



## RESEARCH ARTICLE

## Examination Of University Students' Environmental Culture And Awareness In Terms Of Sustainability

Ferhat KILIÇARSLAN<sup>1\*</sup>, Mustafa İnan ÖZANT<sup>2</sup><sup>1</sup>Gazi University, Faculty of Sport Sciences, Ankara, Turkiye**ARTICLE INFO**

Received: Apr 29, 2024

Accepted: Jul 26, 2024

**Keywords**

Green Culture  
Sustainability  
University Students  
Environmental Awareness

**\*Corresponding Author:**

ferhat.kilicarslan@gazi.edu.tr

**ABSTRACT**

This research aims to analyze the environmental awareness and behaviors of university students in detail and to determine how these behaviors are shaped in terms of positive and negative factors and how they are evaluated in the context of sustainability. Accordingly, 322 university students (112 male and 210 female) studying at Gazi University and Hacettepe University in Ankara participated in the study. Data were collected through face-to-face questionnaires to obtain the opinions of the participants. The questionnaires consisted of the Green Culture Scale adapted by Ayyıldız Durhan et al. and The Environmental Awareness in the Context of Sustainable developed by Atabek Yiğit and Balkan Kıyıcı, as well as demographic questions created by the researchers. After determining that the data obtained were normally distributed, parametric tests were applied. According to these tests, it was concluded that university students' gender, field of study, grade level and academic achievement levels significantly differentiate their environmental awareness levels in the context of green culture and sustainability, there are moderate positive relationships between green culture and environmental awareness in the context of sustainability, negative environmental awareness is stronger in explaining green culture than positive environmental awareness, and negative and positive environmental awareness together explain 34% of the variance of green culture. Accordingly, it can be said that environmental awareness levels have a significant effect on green culture.

**INTRODUCTION**

Environmental awareness and sustainability are two fundamental concepts of increasing importance in today's world. Environmental awareness refers to the capacity of individuals to understand environmental problems, to be aware of these problems and to exhibit environmentally sensitive attitudes and behaviors. Through awareness trainings, individuals' environmental awareness can be improved and environmental protection and sustainability can be ensured (Perron et al., 2006; Küçükbaş Duman & Yurtseven, 2022; Genç et al., 2023). Increased awareness enables individuals to develop conscious and responsible behaviors towards environmental problems.

Sustainability refers to the careful and responsible use of natural resources today so that they can be passed on to future generations. In order to understand sustainability, it is of great importance to understand the origins and importance of the concept, to examine its reflections on current practices and to investigate how people understand this concept (Kılıçarslan, 2024). Sustainability refers to the continued delivery of a program, clinical intervention and/or implementation strategies after a certain period of time and/or the maintenance of individual behavioral change while generating benefits for individuals/systems (Moore et al., 2017).

University students, as important actors of social change, are a critical group that needs to show sensitivity and awareness on environmental issues. Examining their environmental awareness levels and their attitudes and behaviors towards the environment is of great importance in achieving sustainability goals. Environmental awareness has a strong correlation with the formation of green skills, i.e. green culture (Ceylan *et al.*, 2022; Rahmaningtyas *et al.*, 2023). While negative environmental awareness can be defined as individuals' acceptance of environmental problems but negative or indifferent attitudes towards these problems, positive environmental awareness includes awareness of environmental problems and positive and proactive behaviors towards solving these problems.

Studies on environmental awareness and sustainability show that many factors play a role in shaping individuals' attitudes and behaviors towards the environment. Among these factors, education level, demographic characteristics and social values have an important place. According to Rahman (2020), ensuring the active participation of individuals in sustainability efforts is key to improving environmental sustainability. Raising environmental awareness and increasing environmental protection at the national level is important for sustainable development and social needs (Hui-zhon, 2006).

Understanding how university students' environmental awareness levels and environmental behaviors are shaped in terms of positive and negative factors contributes to determining the necessary strategies to increase the effectiveness of environmental education programs and build a sustainable future. In particular, trainings and information to be given to university students strengthen their connections with the environment and help them acquire environmentally sustainable behaviors (Cogut *et al.*, 2019). Moreover, according to Hamid (2017), social media can effectively spread awareness of environmental sustainability in higher education by engaging students and staff in practices such as recycling, reducing electricity, water and paper consumption.

In the light of this information, the current research aims to analyze the environmental awareness and behaviors of university students in detail and to determine how these behaviors are shaped in terms of positive and negative factors and how they are evaluated in the context of sustainability. It is thought that the findings obtained will make important contributions to the development of environmental education programs and policies.

