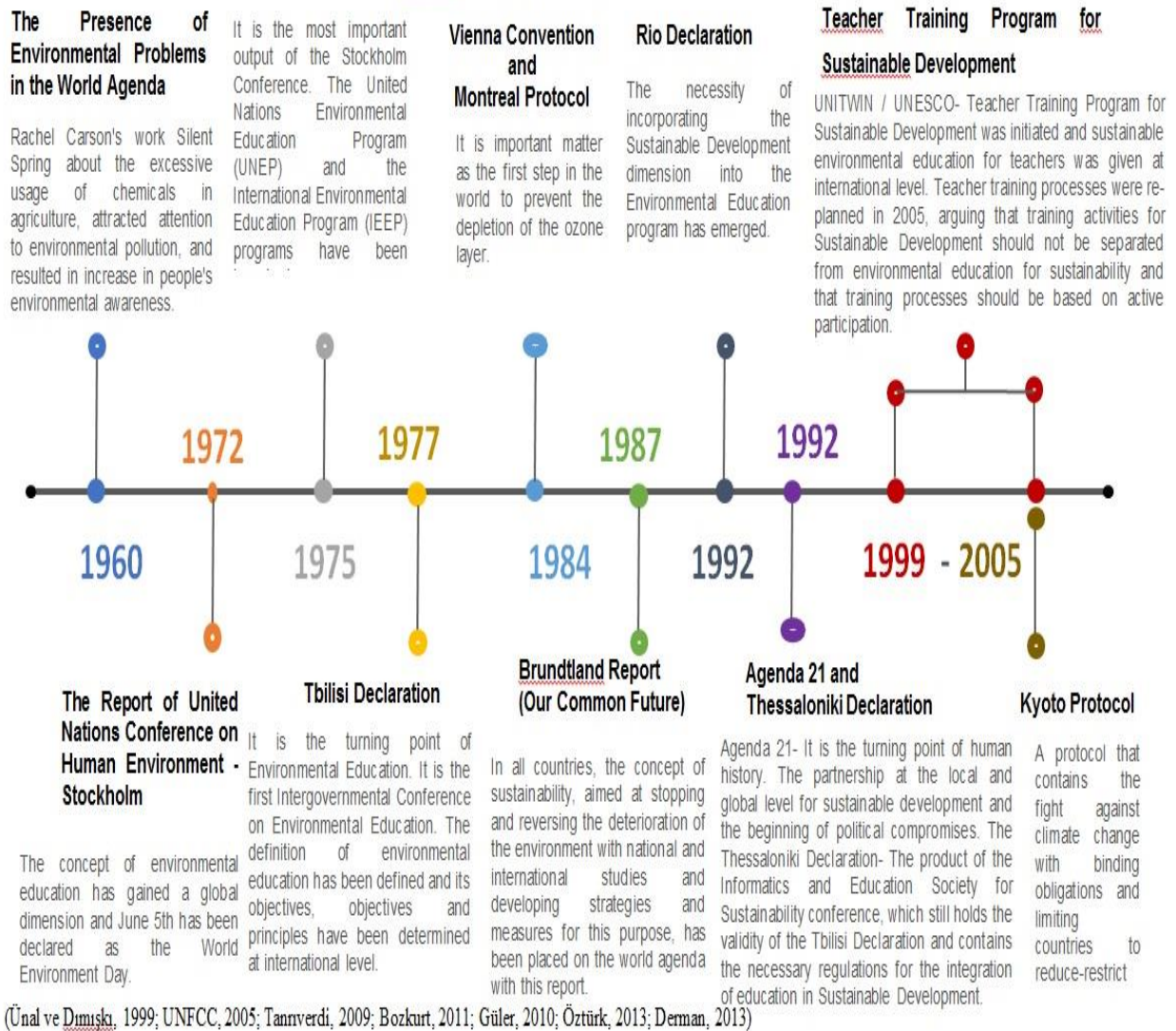
Environmental awareness is a product which arises from environmental information, positive attitudes towards the environment and environmentally friendly behaviors influencing each other (Erten, 2000). In the Declaration of Tiflis, the awareness classified within the aims of environmental education is defined as the individuals and societies gaining sensitivity of to all environment and its problems (Ünal et al., 2001). Individuals with high awareness of the environment will know themselves and their environment in all aspects, will first be responsible for the environment and other living things, and will act with the understanding of the wholeness of the environment rather than the sense of environment for people. A high society with environmentally friendly behavior and environmental awareness can only be achieved through qualified education. Ertürk (1988) describes education as "the process of bringing change in the behavior of the individual through his or her own experience and intention". The influence of the teachers is incomprehensible in bringing this behavior change to the individual and consequently the emergence of a high environmental awareness. For this reason, the fact that teachers have a high level of environmental awareness is an important influence that will accelerate the process.

