

Comparative research of ideas about environmental problems among students in different age groups

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ABSTRACT

In recent years, environmental problems have been increasing rapidly around the world and affecting a wide range of environments. Many campaigns are carried out to raise awareness about environmental problems. This study aims to determine the ideas of students at different education levels about environmental problems and to compare these ideas with each other according to their fields. The survey model was used as the research method. The study group of the research consists of a total of 298 students: 75 at the 4th grade level of primary school, 90 at the 7th grade level of secondary school, 56 at the 11th grade level of high school, and 68 at the 3rd and 4th grade level of the university. The "Environmental Problems Opinion Survey", consisting of four open-ended questions, for which validity studies were conducted, was applied to the study group. The descriptive analysis method was used to analyze the data. Environmental pollution is seen as the most important environmental problem at all levels of education. While the answer to the most important cause of environmental problems is littering at the primary school level, it is shown that people act unconsciously on environmental issues at other levels of education. While the answer to the question about your most frequent behavior to prevent environmental problems was "I throw away the garbage" at the primary school, high school and university levels, the answer to the question "I throw the garbage away" was encountered at the secondary school level. Finally, it was suggested that awareness-raising activities be held at all education levels regarding the solution of environmental problems. Based on all these results, it has been observed that similar answers are encountered at all levels of education regarding environmental problems. Conducting more studies to increase students' awareness of environmental problems is among the recommendations of this study.

Keywords: Environmental problems, comparative research, student ideas.

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INTRODUCTION

The environment is defined as the external environment with which living creatures on Earth maintain their relationships throughout their lives. Environmental pollution is caused by the negative effects on air, water and soil, which are the basic physical elements of nature, and the intense accumulation of foreign substances into the air, water and soil, which negatively affects the vital activities of living elements, causes structural damage to inanimate environmental elements and deteriorates their qualities. It is defined as a mixing event (Aydin, 2013).

The changing and developing growth of living spaces has brought about some environmental changes and transformations, and environmental problems have begun to become more noticeable (Long et al., 2021).

Environmental problems are one of the biggest problems in today's world. The two most important problems observed globally are climate change and environmental pollution (Shah et al., 2023). Many non-governmental organizations and countries are running campaigns to raise awareness of environmental problems and find

solutions. Various campaigns are carried out to raise awareness in our society and the aim is to reduce waste released into the environment and minimize environmental problems.

Ensuring ecosystem sustainability of countries, producing innovative solutions to problems, etc. In such cases, education undoubtedly has vital importance and value (Zafar et al., 2020). Because, thanks to education, information can reach and spread to large audiences (Asongu and Nwachukwu, 2018). In this context, projects aiming to raise students' awareness outside of classes are carried out in schools. At the same time, it is aimed to increase students' awareness of this issue by giving environmental courses in universities, especially in education faculties.

It has been stated in studies that teachers should be sufficiently conscious of environmental education (Ünal and Dımıřki, 1998). At the same time, training people who will bring radical solutions to environmental problems is effective in eliminating environmental problems (Uzun and Sađlam, 2005). For this reason, there are studies on environmental education and awareness conducted with primary school, secondary school, high school and university students.

Some of these studies are as follows. After the computer-assisted teaching carried out by Gökmen and Solak (2015), it was revealed that it had a positive effect on the success of teacher candidates regarding matter cycles. Yıldırım et al. (2012), in their study investigating the sensitivities of teacher candidates studying in different departments regarding environmental problems, concluded that there was no significant difference in the sensitivities of male and female teacher candidates regarding environmental problems. It was observed that there were significant differences in the sensitivity of teacher candidates towards environmental problems according to the departments in which they studied. Ateř (2013), in his study with prospective teachers, stated that as age increases, their perspective on nuclear energy becomes negative. Demirbař and Pektař (2009), in their study to determine the awareness of secondary school students about environmental problems, found that students mostly responded correctly to the environmental problems they encountered and frequently saw in daily life, but the greenhouse effect, global warming, which are current problems but whose causes are not thought to be emphasized in the teaching environment. They stated that they gave wrong answers on issues such as these and even made some misconceptions. In their study where Pınar and Yakıřan (2017) examined the drawings of primary school students about environmental pollution, they stated that primary school students had very limited knowledge about environmental pollution, stated that environmental pollution was mostly caused by garbage and that they thought that environmental pollution could be prevented largely by collecting garbage. Uyanık (2017) found that third-grade primary school students saw

humans as the biggest cause of environmental pollution. In their study, Çabuk and Karacaođlu (2003) found that, according to the opinions of university students, sufficient education on air, water and soil pollution was not given in formal education institutions.