## **METHOD**

### **Research Model**

In the study, the data were collected using the relational survey model by utilizing quantitative research methods. While describing the relational survey model, Karasar (2007) stated that it enables to determine the existence and/or degree of change between two or more variables together. In this direction, the relationship between dependent and independent variables will be examined in accordance with the purpose of the study.

### **Research Group**

Araştırma grubunu Ankara'daki iki farklı üniversitede eğitim gören üniversite öğrencileri The research group consists of university students studying at two different universities in Ankara. The majority of the students participating in the study were women (65.2%) and students of education and engineering sciences (55.6%). Again, the majority of the participants were 2nd year students (33.6%). It was concluded that the majority of the participants were academically successful (43.8%).

## Data Collection

The data were collected through face-to-face interviews and questionnaires from university students studying in different fields at Gazi University and Hacettepe University in Ankara between March and May 2024.

## Data Collection Tools

The questionnaires used as data collection tools consisted of 3 sections. The first section included demographic questions created by the researchers, including questions such as gender and department of education. The second section included the Green Culture Scale adapted into Turkish by Ayyıldız Durhan, Akgül and Karaküçük and the third section included The Environmental Awareness in the Context of Sustainable scale developed by Atabek Yiğit and Balkan Kıyıcı (2022).

## Green Culture Scale (GCS)

The Green Culture Scale, a 5-point Likert-type measurement tool developed by Ermolaeva (2010) and adapted into Turkish by Ayyıldız Durhan, Akgül and Karaküçük, consists of 11 items and 2 sub-dimensions (environmental awareness and environmental behavior). In the original study, the internal reliability coefficients of the scale were found to be .73 for total scores and .60 and .75 for sub-dimensions, respectively. There are no reverse-itemized questions in the scale.

## The Environmental Awareness in the Context of Sustainable (TEAITCOS)

The Environmental Awareness in the Context of Sustainable scale, a 4-point Likert-type measurement tool developed by Atabek Yiğit and Balkan Kıyıcı (2022), consists of 2 sub-dimensions (negative environmental awareness, positive environmental awareness) and 15 items.

## FINDINGS

**Table 1. Percentage and frequency findings on demographic characteristics of the participants**

Variables	Categories	f	%
Gender	Male	112	34,8
	Female	210	65,2
Department of Education	Sport & Health Sciences	143	44,4
	Education & Engineering Sciences	179	55,6
Grade	1 <sup>st</sup> Grade	70	21,7
	2 <sup>nd</sup> Grade	105	32,6
	3 <sup>rd</sup> Grade	84	26,1
	4 <sup>th</sup> Grade	63	19,6
Level of Academic Success	Low	67	20,8
	Moderate	114	35,4
	High	141	43,8

**Table 2.** Findings on the minimum, maximum, mean, standard deviation, skewness and kurtosis values obtained from the measurement tools according to the answers given by the participants and the internal consistency values of the measurement tools according to the answers given

Scale Dimensions	Min.	Max.	$\bar{x}$	S.	Skewness	Kurtosis	$\alpha$
<b>Green Culture Scale</b>	2,18	5,00	3,87	0,54	-0,237	0,027	,77
Environmental Awareness	1,80	5,00	4,21	0,61	-0,767	0,400	,70
Environmental Behavior	1,00	5,00	3,59	0,81	-0,171	-0,187	,80

<b>TEAITCOS</b>	2,50	4,25	3,53	0,35	-0,310	-0,510	,71
Negative Environmental Awareness	1,33	3,78	2,77	0,46	-0,329	0,005	,64
Positive Environmental Awareness	3,00	5,00	4,51	0,49	-1,083	0,274	,85

Table 2 shows the minimum, maximum, average, normality values and internal reliability values of the measurement tools according to the participants' responses to the measurement tools. According to the results obtained from the table, it can be mentioned that the participants have average levels of green culture and sustainable environmental awareness. Accordingly, it can be said that the participants have a generally positive approach to the environment and have knowledge about sustainability. According to the answers given to the scales, it was concluded that the scale was reliable and normally distributed. Therefore, parametric tests will be applied.

