ITU A|Z • Vol 18 No 3 • November 2021 • 551-565

Determination of the difference between environmental attitudes of 1st and 4th year students of landscape architecture

Emine TARAKÇI EREN[1], Tuğba DÜZENLİ[2]
[1] eminem_tarakci@hotmail.com • Interior Architecture and Environmental Design, Faculty of Fine Arts, Afyon Kocatepe University, Afyon, Turkey
[2] tugbaduzenli@gmail.com • Landscape Architecture Department, Faculty of Forestry, Karadeniz Technical University, Trabzon, Turkey

Received: July 2020 • Final Acceptance: January 2021

Abstract

The present study aimed to determine the difference between the environmental attitudes of freshmen and senior students attending Karadeniz Technical University Landscape Architecture Department in Turkey. The study group included 160 freshmen and senior students at KTU Landscape Architecture. A scale developed by Uzun and Sağlam (2000) was employed as the environmental attitude scale. The scale includes 27 items in environmental behavior and environmental thought subscales. The environmental behavior subscale includes 13 items and the environmental thought subscale includes 14 items. The Cronbach alpha internal consistency coefficient of the environmental behavior subscale was calculated as 0.855, and the Cronbach alpha internal consistency coefficient of the environmental thought subscale was 0.812. Thus, it could be suggested that the scale was valid and reliable. It was determined in the study that the environmental behavior (46.9875) and environmental thought (52.0375) and total environmental attitude scores (99.025) of the senior students were higher when compared to the freshmen (90.3375).

Keywords

Environmental attitude, Environmental behavior, Environmental thought, Landscape architecture, Attitude scale.

doi: 10.5505/itujfa.2021.23855

1. Introduction

1.1. Environment

Environment is defined as "the habitat of human beings or any living being " (Özey, 2009). The harmony between living and non-living elements in this environment is important for the sustenance of the environment. However, this harmony has started to deteriorate over time due to human intervention (Erbasan and Erkol, 2020).

According to another definition, the environment; It is defined as the living environment of a living thing. In ecological sense, it is a term that includes everything related to the individual, living and non-living (Berkes and Kışlalıoğlu, 1993). This definition includes the natural and artificial environment.

If we make a more comprehensive definition, the environment, which has a very important place for living things, can be defined as the integrity of the factors that affect the life of living things (Türk, 1998). It can also be expressed as the sum of physical, chemical, biological and social factors at a certain time that can have direct or indirect effects on the environment, human activities and living things (Dinçer, 1996). Environment is the physical, biological, social, economic and cultural environment in which people and other living beings maintain their relationships and interact mutually throughout their lives.

The physical environment is a dynamic phenomenon that includes natural, cultural, historical, social and artificial elements, including humans, which are in continuous and changing interaction with each other. In other words, it could be defined as a set of all factors that affect the living beings within the environment and are affected by mutual interactions. As a constantly changing dynamic phenomenon, the environment is formed by natural and artificial elements due to the requirements of daily life. The environment that includes abiotic factors such as climate, soil, water, and natural structure, and biotic factors such as humans, animals and plants, acquires various qualities, definitions and characteristics based on titshe resources and features. The natural, cultural, historical, aesthetic, visual elements and features that form the environment are described as environmental values (Erdoğan, 2006).

1.2. The importance of the environment for humans

Biological importance of the environment; The biological aspect of the environment is directly related to biological diversity (plants, animals and microorganisms). Elliot Norse et al. Biodiversity concept introduced to the literature by 1990; It is a concept that serves to explain the variability of plants, animals and microorganisms, their relationships with the environments in which they live or with each other. There is also a permanent and irreplaceable relationship between biological diversity and human beings. The existence of human beings today and in the future depends on the state of biological diversity. The reason for this is that human beings, who are in the food chain, meet their basic needs such as shelter, clothing, nutrition and medicine from plants, animals and microorganisms (Keleş et al., 2009).

Economic Importance of the Environment; The most important relationship between the environment and the economic system is the allocation of the resources needed in the production of goods and services from the environmental environment consisting of living and non-living natural resources. Because human needs can only be met with goods and services resulting from the completion of the production process, in which natural resources are also a factor (Ulucak & Erdem, 2013).