In their study, Soran et al. (2000) investigated the opinions of prospective biology and chemistry teachers on environmental issues and stated that the knowledge levels of prospective biology teachers were higher than those of prospective chemistry teachers. Yılmaz et al. (2002) conducted a study with secondary school and university students and found that environmental education was insufficient and that students acquired environmental information from written and visual media. Szeberényi (2023) conducted a study to reveal university students' knowledge about renewable energy, researched their awareness of environmental awareness and environmental problems, and found that students were environmentally sensitive but were insufficient to become green consumer individuals by applying their theoretical knowledge in practice. Kukkonen et al. (2012), in their study investigating the sources from which university students get information about sustainable development and the environmental problems they deem most important, stated that the students stated that they mostly get information from television, newspapers, the internet, lectures, magazines and their friends, respectively. They stated that the environmental problems they consider important are climate change, lack of clean water, decrease in biodiversity, desertification, erosion, overgrazing and malaria, respectively. In their study where Dolenc Orbanić and Kovać (2021) examined the opinions of preschool and primary school teacher candidates regarding environmental awareness, attitude, behavior and environmental education, they stated that the teacher candidates had a relatively high environmental awareness and attitude and that the teacher candidates had a significant impact on the environmental awareness and attitudes of their departments. They concluded that it did not cause any difference. In their study where Dowarah et al. (2022) examined student awareness, attitudes, behavior and opinions regarding plastic and microplastic pollution, they concluded that women's awareness is higher than men's and those with higher education levels, and that special fields such as science are important in raising awareness. Pambudi et al. (2024) examined students' awareness of renewable energy in their study with students between the ages of 15 to 22, and because of their analysis, they stated that awareness increased with the increase in education level, but gender did not make a significant difference.

All these studies, conducted both at home and abroad, are mainly related to the perceptions and awareness of students at different education levels towards environmental pollution. Unlike these mentioned studies, in this study, the opinions of primary school, secondary school, high school and university students regarding

environmental problems will be examined comparatively.

This research aims to determine the opinions of students at different education levels regarding environmental problems that have been encountered frequently in the world in recent years and to compare these ideas with each other according to their education levels. In this way, the ideas of students at different education levels about environmental problems will be revealed and their awareness levels of environmental problems will be examined according to the change in age groups. At the same time, this research will also reveal the ideas of prospective teachers about environmental problems. Since teacher candidates are members of society and role models in educating future generations, it is necessary and important to reveal their ideas about environmental problems. In addition, science teacher candidates will teach about the environment and its protection when they start their teaching profession. Therefore, at this point, it is very important to reveal teacher candidates' awareness

of their environment and the ideas they have.

METHOD

Survey design was used as the research method. Survey design is a research approach that aims to describe a past or present situation as it exists. The important thing in this model is to observe what exists as it is, without changing it (Büyüköztürk et al., 2018; Karasar, 2005).

Working group

The study group of the research consists of a total of 298 students studying in primary school, secondary school, high school, and university. The distribution of the study group according to education levels is given in Table 1.

Table 1. Education levels of the study group.

Education level	Number of students	Age range
Primary school 4 th grade	75	10
Secondary school 7 th grade	90	13
11 th grade high school	56	17
University 3 rd and 4 th year	68	20-22
Total	298	

As seen in Table 1, the study group of the research; The sample consists of 75 students studying at the 4th grade level of primary school, 90 students studying at the 7th grade level of secondary school, 56 students studying at the 11th grade level of high school, and a total of 298 students studying at the 3rd and 4th grades of the university.