**Table 3. Independent sample t-test findings between gender variable and measurement tools**

Scale Dimensions	Gender	n	$\bar{x}$	S.	t	p
<b>Green Culture Scale</b>	Male	112	3,75	0,57	-2,838	,063
	Female	210	3,94	0,50		
Environmental Awareness	Male	112	4,18	0,67	-,657	,069
	Female	210	4,23	0,58		
Environmental Behavior	Male	112	3,40	0,89	-3,014	,050
	Female	210	3,70	0,74		
<b>TEAITCOS</b>	Male	112	3,39	0,36	-5,242	,061
	Female	210	3,61	0,32		
Negative Environmental Awareness	Male	112	2,66	0,52	-3,024	,004*
	Female	210	2,84	0,41		
Positive Environmental Awareness	Male	112	4,33	0,49	-4,929	,031*
	Female	210	4,60	0,46		

\*p>.05

Table 3 shows the independent sample t-test findings between gender variable and measurement tools in line with the responses given by the participants. According to the results obtained, it was determined that the gender variable did not significantly differentiate the levels of Green Culture Scale, environmental awareness and environmental behavior. Although no significant difference was detected, it was observed that women had higher averages in environmental behavior levels compared to men. However, it was found that women had significantly higher averages in Negative and Positive Environmental Awareness scales than men and these differences were statistically significant. These results show that women have higher levels of environmental awareness than men.

**Table 4. Independent sample t-test findings between department of education variable and measurement tools**

Scale Dimensions	Department of Education	n	$\bar{x}$	S.	t	p
<b>Green Culture Scale</b>	Sport & Health Sci.	143	3,94	0,55	1,974	,409

	Education & Engineering Sci.	179	3,82	0,52		
Environmental Awareness	Sport & Health Sci.	143	4,23	0,64	0,445	,367
	Education & Engineering Sci.	179	4,20	0,59		
Environmental Behavior	Sport & Health Sci.	143	3,70	0,86	2,114	,115
	Education & Engineering Sci.	179	3,51	0,75		
<b>TEAITCOS</b>	Sport & Health Sci.	143	3,52	0,37	-0,450	,129
	Education & Engineering Sci.	179	3,54	0,34		
Negative Environmental Awareness	Sport & Health Sci.	143	2,83	0,48	1,878	,148
	Education & Engineering Sci.	179	2,73	0,43		
Positive Environmental Awareness	Sport & Health Sci.	143	4,41	0,52	-3,027	,003*
	Education & Engineering Sci.	179	4,58	0,45		

\*p>.05

According to the results obtained from the independent sample t-test findings in Table 4, it was determined that the field of study variable significantly differentiated in favor of the students studying in education and engineering sciences only in the positive environmental awareness sub-dimension. Although no other significant difference was found, it was concluded that sports and health sciences students had higher levels of green culture compared to education and engineering students. In the context of sustainability, it was seen that students studying in the field of education and engineering had higher averages in total environmental awareness scores, while students studying in the field of sports and health had higher averages in the negative environmental awareness sub-dimension.

**Table 5. Results of one-way analysis of variance ANOVA test between grade variable and measurement tools**

Scale Dimensions	Grade	n	$\bar{x}$	S.	F	p	
<b>Green Culture Scale</b>	1 <sup>st</sup> Grade	70	3,86	0,50	2,470	,062	
	2 <sup>nd</sup> Grade	105	3,77	0,53			
	3 <sup>rd</sup> Grade	84	3,97	0,49			
	4 <sup>th</sup> Grade	63	3,94	0,62			
Environmental Awareness	1 <sup>st</sup> Grade	70	4,16	0,60	0,755	,520	
	2 <sup>nd</sup> Grade	105	4,18	0,58			
	3 <sup>rd</sup> Grade	84	4,29	0,56			
	4 <sup>th</sup> Grade	63	4,22	0,73			
Environmental Behavior	1 <sup>st</sup> Grade	70	3,62	0,77	2,334	,074	
	2 <sup>nd</sup> Grade	105	3,43	0,84			
	3 <sup>rd</sup> Grade	84	3,70	0,76			
	4 <sup>th</sup> Grade	63	3,71	0,83			