### **Environmental Education and Its History**

Environmental education is a training based on nature conservation, integrating with the ecology about the functioning of the environment and providing the theoretical information, as well as educating the environment volunteers by encouraging positive emotions towards the environment (Ünal et al., 2001). According to Davis (1998), environmental education is not an academic course but an education that shapes the individual's positive perceptions of the environment and ultimately leads to eco-friendly behavior.

When the historical development of environmental education is examined, it is seen that it coincides with the emergence of environmental problems. Environmental education could not create the necessary effect in the environmentally aware higher societies, despite the fact that it has received wide repercussions all over the world and has been present for a long time (Travis, 2007). In a study that examines the failure of environmental education, it is stated that although the environmental sensitivities of the individuals are high, they cannot understand the underlying causes of the environmental problems and that the education given should provide individuals the ability to solve the problems and to take place in the center of organized education (Gigliotti, 1990).

Figure 1. The history of environmental education



## Method

### Universe and Sampling

The universe of the research is teachers working in Ankara. The size of the universe, easily accessible sampling method is preferred due to the researcher's difficulty of access, is limited to the city of Etimesgut, one of the largest and most populous district of Ankara. The study was carried out in 2016-2017 school year with the participation of 302 teachers from 25 different schools, ranging from kindergarten to vocational high school, selected from regions representing the district in terms of different socioeconomic levels.

In the study, the environmental awareness level of the teachers was tried to be determined by using the "Environmental Consciousness Scale" developed by Erten (2005). At the beginning of the scale, the demographic characteristics of participants (settlement, area, seniority) and the independent variables of the study are included. These questions are personal questions that will be used to describe participants' environmental awareness levels.

In the Environmental Awareness Scale, there are 60 questions in total, 20 question per subjects; the surrounding area, attitudes towards the environment and environmentally friendly behavior. The proposals in all the items in the measurement are scaled from negative to positive by 5 point likert scale. The items in the scale were used by many researchers in the country and abroad. (Erten, 2005, 2012, Schrenk, 1994, Öztürk, 2013)

## Reliability and Validity

The Cronbach  $\alpha$  reliability analysis was applied with the aim of testing the reliability of the Environmentally Conscious Scale and the Cronbach  $\alpha$  coefficient was found to be 0,98. Factor analysis was used to determine the construct validity of the scale. In addition, the Kaiser-Meyer-Olkin Sample Compliance Measure (KMO) was used to determine if the size of the study group was sufficient. In the factor analysis, the KMO sampling adequacy coefficient was found to be 0,98. According to Büyüköztürk (2004), the coefficient value of 0,98 indicates that the study group is of sufficient size due to both being above the critical value (0,70) and close to 1. As a result of factor analysis, the three sub-dimensions obtained constitute approximately 93% of the total variance.

Table 1. The reliability and validity of the environmental awareness scale

Lower Scale (Size)	Explained Variance	Inner Consistency	KMO
Information	17%	0,84	0,98
Attitude	41%	0,91	
Behavior	35%	0,87	

## Analysis of Data

In the analysis of the data, SPSS 22.0 package program was used. Descriptive statistics, frequency, percent, mean, standard deviation, normal distribution and effect of independent variables to dependent variables were investigated. In the comparison of the two-stage groups, t-test analysis and in comparison of the three-stage groups variance analysis (ANOVA) tests were used. Correlation analysis was applied with the aim of determining relations between attitude, knowledge and behavior levels. P values less than 0.05 were considered statistically significant in the study.

## Results and Discussion

When the scores of the teachers in the environment awareness scale, the attitudes towards the environment, and the scores of the environmentally friendly behavior tests were examined, it was seen that the attitude level was highest with 83,003, the knowledge level with 77,086 and behavior with the lowest value of 54,523.