Data collection and analysis

The "Environmental Problems Opinion Survey" (EPOS) developed by the researchers was used as a data collection tool. The data collection tool consists of four open-ended questions. In the environmental problems opinion survey, "In your opinion, what is the most important environmental problem you face?" Explain why.", "What do you think is the most important reason for environmental problems? Explain your answer.", "What is your most common behavior to prevent environmental problems? Explain why.", "What would you suggest solving environmental problems? Explain why." questions are included. For the content validity of the questions in the survey, the opinions of three science and two biology field

experts and four expert science teachers were consulted. While the survey consisted of five questions before expert opinion, one question was removed from the survey after expert opinion. The environmental issue's opinion survey took its final form after expert opinion and was applied to the working group.

The descriptive analysis method was used to analyze the data obtained from the environmental problems opinion survey. In the descriptive analysis method, the data obtained from the study are summarized and interpreted within the framework of themes (Yıldırım and Şimşek, 2016). After analyzing the answers given by students at different education levels, the answer levels were compared according to grade levels.

RESULTS

This section includes the findings obtained from the analysis of students' answers to the EPOS. The first question of the survey was "In your opinion, what is the most important environmental problem you face?" "Explain why." The findings obtained from the analysis are presented in Table 2.

Table 2. Answers regarding the most important environmental problem encountered.

Answers	Primary school	Secondary school	High school	University
	f	f	f	f
Environmental pollution	34	18	25	28
Global warming	12	9	6	7
Exhaust gas	5	1	2	1
Forest fires	4	5	1	-
Sea pollution	8	15	-	10
Air pollution	5	18	5	15
Decrease in water resources	1	16	7	6
Unconscious hunting	1	1	-	-
Soil pollution	1	1	-	-
Cutting of trees	2	3	-	1
Unregulated urbanization	-	2	4	-
Sound pollution	-	-	3	-
Light pollution	-	-	2	-
Uncodable	2	1	1	-
Total	75	90	56	68

As seen in Table 2, environmental pollution was the most important environmental problem encountered at all education levels. While nearly half of the students at the primary school level give this answer, this rate is the lowest at the secondary school level. The second most common answer category at the primary school level is the global warming answer. At the secondary school level, air pollution, decrease in water resources and sea pollution were the most common answers, respectively. While the answer to sea pollution is not encountered at the high school level, other answers are frequently encountered at this level of education. Similarly, the answer categories of air pollution, sea pollution and depletion of water resources

were frequently encountered at the university level. Answers to sound pollution and light pollution were encountered only at the high school level. The response of irregular urbanization was encountered at the secondary school and high school levels but was not encountered at the primary school and university levels. The answers of two students at the primary school level and one student each at the middle school and high school levels were included in the uncodable answer category.

The second question: "What do you think is the most important cause of environmental problems?" The findings obtained from the analysis of the question "Explain your answer" are presented in Table 3.

Table 3. Answers regarding the most important cause of environmental problems.

Answers	Primary school	Secondary school	High school	University
	f	f	f	f
People acting unconsciously on environmental issues	20	30	32	41
Throwing garbage on the ground	29	24	4	2
People polluting the environment	7	20	15	18
Cutting of trees	4	-	-	-
Forest fires	4	-	-	-
Not using public transportation	2	4	1	2
Industry associations	2	9	1	2
No recycling	3	2	-	2
Rapid population growth	1	-	-	1
Uncodable	3	1	3	-
Total	75	90	56	68

To the question about the most important cause of environmental problems, the most common answer at

secondary school, high school and university levels, and the second most common answer at primary school level,

was that people act unconsciously on environmental issues. The most common response category at the primary school level and the second most frequently encountered at the secondary school level was littering. Although the answer that people pollute the environment is encountered at all education levels, it is the second most frequently encountered answer category at high school and university levels. Cutting down trees and forest fires were encountered only at the primary school level. The answers to not using public transportation and industrial

organizations were encountered at all education levels. The answer of "no recycling" was encountered at all education levels except the high school level. The answers given by three students each at the primary school and high school levels, and one student at the secondary school level were included in the uncodable answer category.