<b>TEAITCOS</b>	1 <sup>st</sup> Grade	70	3,62	0,32	2,465	,062	
	2 <sup>nd</sup> Grade	105	3,49	0,36			
	3 <sup>rd</sup> Grade	84	3,55	0,34			
	4 <sup>th</sup> Grade	63	3,49	0,39			
Negative Environmental Awareness	1 <sup>st</sup> Grade	70	2,81	0,41	0,296	,829	
	2 <sup>nd</sup> Grade	105	2,75	0,45			
	3 <sup>rd</sup> Grade	84	2,76	0,48			
	4 <sup>th</sup> Grade	63	2,79	0,50			
Positive Environmental Awareness	1 <sup>st</sup> Grade <sup>1</sup>	70	4,67	0,40	4,885	,002*	1>2>4
	2 <sup>nd</sup> Grade <sup>2</sup>	105	4,44	0,47			
	3 <sup>rd</sup> Grade <sup>3</sup>	84	4,55	0,49			
	4 <sup>th</sup> Grade <sup>4</sup>	63	4,39	0,56			

\*p>.05

Table 5 presents the findings of the one-way analysis of variance ANOVA test conducted to understand the differentiation of the measurement tools by grade. Accordingly, it was found that the grade variable differed significantly in favor of first grade students only in the positive environmental awareness sub-dimension. Although significant differences were not detected, it can be mentioned that fourth grade students have higher averages in green culture levels compared to other grade students. On the other hand, it was determined that first-year students had higher averages in environmental awareness levels in the context of sustainability.

**Table 6. Results of one-way analysis of variance ANOVA test between level of academic success variable and measurement tools**

Scale Dimensions	Level of Academic Success	n	$\bar{x}$	S.	F	p	LSD
<b>Green Culture Scale</b>	Low <sup>1</sup>	67	3,69	0,60	5,340	,005*	3>2>1
	Moderate <sup>2</sup>	114	3,89	0,45			
	High <sup>3</sup>	141	3,95	0,56			
Environmental Awareness	Low <sup>1</sup>	67	4,05	0,63	5,432	,005*	2>3>1
	Moderate <sup>2</sup>	114	4,35	0,58			
	High <sup>3</sup>	141	4,17	0,61			
Environmental Behavior	Low <sup>1</sup>	67	3,39	0,91	6,005	,003*	3>2>1
	Moderate <sup>2</sup>	114	3,50	0,72			
	High <sup>3</sup>	141	3,76	0,80			
<b>TEAITCOS</b>	Low <sup>1</sup>	67	3,47	0,37	7,612	,001*	3>2>1
	Moderate <sup>2</sup>	114	3,46	0,36			
	High <sup>3</sup>	141	3,62	0,32			

Negative Environmental Awareness	Low <sup>1</sup>	67	2,68	0,48	5,440	,005*	3>2>1
	Moderate <sup>2</sup>	114	2,71	0,48			
	High <sup>3</sup>	141	2,87	0,41			
Positive Environmental Awareness	Low <sup>1</sup>	67	4,49	0,46	3,423	,034*	3>2
	Moderate <sup>2</sup>	114	4,42	0,53			
	High <sup>3</sup>	141	4,58	0,46			

\*p>.05

In Table 6, one-way analysis of variance ANOVA findings examining the differentiation of measurement tools by academic achievement level are presented. According to the results obtained from these findings, academic achievement level significantly differentiates all dimensions of environmental awareness levels in the context of both green culture and sustainability. All these significant differences were found to be in favor of individuals with higher academic achievement levels. Accordingly, it can be said that as academic achievement increases, environmental awareness and sustainability efforts also increase.

**Table 7. Results of Pearson correlation test to determine the relationship between measurement tools**

<b>Green Culture Scale</b>	1					
Environmental Awareness	,577**	1				
Environmental Behavior	,856**	,071	1			
<b>TEAITCOS</b>	,546**	,176**	,555**	1		
Negative Environmental Awareness	,534**	,081	,601**	,799**	1	
Positive Environmental Awareness	,258**	,195**	,192**	,689**	,115*	1

\*p>.05, \*\*p>.01

Table 7 shows the findings of Pearson correlation analysis conducted to understand the relationship between the measurement tools. According to the findings obtained as a result of the analysis, a moderate positive relationship was found between green culture and environmental awareness in the context of sustainability. Accordingly, it can be said that an increase in the level of green culture may lead to an increase in the level of environmental awareness in the context of sustainability.

