Health Problems of Civilization
eISSN: 2354-0265, ISSN: 2353-6942

ORIGINAL PAPER

AWARENESS AND BEHAVIORS OF STUDENTS AT A FOUNDATION UNIVERSITY CONCERNING HEALTH-RELATED SUSTAINABLE DEVELOPMENT GOALS: A CROSS-SECTIONAL DESCRIPTIVE STUDY

Meral Maden Kıvanç[1(A,B,C,D,E)], **Ülkü Yılmaz**[2(D,E,F)], **Hariye Avcı**[1(A,B,C,E,F)]

[1]Department of Nursing, Faculty of Health Sciences, Istanbul Kültür University, Istanbul, Türkiye

[2]Department of Nursing, Faculty of Health Sciences, Istanbul Beykent University, Istanbul, Türkiye

Maden Kıvanç M, Yılmaz Ü, Avcı H. Awareness and behaviors of students at a foundation university concerning health-related sustainable development goals: a cross-sectional descriptive study. Health Prob Civil. https://doi.org/10.5114/hpc.2025.147767

Tables: 5

Figures: 0

References: 33

Submitted: 2024 Nov 11

Accepted: 2025 Feb 6

Address for correspondence: Ülkü Yılmaz, Department of Nursing, Faculty of Health Sciences, Istanbul Beykent University, Cumhuriyet Mahallesi, Beykent, Büyükçekmece / Istanbul, Türkiye, e-mail: ulkyilmz@gmail.com, phone: +90 444 1997 /6271

ORCID: Ülkü Yılmaz https://orcid.org/0000-0002-2128-9398

eISSN: 2354-0265, ISSN: 2353-6942

Summary

Background. The current study aims at assessing the awareness and behaviors of university students at a foundation university's Faculty of Health Sciences regarding sustainable development goals.

Material and methods. The research is cross-sectional and was conducted in the nursing, physiotherapy, and nutrition departments of the Faculty of Health Sciences between November-December 2022. The study sample consisted of 275 students. Data was collected through face-to-face interviews using the Descriptive Data Form and the Sustainable Development Awareness Scale. SPSS Statistics 24.00 software was employed for data analysis.

Results. Most participating students are between the ages of 18-24. More than half of the participants are concerned about the effects of climate change. They state that they save water and paper and that they prefer to use energy-saving devices. Although students' awareness level is high, their participation in environmental protection projects could be improved. It has been observed that nursing and female students have a higher awareness of sustainable development goals than male students in other departments.

Conclusions. It's crucial to formulate action plans concerning sustainable development goals for university students and encourage their implementation.

Keywords: sustainable development goals, sustainable development, young people, awareness, behavior

eISSN: 2354-0265, ISSN: 2353-6942

Introduction

The disruption of ecological balance worldwide has given rise to global issues, leading to the emergence of the concept of sustainable development (SD). The World Commission on Environment and Development (WCED), in its 1987 Brundtland (Our Common Future) report, defined SD as "meeting the needs of the present without compromising the ability of future generations to meet their own needs" [1]. In 2015, the UN General Assembly, with the participation of 193 countries, established 17 universal sustainable development goals (SDGs) to be achieved by 2030 to address global challenges [2,3]. The defined goals primarily encompass social issues such as education, health, and poverty, as well as social inequalities, consumption, environmental concerns, and global cooperation [4,5]. The Sustainable Development 2021 report acknowledges, for the first time, a setback in achieving SDGs in 2020 due to the global COVID-19 pandemic [6].

The SD process gained attention through the Stockholm Conference on the Human Environment in 1972. In the 1980s, as economic and environmental issues escalated, attention was drawn to their interrelation. The SD process continued with the World Summit on Sustainable Development (WSSD), Rio+10, convened in Johannesburg in 2002. By 2005, the Kyoto Protocol came into effect to balance greenhouse gas concentrations and mitigate climate change. The Rio+20 World Summit on Sustainable Development occurred in Rio de Janeiro 2012 [7].