1.3. The human-environment relation

Human beings have been living in nature since their creation, and for a while they were content with what nature provided. While other creatures tried to adapt to the existing natural conditions, humans wanted to control the nature by changing the natural environmental conditions through technology (Yıldız et al., 2000). The mistakes associated with this control attempt led to the environmen-

tal problems. According to Sever and Yalçınkaya (2012), human beings dominated nature since the industrial revolution, and the change in the balance of power in favor of humans resulted in a rapid and insensible consumption of global resources and the onset of environmental problems (Erbasan and Erkol, 2020).

1.4. Environmental problems

Following the industrial revolution in the 19th century, significant developments were observed in the world. The rapid population growth and technological developments led to an increase in production and aggravated use of natural resources. Humans destroyed nature, which they considered as an unlimited resource, to meet the increasing consumption and production requirements. Economic, social, and technological growth also led humans to neglect environmental values (Özcan and Arık, 2019).

Especially due to the efforts of growth, development and to become a strong nation after the Second World War, several countries managed to become economically developed nations, leading to environmental problems that threaten human life. Environmental problems, which were initially justified for growth and wealth, gradually became a global threat (Güzelyurt and Özkan, 2019; Çelik, 2019).

One of the consequences of human development was environmental problems. Environmental problems were initially observed in industrial regions; however, they later became global. Thus, environmental problems became an issue that concerns all living beings. Due to environmental pollution, the natural balance has deteriorated, certain living species disappeared, the recent phenomena of global warming and climate change became an issue. Today, environmental problems threaten all living beings (Çetin et al., 2020).

As the environmental problems grew and deepened, humans realized the limitless nature of these problems, and national and international efforts are spent to solve these problems (Yücel and Babuş, 2005).

1.5. Environmental education

The negative impact of various environmental attitudes and behavior of the individuals lead to environmental problems (Capra, 2009). The future of the world and therefore that of future generations lies in the solution of environmental problems. To develop positive environmental attitudes and behavior as a solution to the problems, it is necessary to investigate the factors that affect these attitudes and behavior, and to describe the relationship between these factors. Based on the findings, education that would improve environmental awareness in new generations could be a step in the right direction (Çetin et al., 2020).

It is known that educational activities are important for permanent solution approaches to environmental problems. Raising environmental awareness is the most effective way to solve these problems. The individuals should be informed about the environment and their behavior towards the environment should be changes through positive attitudes. Thus, the significance of education is clear in resolving and preventing environmental problems. The success would be possible through creating positive attitudes and behavior among the members of the society. There is no doubt that individuals with negative attitudes towards the environment will be insensitive to environmental problems and even continue to create new environmental problems.

According to Bozkurt and Cansüngü (2002), the most basic method to tackle environmental problems is to educate all individuals in the society and raise awareness with organized methods. The value of the environment for the individuals is reflected in their behavior. The positive changes in environmental values and attitudes raise environmental awareness. Ayvaz (1998) reported that there was a correlation between environmental sensitivity and environmental awareness, and individuals should be informed about what could be harmful for the environment. Bozkurt and Aydoğdu (2004) reported that 6th, 7th and 8th grade students had inaccurate knowledge on environmental problems. Yılmaz et al. (2002), reported

that the students' level of knowledge on environment and environmental problems was inadequate, they did not learn the environmental concepts adequately and they were not fully aware of the environmental problems in a study conducted with secondary and higher education students. Çabuk and Karacaoğlu (2003) stated that adequate education was not provided in educational institutions on air, water and soil pollution in a study conducted with college students. Uzun and Sağlam (2006) reported that individuals who had negative attitudes towards the environment would remain insensitive to environmental problems and even continue to create environmental problems. Thus, the attitudes of individuals towards the environment are important.

1.6. Attitude

Attitude includes emotions, thoughts and behaviors about an object. However, these dimensions are not independent. They mutually affect one another, and often these effects are consistent (Aydın, 2000; Özgüven, 1998).