The third question of the survey was "What is your most frequent behavior to prevent environmental problems?" The findings obtained from the analysis of the question "Explain why" are given in Table 4.

Table 4. Your most common behavior to prevent environmental problems.

Answers	Primary school	Secondary school	High school	University
	f	f	f	f
I throw away the garbage	19	19	18	16
Warning those who act unconsciously	17	9	11	15
Recycling garbage	14	38	4	15
Using public transportation	6	4	3	4
Collecting garbage on the ground	9	4	8	-
Consuming sustainably	3	8	2	11
Planting trees	1	2	-	2
Turn off unnecessary lights	3	-	2	-
Raising environmental awareness	-	2	-	5
Uncodable	2	3	6	-
No answer	1	1	2	-
Total	75	90	56	68

Regarding the behavior you most frequently engage in to prevent environmental problems, the response "I throw away garbage" was encountered most frequently at all education levels except the secondary school level. While the answer "I warn those who act unconsciously" is the most common answer at primary and high school levels, the answer to "throw the garbage in recycling" was encountered at the same rate at the university level. At the secondary school level, the most common response was to recycle garbage. The answers to using public transportation and making sustainable consumption were encountered at all education levels. While the answer to picking up garbage on the ground was not encountered at the university level, it was encountered at other levels of education. The answer to raising environmental awareness was encountered at the secondary school and university levels. The answers of two students at the primary school level, three students at the secondary school level, and six students at the high school level were included in the uncoded answer category. One student each at the primary school and secondary school levels, and two students at the high school level did not express an opinion on the question.

The fourth question of the survey was "What would you

suggest solving environmental problems?" The findings obtained from the analysis of the question "Explain why" are shown in Table 5.

In the question regarding suggestions regarding the solution of environmental problems, the most common answer at all education levels was awareness-raising activities related to environmental pollution. The second most common answer category at primary and high school levels was the answer to not throw garbage into the environment. The second most common answer at the university level and the third most common answer at the high school level was to impose deterrent penalties on those who pollute the environment. The answer categories of using resources more consciously and recycling garbage were encountered at all education levels. The response categories of reducing the use of fossil fuels, controlling the waste of industrial enterprises and protecting forests were encountered at all education levels except the high school level. The answers of 12 students at the primary school level, four students at the secondary school level, and five students at the high school level could not be coded. Two students at the secondary school level and three students at the high school level did not answer this question.

Table 5. Answers regarding suggestions for solving environmental problems.

Answers	Primary school	Secondary school	High school	University
	f	f	f	f
Awareness-raising activities about environmental pollution	17	20	28	39
Not throwing garbage into the environment	13	12	8	3
Giving deterrent penalties to those who pollute the environment	4	4	7	11
Reducing fossil fuel use	8	8	-	2
Using resources more consciously	1	9	3	4
Recycling garbage	8	17	2	1
Inspection of waste from industrial establishments	6	11	-	7
Protect forests	6	3	-	1
Uncodable	12	4	5	-
No answer	-	2	3	-
Total	75	90	56	68

DISCUSSION AND CONCLUSION

This study was carried out to determine the ideas of students at different education levels about environmental problems and to compare these ideas with each other according to their education levels; It has been concluded that environmental pollution is seen as the most important environmental problem at all education levels. This answer was followed by global warming, sea pollution, air pollution and exhaust gas answers in primary school students; air pollution, depletion of water resources and sea pollution among secondary school students; Depletion of water resources and global warming among high school students; Among university students, air pollution and sea pollution are the most common answers. In their study where Erduran Avcı et al. (2013) examined 8th grade students' perceptions of environmental problems with the help of different techniques, they found that the environmental problems themes of the students were mostly collected in the answers of air pollution, visual pollution and water pollution. Similarly, Özdemir et al., (2004) stated in their study with medical faculty students that they saw air pollution as the most important environmental problem. Similarly, in the studies conducted by Negev et al., (2010) and Yalçınkaya (2013), it is seen that air pollution and water pollution come first among the answers given by students as the most important environmental problem. Based on all these, studies conducted with students at different education levels reveal similar results. In addition, considering the students' answers to the question, the fact that environmental pollution is frequently brought to the agenda both in the media and in daily life and that its name is frequently mentioned while remaining up to date may have been effective in giving the most frequently given answer.