Sustainable development has three dimensions: environmental, economic, and social. The dimensions are interrelated and are assessed together [8]. Each dimension is examined both within itself and in relation to the other dimensions, and reaching SDGs becomes achievable when necessary awareness is raised. Changes are made in the required areas.

eISSN: 2354-0265, ISSN: 2353-6942

Environmental dimension: Ecosystems must be balanced for sustainable development. The world we live in has a rich biodiversity. The biodiversity needs to be protected for sustainability. It is valid for today's development, and due to the philosophy of sustainable development that also considers future generations, it is necessary to leave at least as much diversity to future generations as today [9].

Economic dimension: The dimension comprises production, consumption, and natural resource components. Production varies with population growth and demand, while consumption patterns depend on individuals' consciousness. Conscious consumption of resources becomes vital for economic development when natural resources are limited. Initiatives such as using renewable energy sources, waste management, monitoring consumption, providing employment, and eliminating income inequalities play a crucial role in achieving SD [10].

Social dimension: Social sustainability focuses on fundamental needs such as housing, nutrition, and clothing, as well as significant concepts like education, equal opportunities, and employment [11]. In the context, the elimination of issues that undermine human dignity, such as all forms of discrimination, racism, gender inequality, and violations of labour rights, emphasises the need for societal changes that enhance the quality of life and elevate human dignity [10]. SD aims at improving living conditions through its social dimension. Ensuring equality in areas such as education, law, gender, and access to healthcare services, where individuals share equal rights and responsibilities, is fundamental for sustainable societies [12]. Preserving cultural heritage for future generations is as essential as conserving natural resources [10]. The preservation of cultural heritage is also encompassed within the social dimension of sustainability, and individuals taking responsibility and being educated about the matter are integral to achieving sustainability.

eISSN: 2354-0265, ISSN: 2353-6942

Sustainable development involves developing strategies to end poverty and eliminate health, social, and economic inequalities, supporting economic growth. It aims at improving education and environmental health [13]. In the context, raising individuals' awareness, particularly in moderating consumption behaviors towards a level of consciousness, plays a crucial role in achieving sustainability goals [14]. To provide the information, individuals should be educated and encouraged about environment and sustainability at every stage of education, including university education [15]. Universities, particularly, have a pivotal role to play in this regard. They can support sustainability and educate individuals, fostering awareness and thus influencing individuals to take action in SD [16].

Aim of the work

The aim of the study was to assess the awareness andbehaviors of university students at a foundation university's Faculty of Health Sciences regarding SDGs.

Material and methods

The study is a cross-sectional research conducted to evaluate students' awareness and behaviors regarding SDGs. The research was conducted between November and December 2022 in three departments of a foundation university's Faculty of Health Sciences: Nursing, Nutrition and Dietetics, and Physiotherapy and Rehabilitation.

eISSN: 2354-0265, ISSN: 2353-6942

Sample and population of the research

The research population comprises 349 students in three foundation universities' Faculty of Health Sciences departments. No sample calculation was made for the research, and the aim was to reach the entire population. Our population number is known in our research, but since our sample consists of students who agreed to participate in the study, no sample calculation was made. 275 students participated in the research voluntarily, and their written consent was obtained. The inclusion criteria for participants were:

- willingness to participate in the research,
- being over 18 years of age,
- enrolled in a department of the university's Faculty of Health Sciences,
- no psychiatric disorders.

Variables of the research

Dependent variables of the research: Participants' levels of awareness regarding SDGs and their implemented practices.

Independent variables of the research*:* Descriptive data form questions (socio-demographic characteristics, etc.), Sustainable Development Awareness Scale.

Data collection tools

Research data waas collected using the face-to-face survey method. Prior to data collection, the purpose of the research was explained to the participants. Informed consent was obtained from voluntary student participants who agreed to participate in the study. The

eISSN: 2354-0265, ISSN: 2353-6942

research employed a Descriptive Data Form, comprising 16 questions prepared in accordance with the literature, and the Sustainable Development Awareness Scale.