In other words, attitude is a mental, emotional, and behavioral reaction or predisposition that one organizes towards oneself, any object, social problem or event based on self-experience and knowledge (İnceoğlu, 2004). Attitude towards the environment is described as learned consistent tendencies towards the environment that manifest in positive or negative attitudes (Pelstring, 1997). However, attitude includes emotions, thoughts and behaviors about an object. However, these dimensions are not independent from each other, they mutually influence one another, and often consistent (Özgüven, 1998). Attitude makes the individual prone to a certain behavior towards the object of attitude. An individual with a positive attitude towards an object or event tends to behave and approach positively, and exhibit affinity, support and assistance towards that object or event, while an individual with a negative attitude towards an object or event, is indifferent for that object or event, and tends to alienate, criticize or harm the object or event (Aydın, 2000). In a study on the attitudes of high school students towards the environment, Kaya et al. (2009) reported that high school students could not convert their environmental thoughts into behavior. Hungerford and Volk (1990) reported that a citizen with environmental awareness and sensitivity is an individual who is aware of environmental problems, has basic knowledge on environmental problems, contributes to the conservation of the environment, has the ability to solve environmental problems, and takes an active role in solving environmental problems. Thus, it could be suggested that there is a direct correlation between environmental problems and environmental awareness, environmental sensitivity and environmental education.

1.7. The study approach

In the last 3 decades, the number of studies on the correlation between environment and humans has increased exponentially. The study of the correlation between human behavior and the environment became a field of interest in social sciences (psychology, sociology, geography and anthropology) and environmental/spatial design (landscape architecture, architecture, interior architecture, city and regional planning). Environment, which became a multi-disciplinary concept, has been the topic in various studies and approaches. The correlation between environment and behavior was initially researched in environmental psychology and spatial design disciplines. Environmental research in architectural disciplines were mostly on environmental psychology (Bell et al., 2011; Düzenli et al., 2018; Özgüner et. al, 2012; Gifford, 2014; Steg et al., 2018; Gatersleben, 2018; Düzenli et. al. 2019), environmental behavior (Batavia, et al. 2019; Gage and Graefe, 2019; Henkel et al., 2019;), environmental cognition (Kaplan, 2016; Wallner et al., 2018; Berto, 2019; Stenfors et al., 2019; Van Hedger et al., 2019, Çorbaci et al, 2020), and environmental perception (Smith, 2015; Lindquist et al, 2016; Prior, 2017; Tarakci Eren et. al, 2018; Torres-Lima et al., 2018; Eroğlu et. al, 2018; Hong et al, 2019; Eisenhart et al., 2019; Menatti et al., 2019 ; Shang and Zheng, 2019; Kang and Kim, 2019).

Topics such as environmental awareness, environmental sensitivity (Kiessling, et al., 2017; Cavanna, 2019; Cao and Chen, 2019; Cattaneo, 2019; Huang et al., 2019; Nikologianni et al., 2019; Purwanti and Musadad, 2019), and environmental attitude (Strack et al., 2019; Diekmann, and Franzen, 2019; Aznar-Díaz et al., 2019; Janmaimool and Khajohnmanee, 2019; Stanley and Wilson, 2019; Baur, 2019), on the other hand, were researched by scientific branches other than architecture.

There are only a few studies on environmental problems, environmental awareness, environmental attitudes in landscape architecture and behavioral issues in Turkey (Alpak et al., 2018; Alpak et al., 2020; Kiper, 2014; Özhanc and Yılmaz, 2015; Oguz et. al., 2011; Yucel et.al., 2006 ; Selim et.al.,2011; Ertürk et.al., 2017, Bayramoğlu et al., 2019).

Landscape architecture profession is taught in various faculties of several universities with different course content in Turkey. Thus, the course weight and content of environment courses may differ. In Karadeniz Technical University Landscape Architecture Department, the most important environmental course is the environmental design project. In this course, 6 environmental design projects are developed, including one semester in the freshmen and senior years, and two semesters in sophomore and junior years. This course is one of the most important courses that instruct environmental knowledge to landscape architecture students with social, psychological, architectural, technical and applied approaches. Furthermore, students take courses such as Soil, Ecology, Plant Material (Dendrology), Botany, Environmental Behavior, Geographic Information Systems, Planting Techniques, Planting Design, Ground Covers, Sustainable Recreational Planning, Irrigation Techniques, Landscape Engineering Knowledge and Applications, National Parks, Rock Gardens, Water Gardens, Aquatic Biotopes, Zoos, Green Roads, Planning Participation, National Park Management, Indoor Plants, Green Infrastructure Systems, and Tourism and Recreation Planning during their education and they are expected to expand their knowledge on environment and attitudes before graduation. Furthermore, they are expected to contribute to the individuals around them. The aim of the present study was to determine the differences between the environmental attitudes of the freshmen students who recently started to attend the school and senior students who took all above-mentioned courses. Because it was assumed that these courses had a positive impact on student attitudes towards the environment. As mentioned above, the present study was considered essential since most previous studies were conducted in the field of education in Turkey, and lack of studies in landscape architecture.