**Table 8. Multiple linear regression analysis results for predicting green culture according to negative and positive environmental awareness**

Variables	B	Std. Error	$\beta$	t	p	R	R <sup>2</sup>	F	p
Negative Environmental Awareness	,596	,054	,511	11,020	,000*	,569	,324	76,458	,001*
Positive Environmental Awareness	,219	,051	,200	4,306	,000*				

\*p<.05, Dependent variable: Green Culture

Table 8 presents the results of the multiple linear regression analysis conducted to examine the effects of negative and positive environmental awareness on predicting green culture. According to the results of the analysis, negative environmental awareness (B = 0.596,  $\beta$  = 0.511, p = 0.000) and positive environmental awareness (B = 0.219,  $\beta$  = 0.200, p = 0.000) have positive and statistically

significant effects in predicting green culture. The effect of negative environmental awareness was found to be stronger than positive environmental awareness. The  $R^2$  value of the model was 0.324 and it was revealed that these variables explained 32.4% of the variance in green culture. In addition, the overall goodness of fit of the model ( $F = 76.458$ ,  $p = 0.001$ ) was statistically significant. These results show that environmental awareness variables significantly affect green culture and negative environmental awareness has a more significant effect.

## DISCUSSION

The participants in the current study, which aims to analyze the environmental awareness and behaviors of university students in detail and to determine how these behaviors are shaped in terms of positive and negative factors and how they are evaluated in the context of sustainability, have average levels of environmental awareness in the context of green culture and sustainability. In addition, it was determined that students had high levels of positive environmental awareness. Accordingly, it can be said that university students are sensitive to the environment and environmental sustainability and tend to exhibit positive behaviors and attitudes towards the environment. According to the results of the study conducted by Zulkarnaen *et al.* (2023). These results are in parallel with the current study.

According to the results obtained from the examination of environmental awareness levels in the context of green culture and sustainability in terms of gender, the gender of university students significantly changes their negative and positive awareness levels towards the environment. Accordingly, positive and negative awareness levels of female university students are higher than male university students. This may indicate that female students are more prone to positive attitudes and behaviors towards the environment and that female students are more conscious and sensitive about behaviors that may harm the environment. Accordingly, it may indicate that environmental awareness programs and trainings may be more effective on women or that women may be innately more sensitive to environmental issues. Therefore, it can be mentioned that the creation of environmental awareness, i.e. green culture, should be in different forms in terms of gender. There are studies in the literature that support the current study (Xiao & McCright, 2015; Briscoe *et al.*, 2019; Akgül *ve diğ.*, 2022; Kılıçarslan & Ayyıldız Durhan, 2023; Setiawan *et al.*, 2023; Zulkarnaen *et al.*, 2023).

Higher education, as one of the last links of education, is a very important link, especially for raising environmental awareness and providing information about sustainability to university students. Environmental education, especially at the university level, has a strong correlation with increased environmental knowledge and attitudes (Zsóka *et al.*, 2013). These concepts are handled in different ways in each field of science, and the way they are conveyed to university students is also different from each other. Therefore, it can be said that the effects of environmental awareness and sustainability concepts also differ for students studying in different fields. In the analyses conducted to determine this relationship in the current study, it was determined that the positive environmental awareness levels of university students studying in the fields of education and engineering were higher than those of students studying in the fields of sports and health. This can be said to indicate that education in the fields of education and engineering is effective in helping students develop more positive and proactive behaviors towards the environment. These findings emphasize the importance of customizing environmental awareness and sustainability education according to the field of study of the students. The effectiveness of environmental education in the fields of education and engineering reveals the necessity of using similar educational strategies in other disciplines. Universities developing more inclusive and field-specific education programs on environmental awareness and sustainability will contribute to raising all students as environmentally sensitive and conscious individuals. According to Gayford (1995), discussion-based learning effectively increases



students' understanding of environmental issues and their social, economic, ethical and environmental consequences. This supports the current findings.

As well as the field of study, the grade level of university students may also cause changes in the levels of environmental awareness and sustainability perceptions. In the current study, it was found that positive environmental awareness decreased as the grade level increased. The reason for this may be that the frequency of environmental courses is higher in the first years. Considering that the burden of students will increase as the grade level increases, it can be mentioned that their environmental awareness may decrease. The intensity of environmental education is strongly associated with students' environmental knowledge, partly due to the education itself and higher intrinsic motivation of committed students (Zsóka *et al.*, 2013). Accordingly, it can be argued that the frequency of environmental lessons should increase as grade levels increase. There are studies in the literature on the effect of grade level on environmental awareness (Sa'di, 2019; Yue *ve diğ.*, 2023). According to the results of the study conducted by Bergman (2016), grade level affects environmental awareness, as fourth and fifth grade students gain awareness of their potential to influence nature, but no change was observed in environmental appreciation or intentions towards environmental learning and behavior. There are also studies in the literature where it is found that environmental awareness increases as the level of education increases. According to Mahanta (2023), graduate students are more aware of environmental awareness than undergraduate students and science students are more aware of environmental awareness than arts students. According to Szeberényi *et al.* (2022), 83.61% of university students learn about renewable energy, environmental awareness or environmental protection in Biology and/or Geography courses. In addition, according to Morales-Baños *et al.* (2023), university students' contact with the environment helps them to develop higher sustainability awareness. Accordingly, it can be said that both the number and intensity of courses should be increased as the grade level increases and these courses should be designed to be in contact with nature and the environment in open spaces.