The Sustainable Development Awareness Scale was developed by Atmaca [17]. The scale consists of 36 items and comprises three sub-dimensions: economic, social, and environmental sustainability. The scale's lowest possible score is 36, while the highest is 180. The sub-dimensions are as follows: economic sustainability dimension (items 1-13), social sustainability dimension (items 14-22), and environmental sustainability dimension (items 24-36). The scale uses a 5-point Likert-type rating, with 1=strongly disagree, 2=disagree, 3=neutral, 4=agree, and 5=strongly agree. Items 1, 8, 10, 24, 30, and 34 are reverse-scored. When examining the Cronbach's alpha values obtained in the study, the sustainability awareness scale yielded a value of 0.96, the economic sustainability sub-dimension had a value of 0.86, the social sustainability sub-dimension had a value of 0.96, and the environmental sustainability sub-dimension had a value of 0.87.

Data analysis

SPSS Statistics 24.00 software was employed for data analysis. When determining the analysis techniques, skewness and kurtosis values of variables were examined to ascertain normal distribution. Values within ±1.5 were assumed to exhibit normal distribution [18]. For the evaluation of the Sustainable Development Awareness Scale and its sub-dimensions based on variables such as gender, age, marital status, consideration of participation in a project for achieving SDGs, and ways of acquiring knowledge about sustainable development objectives, the Mann-Whitney U Test was utilized.

The Kruskal-Wallis H Test was employed for the evaluation of the Sustainable Development Awareness Scale and its sub-dimensions based on variables such as the section

of the study, class level, knowledge about SDGs, concern about the effects of climate change, practising water conservation at home, preferring the use of energy-efficient devices, printing double-sided documents to save paper, preferring glass materials over plastic, and segregating waste according to domestic waste, glass, paper, plastic, and metal types. The Mann-Whitney U Test was applied as a post hoc test.

Results

Demographic data

Of the 275 students participating in the research, 78.2% were female, and 21.8% were male. Among them, 93.5% were aged 18-24, 5.8% were aged 25-34, and 0.7% were aged 35-44. In terms of marital status, 4.0% were married, and 96.0% were single. Furthermore, 20.7% were enrolled in physiotherapy and rehabilitation, 40.0% in nutrition and dietetics, and 39.3% in nursing. As for their academic year, 37.1% were in the 1st year, 23.3% in the 2nd year, 25.8% in the 3rd year, and 13.8% were 4th year students (Table1).

Table 1. Demographic information (N=275)

Reference categories		n	%
Gender	**Female**	215	78.2
	Male	60	21.8
Age	**18-24 years**	257	93.5
	25-34 years	16	5.8
	35-44 years	2	0.7
Marital status	**Married**	11	4.0
	Single	264	96.0
Field of study	**Physiotherapy and Rehabilitation**	57	20.7
	Nutrition and Dietetics	110	40.0
	Nursing	108	39.3
Grade	**1st year**	102	37.1

	2nd year	64	23.3
	3rd year	71	25.8
	4th year	38	13.8

Students' awareness of SDG

Among the students, 49.8% contemplate participating in a project to achieve SDGs. Furthermore, 12.0% have an awareness of SDGs, with 62.2% lacking such awareness and 25.8% having partial knowledge. Among the 104 students who possess knowledge or partial knowledge of SDGs, 12.5% acquire information from family, 10.6% from friends, 71.2% from social media/press, 26.0% through school channels, and 9.6% from other sources (Table 2).

Table 2. Students' awareness of SDGs (N=275)

Questions		**n**	**%**
Considering participation in a project to achieve SDGs	**Yes**	137	49.8
	No	138	50.2
Awareness of SDGs	**Yes**	33	12.0
	No	171	62.2
	Partial	71	25.8
Obtaining information from family	**Yes**	13	12.5
	No	91	87.5
Obtaining information from friends	**Yes**	11	10.6
	No	93	89.4
Obtaining information from social media/press	**Yes**	74	71.2
	No	30	28.8
Obtaining information from the school	**Yes**	27	26.0
	No	77	74.0
Obtaining information from other sources	**Yes**	10	9.6
	No	94	90.4