The answer was given that the most important cause of environmental problems is littering at the primary school level. Similarly, Yüzuak et al. (2022) stated in their study of

secondary school students that the students mostly responded to environmental problems with garbage. Pınar and Yakışan (2017), in their study where they examined primary school students' drawings about environmental pollution, revealed that primary school students stated that environmental pollution was mostly caused by garbage. Especially in primary school, since the emphasis on not throwing garbage on the ground is frequently emphasized in raising environmental awareness among students, it is targeted and expected for students to be good observers of their environment in this regard.

It has been shown that the most important reason for environmental problems is that people at other levels of education behave unconsciously on environmental issues. In their study with 12th grade students, Yenice and Alpak Tunç (2021) concluded that all the students focused on humans as the source of environmental problems. Similarly, in their study with gifted students, Nacarođlu and Bozdađ (2020) found that the most common answers given by students regarding the causes of environmental problems were garbage and waste, cutting down trees and people. In the study conducted by Yurtaş (2023) with preschool students aged 5, the most common answers given by children to environmental problems were garbage around, animal deaths, air pollution, sea pollution and green area pollution. In addition, it has been observed that the most common answer to the causes of environmental problems is to throw garbage around, and finally, the first thing to do to solve environmental problems is to collect garbage. In his study with secondary school students, Kırılmazkaya (2022) found that the environmental problems that students were most disturbed by were garbage waste, air pollution and water pollution, under the theme of pollution. It was observed that students' opinions on environmental problems that they consider important were evaluated under two themes: pollution and lack of sensitivity, and finally, students' solution suggestions for environmental problems were collected under the

themes of social enterprise and pollution prevention protection.

When asked about your most frequent behavior to prevent environmental problems, the answer to the question "I throw away the garbage the most" was encountered at primary school, high school and university levels, while the answer to "recycle garbage" was encountered at the secondary school level. At this point, the fact that the most common answer given by secondary school students is to recycle garbage may be an indication that they have a more conscious attitude and act more consciously about environmental awareness and environmental attitude. In addition, the information they received about household waste and recycling in science class may cause secondary school students to act more carefully and aware at this point. When asked about their most common behavior to prevent environmental problems, the answer of primary school, high school, and university students to the question "I throw away the garbage" is to warn unconscious behavior; the answer of secondary school students is to throw away the garbage. In the study they conducted with secondary school students, Yüzuak et al. (2022) stated that the students gave the most warning answers regarding the solution to environmental problems.

It has been suggested that awareness-raising activities should be held at all education levels regarding the solution of environmental problems. Similarly, in the study conducted by Uzun (2021) to determine the environmental awareness and sensitivity of university students, the answer that people should be made aware of the environment is among the most common answers given by university students regarding the solution to environmental problems. The answer to the suggestion of holding awareness-raising activities at all levels of education regarding the solution of environmental problems is the answer of primary school students to not throw garbage into the environment. The answer of secondary school students to recycle garbage is; that this is followed by the answer of high school students not to throw garbage into the environment and finally by university students the answer of giving deterrent penalties to those who pollute the environment. This response of primary and high school students is an indication that they have a basic environmental awareness. It can be concluded that secondary school students are more aware of waste separation and recycling. The response of university students to give deterrent penalties to those who pollute the environment can be considered as an indication that they pay attention to more ethical and moral evaluations towards the solution of environmental problems.

Based on all this, the following suggestions can be made. Various awareness-raising activities can be carried out by working collaboratively with various institutions and organizations to raise nature-friendly individuals and increase environmental awareness. By drawing attention

to the importance of environmental education in their lessons, teachers can include in-class and out-of-class practices that will increase students' awareness of the environment and develop positive attitudes.