Academic level and field of study are positively related to environmental knowledge (Kaplowitz & Levine, 2005). According to the results of the study conducted by Kılıçarslan and Ayyıldız Durhan (2023), participation in environmental courses, trainings or seminars affects environmental behavior. University students acquire positive behaviors towards the environment through such participation. It can be said that such participation is generally of interest to students who are open to academic self-development and success. Academically successful students can be intrinsically motivated more easily. This shows that they pursue more success. As a result of the analyses conducted in the current study, it was concluded that individuals who are more academically successful have higher levels of green culture, positive and negative awareness and behaviors towards the environment. It is possible to find studies in the literature that support the current result. According to Mahanta (2023), it was found that individuals with graduate level education have higher levels of environmental awareness than individuals with undergraduate level education. This situation is directly proportional to academic achievement. Academically more successful students seek more education. This may positively affect their environmental behaviors. According to Spero *et al.* (2018), students who grow up in rural environments or have frequent childhood interactions with natural environments may receive higher grades in introductory environmental science courses. These findings reveal that there is a positive relationship between academic achievement level and environmental awareness and behaviors. It was determined that more academically successful students tend to exhibit positive behaviors towards the environment and have higher levels of environmental awareness. This supports the existing studies in the literature and emphasizes the importance of integrating environmental education with academic achievement.

In the context of green culture and sustainability, positive relationships were found between environmental awareness levels at an average level. These findings show that these two concepts support each other. It can be said that as environmental culture increases, environmental awareness,

students' positive behaviors towards the environment, both negative and positive environmental awareness may increase. In particular, the strong relationship between environmental culture and environmental behavior provides an important indicator of how environmental culture affects individuals' environmental behaviors. In addition, negative and positive environmental awareness explain 32.4% of Green Culture. These results reveal that both negative and positive environmental awareness have positive and significant effects on Green Culture. However, negative environmental awareness has a stronger effect on Green Culture. According to Ogiemwonyi et al. (2020), green culture has an impact on green behaviors. The result obtained in the current research supports this situation. This shows that individuals' negative environmental awareness may affect their green culture behaviors and attitudes more strongly. Positive environmental awareness is also an important factor, but its effect is relatively weaker. These findings emphasize the importance of designing environmental awareness programs by considering both negative and positive dimensions.

## RESULT

Sonuç olarak, bu çalışma üniversite öğrencilerinin çevresel farkındalık ve davranışlarının çeşitli faktörlerle ilişkili olduğunu göstermiştir. Özellikle negatif ve pozitif çevresel farkındalık, yeşil kültür üzerinde anlamlı ve pozitif etkiler göstermektedir. Negatif çevresel farkındalık, yeşil kültür üzerinde daha güçlü bir etkiye sahipken, pozitif çevresel farkındalık da önemli bir etkidir ancak nispeten daha zayıf kalmaktadır. Bu durum, bireylerin çevreye yönelik negatif farkındalıklarının yeşil kültür davranışlarını ve tutumlarını daha güçlü bir şekilde etkileyebileceğini ortaya koymaktadır.

Öğrencilerin çevresel farkındalık düzeylerinin cinsiyet, akademik başarı ve çalışma alanına göre farklılık gösterdiği tespit edilmiştir. Kadın öğrenciler, erkek öğrencilere göre daha yüksek pozitif ve negatif çevresel farkındalık seviyelerine sahiptir. Ayrıca, eğitim ve mühendislik alanlarında öğrenim gören öğrencilerin çevresel farkındalık seviyeleri, spor ve sağlık alanlarında öğrenim gören öğrencilerden daha yüksektir. Akademik olarak daha başarılı öğrencilerin yeşil kültür, çevresel farkındalık ve davranış seviyelerinin daha yüksek olduğu belirlenmiştir.