Table 2 shows that female participants had a higher level of knowledge and attitude about the environment than men and their behavior levels were quite low for both genders:

Table 2. Knowledge, attitudes towards the environment and the relationship between environment-friendly behaviors and gender

Dimensions	Gender	N	Average	s.s.	t	p
Level of Knowledge	Male	75	75,68	6,28	-2,16	0,03*
	Female	227	77,55	6,56		
Level of Attitude	Male	75	78,71	10,05	-5,57	0,0*
	Female	227	84,42	6,77		
Level of Behavior	Male	75	55,44	7,96	1,19	0,23
	Female	227	54,22	7,57		

\*p<0,05

A group of about 10% of the teachers who participated in the study said they were members of environmental organizations. Despite the fact that the member teachers constitute a small group of the sample, the level of knowledge and attitude is higher and meaningful than that of the non-members.

Table 3. Relationship between information about environment, attitudes towards environment and environment-friendly behaviors and membership status

Dimensions	Are you a member of an organization related to the environment?	n	Average	Standard Deviation	t	p
Level of Knowledge	Yes	28	79,93	7,93	2,44	0,02*
	No	274	76,80	6,32		
Level of Attitude	Yes	28	87,04	5,91	2,80	0,01*
	No	274	82,59	8,17		
Level of Behavior	Yes	28	51,14	7,11	-2,47	0,01*
	No	274	54,87	7,65		

\*p<0,05

Talking about the environment in their most comfortable home, will be instrumental in raising the awareness of the surrounding community about environment and environmental issues in their everyday lives. As shown in Table 4, it was found that the frequency of speaking about environmental problems at home was influential on the level of knowledge, the level of knowledge and attitude of the participants who did not speak at home about environmental problems was lower than the level of occasional speaking participants. Teachers' levels of the frequency of speaking about environmental problems at home have a reverse effect on their level of behavior, participants who did not speak at home about environmental problems were found to be at a higher level than other participants.

Table 4. Relationship between information about environment, attitudes towards environment and environment-friendly behaviors and the frequency of speaking of environmental problems at home

Dimensions	How Often Do You Talk About Environmental Problems at Home?	N	Average	s.s.	F	p	Difference
Level of Knowledge	Never (1)	21	73,52	5,61	5,56	0,01*	1<2,3
	Rarely (2)	179	76,76	6,33			
	Occasionally (3)	102	78,39	6,76			
Level of Attitude	Never (1)	21	73,19	11,68	25,47	0,01*	1<2,3
	Rarely (2)	179	82,55	6,69			
	Occasionally (3)	102	85,81	7,77			
Level of Behavior	Never (1)	21	58,19	6,74	5,55	0,01*	1>2,3
	Rarely (2)	179	55,07	8,19			
	Occasionally (3)	102	52,81	6,48			

\*p<0,05

The influence of frequency of speaking about environmental problems with teachers, who are their colleagues, have on knowledge, attitude and behavior have similar results on the frequency of talking about the environment with their families. A similar situation has been expressed in the work done by Erten et al. (2003) with pre-school teachers and it has been seen that the teachers have spoken about environmental problems with their colleagues but have failed to participate on the works that need implementation for the environment.

The media, an important leg of informal education, is effectively reaching both children and adults; being an informing tool about environmental education issues and environmental problems. Teachers who are asked about their level of follow-up the news about the environment in the newspapers which is a part of written media, a very small part of it stated that they never read, mostly few and occasional answers were given.

Table 5. Relationship between information about the environment, attitudes towards the environment and environment-friendly behaviors and follow-up of environmental problems from written media

Dimensions	Do you read the news about environment on written media?	N	Average	ss	F	p	Difference
<b>Level of Knowledge</b>	Never (1)	10	73,30	4,16	6,29	0,01	1<2,3
	Rarely (2)	166	76,23	6,19			
	Occasionally (3)	126	78,51	6,83			
<b>Level of Attitude</b>	Never (1)	10	69,90	11,22	28,24	0,01	1<2,3
	Rarely (2)	166	81,58	6,98			
	Occasionally (3)	126	85,92	7,68			
<b>Level of Behavior</b>	Never (1)	10	58,50	7,68	8,25	0,01	3<1
	Rarely (2)	166	55,80	7,89			
	Occasionally (3)	126	52,53	6,91			

\*p<0,05

As seen in Table 20, it was determined that teachers' level of reading the news about the environmental problems was influential on the level of knowledge, the participants who did not read the news had lower levels of knowledge and attitude compared to those who read few and occasionally. It has been found that teachers' reading levels on news about environmental problems have an adverse effect on the behavior levels, and the attitudes of the participants who never read the news were higher than those who read occasionally.

When the relationship between information, attitude and behavior levels were examined, it was found that there was a positive(moderate), medium power and a meaningful relationship between the knowledge levels and attitude levels of the teachers. ( $r = 0,436$ ,  $p < 0,01$ ). This suggests that teachers have developed a positive attitude toward the environment as the level of knowledge about the environment increases. At the same time, as their attitudes increased, they also came to the conclusion that they were willing to learn new information about the neighborhood.