Students' awareness of sustainable development

A total of 72.0% of students are concerned about the effects of climate change, with 4.7% not being concerned and 23.3% being occasionally concerned. Regarding water conservation, 61.8% of students practice it at home, 7.3% do not, and 30.9% do so occasionally. In terms of preferring the use of energy-efficient devices, 57.5% opt for them, 12.4% do not, and 30.2% do so occasionally. Additionally, 71.3% of students print double-sided documents to save paper, 7.6% do not, and 21.1% do so occasionally. Regarding material preferences, 45.1% usually choose glass over plastic, 17.1% do not, and 37.8% do so occasionally. Waste separation practices reveal that 32.7% separate waste into household waste, glass, paper, plastic, and metal categories, while 30.9% do not, and 36.4% do so occasionally. Moreover, 19.6% of students participate in projects related to environmental conservation, 42.9% do not, and 37.5% do so occasionally (Table 3).

Table 3. Students' awareness of sustainable development (N=275)

Questions	Yes		No		Occasionally	
	N	%	n	%	n	%
Concern about the effects of climate change	198	72.0	13	4.7	64	23.3
Water conservation at home	170	61.8	20	7.3	85	30.9
Preference for using energy-efficient devices	158	57.5	34	12.4	83	30.2
Double-sided printing for paper conservation	196	71.3	21	7.6	58	21.1
Preference for using materials made from glass instead of plastic	124	45.1	47	17.1	104	37.8
Separation of waste into domestic waste, glass, paper, plastic, and metal	90	32.7	85	30.9	100	36.4
Participation in projects related to environmental conservation	54	19.6	118	42.9	103	37.5

There is a significant difference in sustainable development awareness, economic sustainability, social sustainability, and environmental sustainability scores between females and males ($p<0.05$). It was observed that females have higher levels of sustainable development awareness in economic, social, and environmental dimensions, as compared to males.

There is no significant difference in economic sustainability scores based on the students' field of study ($p>0.05$). However, there is a significant difference in sustainable development awareness, social sustainability, and environmental sustainability scores ($p<0.05$). When looking at the pairwise comparisons of the differences among different fields of study:

- students studying in the Nursing Department have higher levels of sustainable development awareness and environmental sustainability, as compared to those studying in the Physiotherapy and Rehabilitation Department;
- students studying in the Nursing Department have higher levels of social sustainability, as compared to those studying in the Nutrition and Dietetics Department;
- students with partial knowledge about sustainable development goals have higher levels of sustainable development awareness, economic sustainability, social sustainability, and environmental sustainability, as compared to those with no knowledge (Table 4).

Table 4. Comparison of sustainable development awareness scale and sub-dimension scores by gender and field of study (n=275)

Gender and field of study		Sustainable development awareness					Economic sustainability					Social sustainability					Environmental sustainability				
		Mean	SD	Rank Mean	Result	*p*	Mean	SD	Rank Mean	Resut	*p*	Mean	SD	Rank Mean	Result	*p*	Mean	SD	Rank Mean	Result	*p*
Gender	Female	148.29	22.51	145.49	**Z:-2.958**	**0.00***	51.99	8.28	144.87	**Z:-2.714**	**0.01***	39.27	6.99	144.72	**Z:-2.679**	**0.01***	57.03	9.11	146.20	**Z: -3.242**	**0.00***
	Male	138.00	27.27	111.15			49.12	8.82	113.39			36.43	8.92	113.93			52.45	10.70	108.60		
Field of study	Physiotherapy and Rehabilitation[a]	57	140.05	29.08	**χ^2: 7.905**	**0.02***	57	49.74	10.40	**χ^2: 3.222**	**0.20**	57	37.09	8.90	**χ^2: 7.597**	**0.02***	53.23	10.86	115.38	**χ^2: 9.861**	**0.01***
	Nutrition and Dietetics[b]	110	145.40	21.14			110	51.18	7.75			110	38.40	7.10			55.82	8.28	133.21		
	Nursing[c]	108	149.86	23.20			108	52.40	7.96			108	39.74	7.06			57.72	9.99	154.81		
	Difference	-	-	-	**a<c**		-	-	-	-		-	-	-	**b < c**		-	-	-	**a<c**	

Notes: Z – Mann-Whitney U Test, χ^2 – Kruskal-Wallis H Test, *p< 0.05, significantly at the 0.05 level.