## RECCOMENDATON

Elde edilen sonuçlara göre araştırmacılar şu önerilerde bulunmaktadır; üniversitelerde çevresel farkındalık ve sürdürülebilirlik konularına yönelik derslerin sayısı ve yoğunluğu artırılmalıdır. Özellikle üst sınıflarda bu derslerin sıklığı artırılarak öğrencilerin çevresel farkındalık düzeylerinin korunması sağlanabilir. Çevresel farkındalık eğitimleri cinsiyete özgü olarak tasarlanmalıdır. Kadınların çevresel konulardaki duyarlılıkları göz önüne alınarak, kadınlara yönelik daha derinlemesine programlar geliştirilebilir. Çeşitli akademik alanlarda öğrenim gören öğrenciler için çevre eğitimi programları özelleştirilmelidir. Eğitim ve mühendislik alanlarında uygulanan başarılı stratejiler diğer disiplinlere de uyarlanmalıdır. Öğrencilerin çevresel kurslara, eğitimlere ve seminerlere katılımını teşvik eden programlar oluşturulmalıdır. Akademik başarıya yatkın öğrencilerin bu tür etkinliklere katılımı, çevresel farkındalık ve davranışlarını olumlu yönde etkileyebilir. Üniversitelerde doğayla ve çevreyle doğrudan temas kurmalarını sağlayacak açık hava etkinlikleri ve projeler düzenlenmelidir. Bu tür programlar, öğrencilerin çevresel farkındalıklarını artırmada etkili olabilir. Bu öneriler, üniversite öğrencilerinin çevresel farkındalıklarını artırmak ve sürdürülebilirlik bilincini geliştirmek amacıyla eğitim programlarının daha etkili hale getirilmesine katkı sağlayabilir.

## REFERENCES

Akgül, B. M., Durhan, T. A., Arı, Ç., & Karaküçük, S. (2022). Yeşil Öğrenci Projesi'nde Yer Alan Ekorekreasyon Faaliyetlerin Katılımcılar Açısından İncelenmesi. *GSI Journals Serie A: Advancements in Tourism Recreation and Sports Sciences*, 5(2), 325-337.

- Atabek-yiğit, E. & Balkan Kıyıcı, F. (2022). The Environmental Awareness in the Context of Sustainable Development: A Scale Development and Reliability Study, Sakarya University Journal of Education, 12 (3) , 646-665. <https://doi.org/10.19126/suje.1167444>
- Ayyıldız-Durhan, T., Akgül, B. M., & Karaküçük, S. (2022). Testing The Green Culture Scale on Turkish population: The Green Culture Scale (Yeşil Kültür Ölçeğinin Türk popülasyonu üzerinde sınanması: Yeşil Kültür Ölçeği). Journal of Human Sciences, 19(4), 569-581. <https://doi.org/10.14687/jhs.v19i4.6286>
- Bergman, B. (2016). Assessing impacts of locally designed environmental education projects on students' environmental attitudes, awareness, and intention to act. Environmental Education Research, 22(4), 480 - 503. <https://doi.org/10.1080/13504622.2014.999225>
- Ceylan, L., Akkaya Boyraz, D. E., Çaldıran, S., Ceylan, T. & Küçük, H. (2022). Examination of nutrition knowledge levels of individuals who received sports training: life sciences-nutritional science. *International Journal of Life Science and Pharma Research*, 12(5), L11-L17. <https://doi.org/10.22376/ijpbs/lpr.2022.12.5.L11-17>
- Cogut, G., Webster, N. J., Marans, R. W., & Callewaert, J. (2019). Links between sustainability-related awareness and behavior: The moderating role of engagement. *International Journal of Sustainability in Higher Education*, 20(7), 1240-1257. <https://doi.org/10.1108/IJSHE-09-2018-0161>
- Genç, N., Yılmaz, G., & Taştan, Z. (2023). The historical journey of recreation research: A bibliometric study (1955-2022). *Journal of ROL Sport Sciences*, 1022-1039. <https://doi.org/10.5281/zenodo.8422966>
- Hamid, S., Ijab, M., Sulaiman, H., Anwar, R., & Norman, A. (2017). Social media for environmental sustainability awareness in higher education. *International Journal of Sustainability in Higher Education*, 18, 474-491. <https://doi.org/10.1108/IJSHE-01-2015-0010>
- Hui-zhon, W. (2006). Environmental awareness and sustainable development. *Jiangsu Environmental Science and Technology*. 38(1), 5-21. <https://doi.org/10.1177/0013916505280087>
- Kaplowitz, M., & Levine, R. (2005). How environmental knowledge measures up at a Big Ten university. *Environmental Education Research*, 11(2), 143 - 160. <https://doi.org/10.1080/1350462042000338324>
- Kılıçarslan, F. (2024). Sustainability in recreational sports organisations, Ayyıldız Durhan, T. (ed.). *Interdisciplinary approaches in sport Sciences (1<sup>st</sup> edition)*, Eğitim Publisher, 57.
- Kılıçarslan, F., & Durhan, T. A. (2023). Environmental Behaviors and Ecological Intelligence of University Students. *International Journal of Environment and Geoinformatics*, 10(3), 93-105.
- Küçükbaş Duman, F., & Yurtseven, C. N. (2022). Examining the environmental literacy levels of university students. *Journal of ROL Sport Sciences*, 3(1), 52-62. <https://doi.org/10.29228/roljournal.54994>
- Mahanta, B. (2023). Environmental Awareness Among Higher Education Students. *International Journal For Multidisciplinary Research*, 5(5), 1-10. <https://doi.org/10.36948/ijfmr.2023.v05i05.7040>
- Moore, J., Mascarenhas, A., Bain, J., & Straus, S. (2017). Developing a comprehensive definition of sustainability. *Implementation Science : IS*, 12(110), 1-8. <https://doi.org/10.1186/s13012-017-0637-1>