REFERENCES

- Asongu, S. A., and Nwachukwu, J. C. (2018). Educational quality thresholds in the diffusion of knowledge with mobile phones for inclusive human development in sub-Saharan Africa. *Technological Forecasting and Social Change*, 129, 164-172. <https://doi.org/10.1016/j.techfore.2018.01.004>
- Ateş, H. (2013). Views of pre-service science teachers about nuclear energy. [Master Thesis], Erciyes University.
- Aydin, G. (2013). *Science and class teacher candidates' knowledge level about heavy metal radiation pollution: Giresun University example* [Master thesis], Giresun University.
- Büyükköztürk, Ş., Kılıç Çakmak, E., Akgün, Ö. E., Karadeniz, Ş., and Demirel, F. (2018). *Scientific research methods*. Pegem Academy.
- Çabuk, B., and Karacaolu Ö. C. (2003). Investigation of environmental sensitivity of university students. *Ankara University Journal of Faculty of Educational Sciences*, 36(1), 189-198. https://doi.org/10.1501/Egifak_0000000079
- Demirbaş, M., and Pektaş, H. (2009). Primary school students' level of realization of basic concepts related to environmental problems. *Necatibey Faculty of Education Electronic Journal of Science and Mathematics Education*, 3(2), 195-211.
- Dolenc Orbanic, N., and Kovač, N. (2021). Environmental awareness, attitudes, and behaviour of preservice preschool and primary school teachers. *Journal of Baltic Science Education*, 20(3), 373-388. <https://doi.org/10.33225/jbse/21.20.373>
- Dowarah, K., Duarah, H., and Devipriya. S. (2022). A preliminary survey to assess the awareness, attitudes/behaviours, and opinions pertaining to plastic and microplastic pollution among students in India. *Marine Policy*, 144, 105220. <https://doi.org/10.1016/j.marpol.2022.105220>
- Erduran Avcı, D., Demirekin, M., Hare, O., Özlü, S., and Özkan, İ. (2013). Investigation of 8th grade students' perception of environmental problems with different techniques. *Journal of Science Teaching*, 1(2), 50-66.
- Gökmen, A., and Solak, K. (2015). The effect of computer assisted instructor in environmental education on the achievement of preservice teachers about matter cycle topic. *Gazi University Gazi Faculty of Education Journal*, 35(3), 575-594.
- Karasar, N. (2005). *Scientific Research Method*. Nobel Publishing House.
- Kırlmazkaya, G. (2022). Secondary school students' views on environment and environmental problems. *Adnan Menderes University Faculty of Education Journal of Educational Sciences*, 13(1), 1-11.
- Kukkonen, J., Karkkainen, S., and Keinonen, T. (2012). University students' information sources of education for sustainable development issues and their perceptions of environmental problems. *Problems of Education in the 21st Century*, 39, 93-104.
- Long, C., Jiang, Z., Shangguan, J., Qing, T., Zhang, P., and Feng, B. (2021). Applications of carbon dots in environmental pollution control: A review. *Chemical Engineering Journal*, 406, 126848. <https://doi.org/10.1016/j.cej.2020.126848>
- Nacaroğlu, O., and Bozdağ, T. (2020). An investigation into the perceptions of gifted students on environmental problems by using word association test. *GEFAD / GUJGEF*, 40(2), 385-409.
- Negev, M., Garb, Y., Biller, R., Sagy, G., and Tal, A. (2010). Environmental problems, causes, and solutions: An open question. *The Journal of Environmental Education*, 41(2), 101-115.
- Özdemir, O., Yıldız, A., Ocaktan, E., and Sarışen, Ö. (2004). Awareness and sensibility levels of medical students. *Journal of Ankara University Faculty of Medicine*, 57(3), 117-127.
- Pambudi, N. A., Nanda, I. R., Alfina, F. T., Syahrial, A. Z., and Syahrial, A. Z. (2024). Renewable energy education and awareness among Indonesian students: Exploring challenges and opportunities for a sustainable future. *Sustainable Energy Technologies and*