There is a significant difference between students who intend to participate in a project for achieving SDGs and those who do not, regarding their concern about the effects of climate change, double-sided printing for paper conservation, preference for materials made from glass instead of plastic, and participation in projects related to environmental conservation (p<0.05). Among students who intend to participate in a project for achieving SDGs, 81.0% are concerned about the effects of climate change, whereas among those who do not intend to participate, 63.0% express concern. Similarly, 78.1% of students intend to participate, and 64.5% do not intend to participate in double-sided printing for paper conservation. Furthermore, 40.1% of students considering participation and 50.0% of those not considering participation prefer items made from glass over plastic. Concerning participation in projects related to environmental conservation, 41.6% of students intending to participate occasionally take part, while 57.2% of those not intending to participate do not engage in such projects (Table 5).

Table 5. Comparison of awareness of sustainable development based on an intention to participate in a project for achieving SDGs

Questions		Intention to participate in a project for achieving SDGs				Total		*p*
		Yes		No				
		n	%	n	%	n	%	
Concern about the effects of climate change	**Yes**	111	81.0	87	63.0	198	72.0	0.00*
	No	2	1.5	11	8.0	13	4.7	
	Occasionally	24	17.5	40	29.0	64	23.3	
Water conservation at home	**Yes**	91	66.4	79	57.2	170	61.8	0.051
	No	5	3.6	15	10.9	20	7.3	
	Occasionally	41	29.9	44	31.9	85	30.9	
Preference for using energy-efficient devices	**Yes**	78	56.9	80	58.0	158	57.5	0.93
	No	18	13.1	16	11.6	34	12.4	
	Occasionally	41	29.9	42	30.4	83	30.2	
Double-sided printing for paper conservation	**Yes**	107	78.1	89	64.5	196	71.3	0.00*
	No	2	1.5	19	13.8	21	7.6	
	Occasionally	28	20.4	30	21.7	58	21.1	
	Yes	55	40.1	69	50.0	124	45.1	0.02*

Preference for using materials made from glass instead of plastic	**No**	32	23.4	15	10.9	47	17.1	
	Occasionally	50	36.5	54	39.1	104	37.8	
Separation of waste into domestic waste, glass, paper, plastic, and metal	**Yes**	43	31.4	47	34.1	90	32.7	0.78
	No	45	32.8	40	29.0	85	30.9	
	Occasionally	49	35.8	51	37.0	100	36.4	
Participation in projects related to environmental conservation	**Yes**	41	29.9	13	9.4	54	19.6	0.00*
	No	39	28.5	79	57.2	118	42.9	
	Occasionally	57	41.6	46	33.3	103	37.5	
Total			137	49.8	138	50.2	275	100.0

Notes: *p* – Chi-Square Independence Test, **p*<0.05 statistically significant.

Discussion

The examination of students' awareness of SDGs and their related behaviors constitutes the unique value of the study. The research was conducted among three departments' students (Table 1). The existing studies in the literature have mainly focused on prospective teachers and have been limited to measuring only awareness levels [19-22]. Achieving SDGs is possible through raising awareness in conjunction with education within society [23], and the younger population plays a significant role in the context [24]. In order for individuals to effect changes in their respective fields, they need to have knowledge about SDGs in the first place [25]. A considerable portion of the participating students was found to possess knowledge about SDGs (Table 2). Schools are recognized as one of the most important sources of information. In the context, universities, which are expected to be educational and pioneering for individuals, are anticipated to engage in adopting and implementing SDGs actively. Uyanık [26] revealed that students who do not receive environmental education at school exhibit lower environmental attitudes and that as their environmental knowledge increases, their environmental attitudes also improve.

eISSN: 2354-0265, ISSN: 2353-6942

The results of another study conducted by Çobanoğlu and Türer [27] indicated that pre-service teachers studying in the Science Teaching Department have high levels of general and dimension-specific awareness about SDGs.. Similarly, a study by Ateş and Demirbaş [28,29] assessed the SDGs awareness of teacher candidates from different branches of the education faculty and indicated a generally high level of awareness in all departments.The findings support the current study (Table 3).