2. Materials and method

Descriptive survey model was employed in the present study. The study was conducted with randomly assigned 160 freshmen and senior students attending Karadeniz Technical University Landscape Architecture Department. The study data was collected with the environmental attitude scale developed by Uzun and Sağlam (2000). The scale includes two sub-dimensions: the environmental behavior and environmental thought subscales. The environmental behavior subscale includes 13 items and the environmental thought subscale includes 14 items. The scale includes 27 items. The Environmental Attitude Scale is a 5-point Likert-type scale (5 completely agree and 1 (completely disagree) for both positive and negative statements, and the total score reflects the environmental attitude score of the participant. The possible scores vary between 13 and 65 in the 13-item Environmental Behavior Subscale, while possible scores vary between 14 and 70 in the 14-point Environmental Thought Subscale. The minimum total scale score, thus, is 27, and the maximum score is 135.

In Likert type scales, the scale score is the sum of the scores for individual responses to the items. Scoring is conducted as presented in Table 3 in Likert type scales. Furthermore, the scoring of positive and negative items is different.

After the application, it was determined that the Environmental Attitude Scale was two-dimensional. The analysis of the items revealed that the first dimension measured the environmental

Table 1. *Item scoring.*

Option		Positive attitude items	Negative attitude items
Completely agree		5	1
		4	2
		3	3
		2	4
Completely disagree		1	5

behavior of the students, and the items in the second dimension measured the environmental thoughts of the students. The items that measured these two sub-dimensions of attitude were classified as "Environmental Behavior Subscale" and "Environmental Thought Subscale".

2.1. Environmental Attitude Scale

2.1.1. Environmental Behavior Subscale

1. I watch radio and TV shows about the environment
2. I follow environmental developments in daily newspapers
3. I watch documentaries on environment
4. I read books on environment other than textbooks
5. I read popular magazines on environ ment
6. I read scientific articles on environment
7. I would not hesitate to warn people who harm the environment
8. I would like to volunteer in environmental activities at school
9. My friends know that I am sensitive for the environment
10. I can volunteer for long term for a habitable environment
11. I share my environmental knowledge with my friends
12. I pay attention weather the waste of the product is recyclable when shopping
13. I prefer environment-friendly products even if they are more expensive

2.1.2. Environmental Thought Subscale

1. Endangered species are exaggerated, there are already several species in nature, extinction of a few is not important.
2. It is more beneficial for our country to construct better roads instead of spending money on historical places.
3. Erosion is no longer a reality in our country
4. Agricultural pesticides are beneficial for the environment
5. It is conceivable to sell degraded forest land to increase national revenues
6. The state should allow the construction of touristic buildings in national parks and forests.
7. It is best to wick the wetlands to build houses.
8. Human waste is not a problem since the environment cleans itself.
9. The ozone layer thinned out especially over the US. Turkey is not in danger.
10. Turning off the lights when leaving a room would not cause significant energy savings.
11. There is plenty of water on earth: humans could never contaminate it.
12. The rapid depletion of natural resources is a significant problem for our future.
13. Urban sprawl is one of the most important problems in Turkey.
14. Global warming could lead to disasters in the future.

3. Data analysis

In the analysis of the study data, environmental behavior and environmental thought subscale arithmetic averages and scores of all respondents in the sample were initially calculated. Then a correlation analysis was conducted to determine whether there was a correlation between the environmental behavior and thought scores based on student seniority. Simple linear regression analysis was conducted to determine the effect size. Finally, ANOVA was conducted to determine whether there was a difference between the environmental behavior and thought mean scores of freshmen and senior students.

4. Findings

The total mean student scores for the environmental behavior and environmental thought subscales are presented in Table 2. It was determined that the mean environmental attitude score

Table 2. *The environmental behavior, environmental thought and the environmental attitude scores of freshmen and senior students.*

attitude scores of freshmen and senior students

	N		Total mean score
Environmental behavior	Freshmen	80	40,9375
	Senior	80	46,9875
Environmental thought	Freshmen	80	49,4
	Senior	80	52,0375
Environmental attitude	Freshmen	80	90,3375
	Senior	80	99,025

Table 3. *The arithmetic mean environmental behavior score of the students in each related scale item.*