- Ogiemwonyi, O., Harun, A., Alam, M., Karim, A., Tabash, M., Hossain, M., Aziz, S., Abbasi, B., & Ojuolape, M. (2020). Green product as a means of expressing green behaviour: A cross-cultural empirical evidence from Malaysia and Nigeria. *Environmental Technology and Innovation*, 20, 101055. <https://doi.org/10.1016/j.eti.2020.101055>
- Rahman, H. (2020). Environmental sustainability awareness in selected countries. *The International Journal of Academic Research in Business and Social Sciences*, 10, 85-97. <https://doi.org/10.6007/IJARBS/V10-I15/8235>
- Rahmaningtyas, W., Joyoatmojo, S., Kristiani, K., & Murwaningsih, T. (2023). Building a sustainable future: Unraveling the link between environmental awareness and the cultivation of employability and green skills-a literature review. *IOP Conference Series: Earth and Environmental Science*, 1248(1), 012021. <https://doi.org/10.1088/1755-1315/1248/1/012021>
- Sa'di, I. T. (2019). Identifying Differences in the Level of Environmental Awareness among Male Students: A Case of Lower Elementary Grades. *International Journal of Learning, Teaching and Educational Research*, 18(8), 1-16. <https://doi.org/10.26803/ijlter.18.8.1>
- Setiawan, H., Kusnadi, K., Surtikanti, H. K., & Riandi, R. (2023). Gender differences and the correlation of environmental knowledge with sustainability awareness after ESD-PjBL implementation. *JPBI (Jurnal Pendidikan Biologi Indonesia)*, 9(3), 371-386. <https://doi.org/10.22219/jpbi.v9i3.26049>
- Spero, M., Balster, N., & Bajcz, A. (2018). Effects of childhood setting and interaction with nature on academic performance in introductory college-level courses in the environmental sciences. *Environmental Education Research*, 25(3), 422 - 442. <https://doi.org/10.1080/13504622.2018.1496405>
- Szeberenyi, A., Lukacs, R., & Papp-Vary, A. (2022). Examining environmental awareness of university students. *Eng. Rural Dev*, 21, 604-611. <https://doi.org/10.22616/erdev.2022.21.tf198>
- Xiao, C., & McCright, A. (2015). Gender Differences in Environmental Concern. *Environment and Behavior*, 47(1), 17 - 37. <https://doi.org/10.1177/0013916513491571>
- Yue, X., Wanglee, W., Yin, Y., Ye, Y., & Cai, T. (2023). Environmental attitudes of Chinese students in higher education institutions. *Journal of Education and e-Learning Research*, 10(2), 165-174. <https://doi.org/10.20448/jeelr.v10i2.4491>
- Zsóka, Á., Szerényi, Z., Széchy, A., & Kocsis, T. (2013). Greening due to environmental education? Environmental knowledge, attitudes, consumer behavior and everyday pro-environmental activities of Hungarian high school and university students. *Journal of Cleaner Production*, 48, 126-138. <https://doi.org/10.1016/j.jclepro.2012.11.030>