In accordance with the findings obtained from the research, when comparing awareness and behaviors regarding SDGs according to gender, it was determined that women have higher levels of awareness about SDGs, economic sustainability, social sustainability, and environmental sustainability, as compared to men (Table 4). Literature indicates that in economically developing countries, females are more concerned about the effects of climate change than males due to various reasons [30]. Studies in the literature that are in line with our results have been encountered. A study by Aleixo et al. [24] with university students showed statistically significant differences between genders in sustainable habits and behaviors. Another study involving 823 students from three different faculties found that university students' perceptions of SDGs vary significantly according to gender [31]. The situation could be explained by the nature of females being more emotional and empathetic in evaluating events and having more concerns about the future. The fact that females are inherently more sensitive and empathetic is believed to positively influence their awareness of environmental issues [27].

Like other studies in the literature, the present study also found a significant difference between the field of study and awareness of SDGs. There is a significant difference in SDGs awareness, social sustainability, and environmental sustainability scores according to the field of study (p<0.05). When looking at the pairwise comparisons made to determine which departments the differences are between, it is discovered that students studying in the Nursing Department have higher levels of SDGs awareness and environmental sustainability, as

eISSN: 2354-0265, ISSN: 2353-6942

compared to students studying in the Physiotherapy and Rehabilitation Department. Students in the Nursing Department also have higher levels of social sustainability than those in the Nutrition and Dietetics Department (Table 4). The reason for it is attributed to the education of nurses on humanistic values during their training. Student nurses are aimed at starting their profession with a high level of awareness by learning concepts such as human beings, environment, health, and disease. Throughout history, nurses have contributed to economic, social, and environmental sustainability through their initiatives. Being deeply intertwined with the community, nurses can develop practical solutions and implement them to bring about societal change. Particularly, they can play an essential role in environmental sustainability and the sustainability of life through various approaches to waste management and health improvement [32].

In line with the findings obtained from the research, it has been concluded that students develop largely positive behaviors along with their SDGs awareness [33]. Despite the acquisition of the positive attitudes, it was noted that individuals are somewhat hesitant to participate in environmental protection projects, and even though their awareness levels are high, participation in such projects is low (Table 5). The reason for individuals not participating in the projects is associated with their awareness not yet reaching the desired level and the knowledge they acquire remaining largely theoretical. The fact that students are not members of any environmental organization is also considered a major factor contributing to the situation. It may be recommended to add content related to sustainable development to university curricula to increase student participation.

eISSN: 2354-0265, ISSN: 2353-6942

Conclusions

Achieving SDGs is a global responsibility. For the resolution of issues and the benefit of future generations, each individual should take responsibility for attaining SDGs. In order to achieve it, a comprehensive understanding of sustainable development should be embraced, and the pursuit of SDGs should become a fundamental principle and objective. In the context, inter-agency collaboration should be established, and action plans that promote awareness among university students should be devised and encouraged. Utilizing the Internet, social media, and television channels effectively should be prioritized in promoting and informing about SDGs. Initiatives aimed at promoting the efficient use of energy and resources in all aspects of daily life should be undertaken to encourage students.

Based on the study's findings, students studying health sciences can be educated about sustainable development goals and increase their awareness. Health professionals with high awareness can support achieving strategic goals such as ensuring a healthy life, reducing mortality rates, and preventing malnutrition in children.

Limitations of the study

The study is limited to students enrolled in a foundation university's Faculty of Health Sciences and the measurement tools used in the research. Within the scope of the study, considering the possibility of incomplete and erroneous survey responses and anticipating a decrease in the number of participants, 349 Faculty of Health Sciences students were intended to be reached. However, during the study, contact was established with 275 students.

eISSN: 2354-0265, ISSN: 2353-6942

Disclosures and acknowledgements

The authors declare no potential conflicts of interest with respect to the research, authorship, and/or publication of this article.