S.	EB1	EB2	EB3	EB4	EB5	EB6	EB7	EB8	EB9	EB10	EB11	EB12	EB13
1.	3,3	3,3	3,2	3,2	2,7	2,3	3,4	2,9	3,1	2,8	3,7	3,2	3,4
4.	3,7	3,9	3,7	3,4	3,6	3,9	3,7	3,8	3,2	3,4	3,7	3,3	3,2

Table 4. *The arithmetic mean environmental thought score of the students in each related scale item.*

S.	ET1	ET2	ET3	ET4	ET5	ET6	ET7	ET8	ET9	ET10	ET11	ET12	ET13	ET14
1.	3,5	3,5	3,06	3,2	4,3	3,5	3,2	3,6	3,6	3,4	3,5	3,9	3,08	3,4
4.	3,4	3,5	3,8	3,8	4,05	3,6	3,5	3,7	3,7	3,9	3,8	3,6	3,8	3,5

(99.025) of the senior students, which is the sum of the mean environmental behavior (46.9875), and environmental thought (52.0375) subscale scores, was higher than those of the freshmen (90.3375).

The mean score for each item in the environmental behavior and environmental thought subscales are presented in Tables 3 and 4.

Correlation analysis was conducted to determine whether there was a correlation between students' environmental behavior and thoughts based on seniority. Correlation analysis findings are presented in Table 5. Thus, it was determined that there was a positive correlation between the total environmental behavior and total environmental thought scores. Correlation coefficient was calculated as r = 0.489. As the total environmental behavior score increased, the total environmental thought score increased. There was also a positive and significant correlation between the student seniority and total environmental behavior and environmental thought scores. In other words, the total environmental behavior and environmental thought scores of the senior students were higher than those of the freshmen. The scale scores increased with seniority. Environmental behavior score correlation coefficient was r = 0.631 and environmental thought score correlation coefficient was r = 0.360.

Table 5. *Correlation analysis findings.*

Partial Correlation Findings				
		EBTS	ETTS	SENIORITY
Environmental Behavior Total Score (EBTS)	Pearson correlation	1	,419**	,631**
	Sig.		,000	,000
Environmental Thought Total Score (ETTS)	Pearson correlation	,419**	1	,360**
	Sig.	,000		,000
SENIORITY	Pearson correlation	,631**	,360**	1
	Sig.	,000	,000	
**, (p<0.01), N=160				

Table 6. *The regression findings conducted to determine the effect of seniority on environmental behavior and thinking scores.*

Model		B	Std. error	ß (Beta)	t	Sig.
1	Constant	-1,979	,441		-4,489	,000
	EBTS	,061	,007	,583	8,632	,000
	ETTS	,016	,009	,116	1,720	,031
R=,640; R2=,410; Corrected R2=,402; Model F= 54,519; df1=2; df2=157; p<0,05						

After the direction and size of the correlation between student seniority and environmental behavior and environmental thought scores was determined with the correlation analysis, simple linear regression analysis was conducted to determine the effect of seniority on environmental behavior and thinking scores (Table 6).

As seen in Table 6, it was determined that the effect of seniority on environmental behavior and thought scores was positive and statistically significant. This effect was higher on the environmental behavior score (ß =, 583; p = 0.01) and lower on the environmental thought score (ß =, 116; p <0.05). The effects of seniority on environmental behavior and environmental thought scores are presented in Figure 1.

Based on analysis of the scores of the freshmen and senior students, their mean environmental behavior and thought scale scores were calculated and ANOVA was employed to determine whether there was a difference between the mean scores based on seniority (Tables 7 and 8). The review of Table 7 demonstrated that "Sig." value was <0.05 for all variables. In other words, there was a significant difference between environmental behavior and environmental thought scores based on seniority. The difference based on seniority was predominant in environmental behavior scores (F = 105,331; p = 0,00). The difference

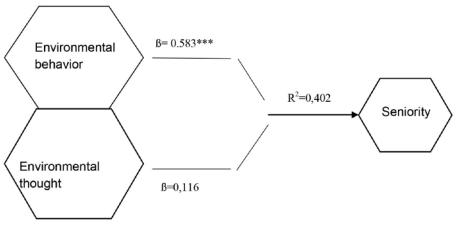

Figure 1. *The theoretical model for the effects of seniority on environmental behavior and environmental thought scores.*

Table 7. *The mean environmental thought and environmental behavior scores based on seniority.*