Table 6. Level of Relationship Between Information about the Environment, Attitudes Towards the Environment and Environment-Friendly Behavior

		Level of Knowledge	Level of Attitude	Level of Behavior
<b>Level of Knowledge</b>	r	1		
	p			
	N	302		
<b>Level of Attitude</b>	r	,436**	1	
	p	0,001		
	N	302	302	
<b>Level of Behavior</b>	r	-,192**	-,218**	1
	p	0,001	0,001	
	N	302	302	302

\*\*Significant relationship at level 0,01

## Conclusion

The results of the independent variables related to environment, attitudes related to environmentally friendly behaviors. The independent variables of the work; gender, membership status in an environmental organization, frequency of taking environmental problems in the family agenda, follow up of the media in the context of environmental problems and making additional activities for the environment with their students have an effect on the level of knowledge and attitudes of teachers. Also, taking care of plants at home has an impact on improving positive attitudes towards the environment.

When analyzing item-based scores and total scores in terms of environment-friendly behaviors, almost every independent variable is also at the lowest level of environment-friendly behavior. Also, contrary to what is expected, the level of behavior of teachers who are members of environmental organizations, family at home and colleagues at school and who are discussing about the environment and who are following the media about the environment and working with the students about the environment are less eco-friendly than other teachers.

It is highly probable that teachers' life habits are more friendly to the environment because of economic concerns, and also it is not a conscious decision. In other words, economic concern leads to environmental awareness, resulting in teachers' behavior serving for environmental awareness become far from eco-friendly behavior and for economic purposes. They may become ecocentric individuals by increasing the level of attitude by prioritizing the environment without making the cost benefit relation a priority (Erten, 2012).

When the regression analysis of teachers' level of knowledge, attitude and behavior revealed their environmental awareness, information about the neighborhood was explained by  $R^2 = .44$ ,  $R^2 = .51$  for environmentally friendly and  $R^2 = .13$  for environmentally friendly behavior. It is an important finding that the teachers' behavior levels are at a low level both in terms of estimating environmental awareness and total scores. While teachers are inadequate to transform their knowledge of the environment into behavior in their own lives, it should be discussed their role of educating and role modeling, and their impact on making society more environmentally conscious.

## **Recommendations**

Increasing the environmental awareness of teachers is of great importance for the education system. The most critical finding of this study is the low rate of teachers' conversion of information about the environment and the attitude towards the environment into environmentally friendly behavior. The consequences of the ineffectiveness of teachers in transforming knowledge and attitude into behavior are quite striking and demonstrate the need of immediate action for teachers who guide the education system.

Trainings should be arranged so that they can recognize the environment by living, making in nature and away from the classical in-service training concept so that the change of eco-friendly behaviors can be realized. Güler (2010), Öztürk (2013) and Candan & Erten (2015) conducted such practical training with candidate that it left an effective trace on teachers and in-service teachers. A large-scale, full-fledged workshop with teachers should be carried out and a map of the environmental education of our country should be uncovered.

Based on the results of the research, following the media has a significant impact on teachers' environmental awareness. Taking this as a basis, it will have an environmental awareness-enhancing effect on teachers and students if they keep up with environmental news. The preparation of environmental panels on schools will be effective in raising awareness of the sharing of environmental issues related to nearby and remote environments. Another result emerging from the survey is the relationship between membership in environmental organizations and environmental awareness. Increasing voluntary work in environmental organizations will only be possible with the introduction of environmental organizations. By a protocol between The Ministry of National Education and these environmental organizations, these organizations should be promoted to teachers and schools. Through these organizations, students and teachers will be able to access up-to-date news about the environment in the school environment and environmental information of the whole schools will be increased.

The fact that environmental consciousness of teachers who speak environmental problems with families at home and colleagues at school is higher than those who do not speak is an important finding for what should be done in formal education. Teachers should include students' parents and peers in the process in order to increase environmental awareness, and activities aimed at sharing environmental problems at home should be preferred. Analyzes of school consumption should be made in order for schools to effectively implement recycling practices and saving use of resources, and students should be encouraged to do such activities at home, while recycling practices are encouraged at school.

## **Acknowledgements**

This study is derived from the master thesis of Karaismailoğlu (2018) prepared in the supervision of Prof. Dr. Sinan Erten.

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