This study was supported by the TÜBİTAK 2209-A University Students Research Projects Support Programme under project number "1919B012204981" and was presented as an oral presentation at the 1st International 21st National Nursing Congress.

Ethical approval for the research was obtained from the Istanbul Kültür University Ethics Committee (Approval no. E-51629536-199-61051, dated September 16th, 2022). Participant voluntariness was paramount in the study. Written consent was obtained from the selected group after providing information about the research purpose and the scientific use of data.

Artificial intelligence (AI) was not used in the creation of the manuscript.

References:

1. WCED. Report of the World Commission on environment and development: our common future. Oxford: Oxford University Press; 1987.
2. UNESCO. 2030 sustainable development goals [Internet]. UNESCO; 2015 [cited 2023 Jul 24]. Available from: https://www.Unesco.Org.Tr/Home/Announcementdetail/302
3. Önder H. Health as a sustainable development goal. Akademia Journal of Natural and Human Sciences. 2020; 6(1): 10-24.
4. Bozoğlu O, Ciğerim E. Sustainability, sustainable development and sustainable universities. Socrates Journal of Interdisciplinary Social Studies. 2020; 18: 146-158. https://doi.org/10.51293/socrates.273

5. Yılmaz H, Yücel T. International studies and criticisms in achieving sustainable development. International Academy of Management Journal. 2022; 3: 691-702. https://doi.org/10.33712/mana.1181239
6. Sachs J, Kroll C, Lafortune G, Fuller G, Woelm F. The decade of action for the sustainable development goals: sustainable development report 2021. Cambridge: Cambridge University Press. https://doi.org/10.1017/9781009106559
7. Gedik Y. Sustainability and sustainable development in social, economic and environmental dimensions. International Journal of Economy, Politics, Humanities and Social Sciences. 2020; 3(3): 196-215.
8. Grönland S, Saleem M, Roopli M, Mason J. Sustainable management education and an empirical five-pillar model of sustainability. The İnternational Journal of Management Education. 2022; 20: 3. https://doi.org/10.1016/j.ijme.2022.100658
9. Yılmaz H, Yücel T. International studies and criticisms in achieving sustainable development. International Academy of Management Journal. 2022; 5(3): 691-702. https://doi.org/10.33712/mana.1181239
10. Karabıçak M, Özdemir MB. Conceptual foundations of sustainable development. Süleyman Demirel University Visionary Journal. 2015: 6(13): 44-49.
11. Bingöl R, Alpsoy İ. Sustainable development policies and media in Turkey: creating social awareness in the news. Humanities Sciences. 2023; 18(4): 35-49. https://doi.org/10.12739/NWSA.2023.18.4.4C0256
12. Bayraktar HK. An evaluatıon on the relatıonshıp between sustaınable development and natural lıfe envıronments: eco vıllage examples in Italy. Journal of Strategic and Social Research. 2022; 6(2): 505-522. https://doi.org/10.30692/sisad.1101269
13. Amorós Molina Á, Helldén D, Alfvén T, Niemi M, Leander K, Nordenstedt H, et al. Integrating the United Nations sustainable development goals into higher education

globally: a scoping review. Glob Health Action. 2023; 16(1): 2190649. https://doi.org/10.1080/16549716.2023.2190649