		N	Mean of Squares	Standart Errors
EBMN	Freshmen	80	3,1506	,31430
	Senior	80	3,6144	,25424
	Total	160	3,3825	,36787
ETMN	Freshmen	80	3,5286	,23085
	Senior	80	3,7170	,25927
	Total	160	3,6228	,26231

Table 8. *The results of the one way analysis of variance conducted to determine whether there was a difference between environmental thought and environmental behavior scores of the freshmen and senior students.*

		Sum of squares	Degree of freedom	Mean of squares	F	Sig.
EBMN	Intergroup	8,607	1	8,607	105,331	,000
	In-group	12,910	158	,082		
	Total	21,517	159			
ETMN	Intergroup	1,420	1	1,420	23,560	,000
	In-group	9,521	158	,060		
	Total	10,941	159			

between the environmental thought scores was also significant based on seniority (p = 0.00). However, the difference was lower than environmental behavior scores (F = 23,560).

5. Discussion

The review of previous studies conducted on environmental attitude, environmental behavior, and environmental though revealed that various scales were developed by different authors, while certain scales were utilized with different samples in different research fields. One was the 15-item "New Ecological Paradigm (NEP)" scale (Dunlap et al. 2000), which is widely used in the literature to determine environmental attitudes. NEP (Dunlap and Van Liere 1978; Dunlap et al. 2000; Dunlap, 2008) was developed by Dunlap and Van Liere in 1978 and revised in 2000. In the literature review, it was observed that NEP was applied to several groups. In the literature, there are studies developed especially for students and certain other applications. Demirel et al. (2009) investigated the impact of nature recreational activities on environmental attitude. The sample included students attending different universities in Ankara. The analysis was conducted on a 5-point Likert type scale. Erdoğan (2006) tested the NEP scale on students attending four colleges in different provinces and investigated whether the students had nature-centered or human-centered thinking. Alnıaçık and Koç (2009) determined the attitudes of students attending 5 universities and Alnıaçık (2010) determined the attitudes of students attending 7 universities towards the environment using the NEP scale and reported that the awareness of university students about environmental problems was above average.

Yet another scale was developed by Altınöz (2010). This test included 15 multiple choice questions. Each item has five choices, and it was first used by the authors and then by various others. Kıyıcı et al. (2014) used the scale in a study on the analysis of the change in environmental literacy of pre-service teachers with nature education and their views, Erbasan and Erkolun (2020) used the scale in their study titled 'Investigation of Environmental Knowledge, Attitudes and Behavior of Classroom Teachers' in 2020', Akıllı and Genç (2015) used the scale in a study on the analysis of environmental literacy sub-dimensions of middle school students based on various variables, Kışoğlu et al. (2016) used the scale to investigate the environmental problem attitudes of pre-service teachers who will instruct environmental education in primary and middle schools, and also certain other authors used the scale.

The environmental attitude scale used in the present study was initially used by Uzun and Sağlam, who developed the scale, in 2000, and later used on various sample groups by various authors in different fields. Sadık and Çakan (2010) used the scale in a study on environmental knowledge of biology students and their attitudes towards environmental problems. The aim of that study was to investigate the students' environmental knowledge and their attitudes towards environmental problems based on certain variables. The study was conducted with 212 students attending Çukurova University, Faculty of Arts and Sciences, Department of Biology. T-test and variance analysis were employed in data analysis. The analyzes demonstrated that environmental behavior and attitudes of female students were more positive when compared to male students. While there was no significant difference between the environmental thought scores of the students based on seniority, it was determined that the environmental behavior scores of freshman students were more positive. Yet in another study, Kahyaoğlu (2013) investigated the correlation between the environmental attitudes and intelligence domains of middle school students based on the multiple intelligence theory. The study data were collected with the "multiple intelligence domains inventory" developed by Armstrong (1999) and translated into Turkish language by Saban (2002) and the "environmental attitude scale" developed by Uzun and Sağlam (2006) that includes environmental behavior and environmental thought sub-dimensions. The analysis of the correlation between the environmental attitudes and intelligence domains of the middle school students revealed that there

was no significant difference between the environmental attitudes and logical, social, physical, intrinsic, naturalistic and visual intelligence domain scores of the middle school students, while a significant difference was determined between verbal intelligence and musical intelligence domain scores. On the other hand, it was determined that there were low significant correlations between environmental attitude scores and logical mathematical intelligence scores of the pre-service teachers. The scale has been used in several other studies. Poley and O'Connor (2000) developed the "Environmental Attitude Scale" and applied the scale to 92 individuals. In a study on curricula, it was revealed that the attitude and behavior dimensions were neglected in the curricula and the curricula mostly aimed to provide information. Environmental attitudes, beliefs and emotions were discussed in the study. It was concluded that besides providing information about environmental programs, raising environment awareness and environment-friendly individuals should be prioritized based on the dimensions of environmental attitudes and behavior.