- Assessments, 63, 103631. <https://doi.org/10.1016/j.seta.2024.103631>
- Pınar, E., and Yakiřan, E. (2017). Analyze of the drawings on environmental concepts of the primary school students. *Trakya University Journal of Education Faculty XV. International Primary Teacher Education Symposium* (11-14 May 2016). IPTES 2016 Special Issue, 97-113. <https://doi.org/10.24315/trkefd.366693>
- Shah, S. Q. A., Waris, U., Ahmed, S., Agyekum, E. B., Hussien, A. G., Kamal, M., Rehman, M. U., and Kamel, S. (2023). The role of remittance and education for environmental pollution: Analyzing in the presence of financial inclusion and natural resource extraction. *Heliyon*, 9(6), e17133. <https://doi.org/10.1016/j.heliyon.2023.e17133>.
- Soran, H., Morgil, F. İ., Yücel, S., Atav, E., and Iřık, S. (2000). Investigation of biology students' interest in environmental issues and comparison with chemistry students. *Hacettepe University Journal of Education Faculty*, 18, 128-139.
- Szeberényi, A. (2023). Study on the knowledge of renewable energies among the younger generation. Selected Aspects of Modernization Processes in "Younger Europe"- Past and Present (pp.207-223) Publisher: Wydawnictwo Uniwersytetu Rzeszowskiego.
- Uyanık, G. (2017). Opinions towards environmental pollution of primary school students. *YYU Journal Of Education Faculty*, 14(1), 1574-1600. <http://dx.doi.org/10.23891/efdyyu.2017.56>
- Uzun, N., and Sađlam, N. (2005). Effect of socio-economic status on environmental awareness and environmental academic success. *H.U. Journal of Education*, 29, 194-202.
- Uzun, S. (2021). Determination of environmental awareness and sensitivity of university students: The case of Düzce University. *Düzce University Journal of Forestry*, 17(1), 173-198.
- Ünal, S. and Dımıřkı, E. (1998). Training teachers for secondary education environmental education according to UNESCO International Environmental Education Program (IIEP). *Marmara University Atatürk Faculty of Education Journal of Educational Sciences*, 10(10), 299-308.
- Yalçınkaya, E. (2013). Environmental issues to 8th grades elementary education students: A qualitative study. *Marmara Geography Journal*, 27, 416-439.
- Yenice, N., and Alpak Tunç, G. (2021). Environmental ethics of secondary school 12th grade students examining their perceptions: A case study. *Bođaziçi University Education Journal*, 38(2). <https://doi.org/10.52597/buje.932005>
- Yıldırım, A., and řimřek, H. (2016). *Qualitative Research Methods in the Social Sciences*. Seçkin Publications.
- Yıldırım, C., Bacanak, A., and Özsoy, S. (2012). Pre-service teachers' sensibilities towards environmental problems. *Kastamonu Education Journal*, 20(1), 121-134.
- Yılmaz, A., Morgil, F. İ., Aktuđ, P., and Göbekli, İ. (2002). Knowledge of the secondary school and university students on the environment, environmental concepts and problems and suggestions. *Hacettepe University Journal of Faculty of Education*, 22, 156-162.
- Yurttař, A. (2023). Perceptions of preschool five-year-old children about environmental problems. *Trakya Journal of Education*, 13(1), 695-710. [Doi: 10.24315/tred.1084475](https://doi.org/10.24315/tred.1084475)
- Yüzüak, A. V., řahin, N., and Alkan, R. (2022). Elementary school students' views about the zero waste project. *YYU Journal of Education Faculty*, February Special Issue, 214-239. [doi:10.33711/yyuefd.1068106](https://doi.org/10.33711/yyuefd.1068106).
- Zafar, M. W., Qin, Q., and Zaidi, S. A. H. (2020). Foreign direct investment and education as determinants of environmental quality: The importance of post Paris Agreement (COP21). *Journal of Environmental Management*, 270, 110827. [doi: 10.1016/j.jenvman.2020.110827](https://doi.org/10.1016/j.jenvman.2020.110827)

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