14. Hatipler M, Köksalan N. Consumption awareness and sustainable development. 4. Asia Pacific International Congress on Contemporary Studies; 2020.
15. Hansen B, Stiling P, Uy WF. Innovations and challenges in SDG integration and reporting in higher education: a case study from the University of South Florida. International Journal of Sustainability in Higher Education. 2021; 22(5): 1002-1021. https://doi.org/10.1108/IJSHE-08-2020-0310
16. Uzun S. Determination of environmental awareness and sensitivity of university students: The example of Duzce University. Düzce University Faculty of Forestry Journal of Forestry. 2021; 17(1): 173-198.
17. Atmaca AC. Determining the sustainable development awareness of science teacher candidates. [Unpublished master's thesis]. Konya: Necmettin Erbakan University; 2018.
18. Fidell S, Tabachnick B, Mestre V, Fidell L. Aircraft noise-induced awakenings are more reasonably predicted from relative than from absolute sound exposure levels. The Journal of the Acoustical Society of America. 2013; 134(5): 3645-3653. https://doi.org/10.1121/1.4823838
19. Fischer D, King J, Rieckmann M, Barth M, Büssing A, Hemmer I, et al. Teacher education for sustainable development: a review of an emerging research field. Journal of Teacher Education. 2022; 73(5): 509-524. https://doi.org/10.1177/00224871221105784
20. del Carmen Pegalajar-Palomino M, Burgos-García A, Martinez-Valdivia E. What does education for sustainable development offer in initial teacher training? A systematic review. Journal of Teacher Education for Sustainability. 2021; 23(1): 99-114. https://doi.org/10.2478/jtes-2021-0008

21. Ferguson T, Roofe C, Cook LD. Teachers' perspectives on sustainable development: the implications for education for sustainable development. Environmental Education Research. 2021; 27(9): 1343-1359. https://doi.org/10.1080/13504622.2021.1921113
22. Timm JM, Barth M. Making education for sustainable development happen in elementary schools: the role of teachers. Environmental Education Research. 2021; 27(1): 50-66. https://doi.org/10.1080/13504622.2020.1813256
23. Olsson D, Gericke N, Boeve-de Pauw J. The effectiveness of education for sustainable development revisited–a longitudinal study on secondary students' action competence for sustainability. Environmental Education Research. 2022; 28(3): 405-429. https://doi.org/10.1080/13504622.2022.2033170
24. Aleixo Am, Leal S, Azeiteiro U. Perceptions of sustainable development among higher education students in Portugal. Cleaner Production Journal. 2021; 327: 129429. https://doi.org/10.1016/j.jclepro.2021.129429
25. Örmeci Güney G. University students' awareness of sustainable development differs according to their demographic characteristics. İnternational Journal of Social Sciences. 2023; 7(1): 911-937. https://doi.org/10.25295/fsecon.1212669
26. Uyanık G. Examination of Teacher Candidates' Knowledge Levels and Attitudes Regarding Environmental Problems. Online Journal of Science Education. 2016: 1(1): 30-41.
27. Çobanoğlu O, Türer B. Determining the sustainable development awareness of science and social studies teachers. International Journal of Turkish Educational Sciences. 2015; 5: 235-247.
28. Ateş H, Gül K. Analysis of the science curriculum in terms of sustainable development education. Yüzüncü Yıl University Faculty of Education Journal. 2019: 16(1): 101-127.
29. Demirbaş Ç. Sustainable development awareness levels of teacher candidates. Marmara

Geography Journal. 2015: 31: 300-316. https://doi.org/10.14781/mcd.09811

30. Ağıralan E, Sadioğlu U. Climate change awareness and social awareness: the example of Istanbul. Anadolu University Journal of Social Sciences. 2021: 21(2): 627-654. https://doi.org/10.18037/ausbd.959287
31. Tuncer M, Şen BG. Studies conducted in Turkey on Gender equality in preschool education. Eurasian Journal of Social and Economic Research. 2018; 5(12): 870-882.
32. Madenoğlu Kıvanç M, Türen S, Atakoğlu R, Kara Özçalık C. The importance of nurses in achieving sustainable development goals. Journal of Health and Life Sciences. 2020: 2(2): 74-78. https://doi.org/10.33308/2687248X.202022184
33. Wendlandt Amézaga TR, Camarena JL, Celaya Figueroa R, Garduno Realivazquez KA. easuring sustainable development knowledge, attitudes and behaviors: evidence from university students in Mexico. Environ Dev Sustain. 2022; 24: 765-788. https://doi.org/10.1007/s10668-021-01467-0