Yilmaz, Boone, and Andersen (2004) developed a 51-item "Attitudes Towards Environmental Problems Scale." The scale was applied to 458 students, and the attitude scores were compared and analyzed based on independent variables such as gender, education level, socio-economic status, and the region of the school.

Tuncer, Ertepinar, Tekkaya, and Sungur (2005) developed a Likert-type survey that included 45 items and four factors (environmental problem awareness, national environmental problems, problem solutions, individual responsibility awareness) and applied the scale to 1497 students attending private and public schools. In the study, a statistically significant difference was determined between students environmental attitudes based on school type and gender.

In a study on the impact of social desirability on environmental awareness, attitudes and behavior, Çınar et al. (2019) sampled individuals who participated in nature hiking tours. The findings demonstrated that the environmental awareness, environmental attitudes and environmental behavior of these individuals were significantly affected by social desirability. Thus, it was observed that raising environmental awareness, attitudes and behavior is very difficult and even the sincerity was affected by social pressures via social desirability.

Gazeloğlu (2019) investigated the environmental behavior of academicians and reported that academicians were more environmentally sensitive to pass a clean world on to the children. Furthermore, they proposed legal regulations for businesses that pollute the nature. Finally, they argued that will file a complaint to relevant authorities about environmental problems (such as businesses, vehicles, machinery, etc.). These sensitivities were among the prominent arguments of the academicians.

Turkistani (2019) investigated the impact of the environmental attitude levels of consumers on purchasing behavior, and they applied a questionnaire to 400 students at Marmara University. The findings revealed that the effects of environmental interest, sensitivity, awareness, pollution and environmental problems and other demographic variables (age, gender, education level, etc.) on purchasing environmentally friendly products were statistically significant.

A similar study was conducted by Dinavasova (2019). The findings of the study on the effect of individual environmental attitudes on sustainable consumption behavior demonstrated that environmental attitudes had an effect on sustainable consumption behavior. Furthermore, it was observed that the environmental attitude and sustainable consumption behavior sub-dimensions varied based on certain demographics.

6. Conclusion

Although the difference between the environmental behavior scores of the freshman and senior students was not significant in the study, the environmental behavior scores of the senior students were higher than the environmental behavior scores of the freshman students. Similar findings were obtained about the environmental thought scores. In other words, the environmental thought scores of the freshman students were lower than the

environmental thought scores of the senior students. Finally, it was determined that the environmental attitude scores of the senior students were higher than those of the freshman students.

The analysis of the item scores in the environmental behavior subscale revealed that the arithmetic mean score of senior students was higher in all items except two items. Only in the 11th item, the average scores of the freshman and senior students were equal. In the analysis of the 13th item scores, the mean score of freshman students was higher.

The analysis of the item scores in the environmental thought subscale revealed that the mean scores of the senior students were higher in 9 out of 14 items, while the mean scores of the freshman students were higher in the 1st, 5th and 12th items. In the 2nd item, the mean scores were equal.

The statistical analyses were conducted to determine whether there was a correlation between environmental behavior and environmental thought scores of the freshman and senior students, and a significant and positive correlation was found between these scores. In other words, when the environmental behavior score increased, the environmental thought score increased as well. Furthermore, the impact of seniority on environmental behavior and thought scores was investigated, and a positive and significant correlation was determined. In other words, as the class level increased, the score increased as well. The effect on the environmental behavior score was higher, while the effect on the environmental thought score was lower. Also, it was tested whether the total environmental behavior and environmental thought scores differed based on seniority, and a difference was determined between the freshmen and seniors.

The present study was based on the assumption that education will have an impact on environmental behavior and environmental thought; and thus on environmental attitudes, and the accuracy of the assumption was determined with the statistical analysis conducted on the scale data. The scale scores demonstrated that, the sensitivity of the students who took environmental courses for four years increased and the courses had a positive impact on their behavior, thoughts and attitudes. The assumption was confirmed in the present study conducted with the freshman and senior students attending Karadeniz Technical University, Landscape Architecture Department.

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