Chapter 4

Research of Awareness of Renewable Energy Sources: A Practice on Associate Education Students

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Abstract

Renewable energy sources are important for Turkey and countries with high geopolitical potential likewise. It is expected that our energy dependence could be eliminated by accurate planning of our energy resources and powerful energy policies. Turkey has potential of renewable energy sources with the high number of sunny days, its development in agriculture and livestock and being surrounded by the sea on three sides. Building a balanced global energy economy over the years will largely depend on renewable energy sources. Energy is one of the measures of the economic development and welfare level of countries. In this point, it is of major importance to know the renewable energy sources in our country and to have awareness about these sources. In this contended, the goal of this study is to define identifying factors in the awareness levels of associate degree students studying in social sciences departments about renewable energy sources. A survey has been applied to 414 associate degree students studying at Trabzon University, Beşikdüzü and Vakfikebir Vocational School, Department of Office Services and Secretarial Services, Foreign Trade, Accounting and Tax, Marketing and Advertising, Management and Organization, Finance-Banking and Insurance in order to identifying factors in the awareness levels regarding renewable energy sources. Two independent groups of t-tests and ANOVA tests have been performed in the analysis of the data. As consequence, it is clarified that there is a meaningful difference between the level of awareness of the students about renewable energy sources, gender, and education level of the parents. However, it has also been identified that there is no difference in the grade of

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awareness of renewable energy sources between the department where they study and whether they study or take courses on renewable energy sources. Consequently, the results of the study indicate that gender and parental education are determinants in the differences of students regarding renewable energy sources.

1. Introduction

Fossil fuels (coal, oil, natural gas) are the main sources used to obtain energy. When they are burned, their emissions, especially carbon dioxide (CO_2), pollute the environment and render the air, water and soil unusable. In addition, it causes global warming by covering our world with a blanket of greenhouse gases. With the rise of the industry, the development of technology and the increase in population, the demand for energy is soaring day by day. Fossil fuels, which are still our primary energy source, are expected to run out within a few centuries. Increases in energy demand are reflected in the energy market, increasing energy prices due to depletion of fossil fuels [20]. The world has folded to alternative energy sources because of the material, spiritual problems of fossil fuels. Alternative energy sources are separated renewable and non-renewable energy sources. Renewable energy sources are named after unlimited reserves. It is also regenerative, accessible and harmless. It is suitable for use in transportation, home and work places, heating systems, industry, etc. Solar energy, wind energy, geothermal energy, hydraulic energy and bio-mass energy are renewable energy sources [1,34].

One of the criteria that illustrate development and welfare levels of countries is the amount of energy production and consumption. Turkey is not a country rich in fossil fuels. That's why it imports most of its energy. Turkey, whose population is increasing day by day, is a developing country with its growing technology and industry. Therefore, the energy demand is gradually increasing [30]. The rise of welfare level of a country and being a self-sufficient country basically depend on energy production. Taking into account of Turkey's high number of sunny days, the three sides surrounded by sea, the availability of climate conditions, development of agriculture and livestock etc., the potential for renewable energy sources is remarkable [1,4,16].

There are predominantly fossil fuel energy systems in energy production. It is aimed to transform it into renewable energy-sourced production systems with new installations, if possible, over time. However, the utilization of renewable energy resources could not reach the desired level due to high initial investment costs, the lack of a logistics network as developed as fossil fuels, and especially the lack of information. Renewable energy resources

education in Turkey is provided only in engineering-trained faculties and in some vocational schools. People should be aware of the existence of environmentally friendly, sustainable and cheap energy sources such as renewable energy sources besides the harm caused by fossil fuels to the environment [16, 20, 30, 34].

With consciousness created, individuals from all parts of society are targeted to support renewable energy sources**.** Thus, our country will turn into a cleaner country that can generate its own energy and with a higher level of prosperity. Our energy need is growing via developing technology, rising industry and increasing population. While seeking solutions in this regard, it is important that young population, who represent the future, are supposed to have knowledge about renewable energy sources. Various studies have been carried out in the literature to identify this situation and to propose solutions. Some of these studies are listed below.

Ozil et al, investigated the awareness of engineering and economics/ business students studying in Canada, Romania and Turkey about renewable energy sources and environmental problems. In conclusion, they found out that renewable energy resources and environmental problems could be described based on cultural and socio-economic factors [29]. Karabulut et al, purposed to investigate the level of renewable energy resources education at the university. This context, they surveyed faculty members in different universities and departments in Turkey. As a consequence of the study, they determined that renewable energy sources in Turkish universities were described as lessons in some engineering departments, but that information was encyclopaedic and inadequate [21]. Karatepe et al., conducted a survey about renewable energy resources to 102 students studying at Marmara University, Afyon Kocatepe University and Düzce University. Surveys were evaluated with the SPSS program. Consequently, they conveyed the necessary actions to raise the awareness of university students about renewable energy sources [22].

Bilen et al, examined the attitudes of science teacher candidates studying at Pamukkale University, Faculty of Education, towards renewable energy sources. In study, they used the likert-type Renewable Energy Attitude scale consisting of 39 questions. The survey was applied to 254 science teacher candidates. In conclusion, it was identified that the awareness levels of science teacher candidates studying in different classes were at different levels [5]. Bozdoğan and Yiğit conducted a survey to 172 fourth grade teacher candidates studying in mathematics, social studies, science and classroom teaching departments to examine their views on alternative

energy sources. Consequently, it was concluded that the students supported alternative energy sources such as sun, wind and water, which they thought were nature friendly [6]. Irmak et al, in their study, aimed to ensure that renewable energy sources were included in the curriculum of educational institutions and to contribute to the development of energy policies. In this context, a questionnaire was applied to 322 students studying at state, private colleges and universities in Ankara [17]. İpekoğlu et al, improved a questionnaire to quantify the renewable energy awareness of university students. Content validity and construct validity of the test provided by expert opinion were provided by exploratory factor analysis [18]. Tiftikçi, conducted a like-type survey obtained from the literature to 442 senior university students studying in different departments to investigate their awareness of renewable energy sources. In conclusion, it was clarified that the awareness of the students studying in the science teaching department about renewable energy sources was higher than the students in the other department [32]. Çakırlar, investigated the awareness level of secondary school students about renewable energy sources in the study. He used qualitative and quantitative methods in the study he carried out with the participation of 600 students in Ankara in 2014-2015. In conclusion, it was clarified that the awareness level of the students about renewable energy sources was middle level [7].

Kacan, conducted an awareness study on renewable energy sources in vocational and technical education. He applied the awareness survey on renewable energy resources to vocational school students and graduates. In line with the references of the Anova test conducted in the study, it was clarified that there was a meaningful difference in the awareness levels of the students. As a consequence, the study suggested that a potential workforce could be created for the local industry by establishing the "Alternative Energy Resources Technology Programme" [19]. Çelikler et al, examined the views of 12th grade students studying in different types of high schools about renewable energy sources. They applied "Renewable Energy Resources Attitude Scale" with 37-item survey to 257 students. The data were applied with the SPSS program. Consequently, it was concluded that the students had a positive behaviour towards renewable energy sources but did not have sufficient knowledge [9]. Çelikler and Aksan, improved a scale that can evaluate high school students' attitudes towards renewable energy sources. A questionnaire with 48-item prepared with a 5-point likert type was used to evaluate the attitudes of 433 students studying in the 9th, 10th, 11th, and 12th grades of a high school in Turkey towards renewable energy sources [8].

Demir et al, applied a survey to 381 students studying at Atatürk University to examine their knowledge and awareness levels about global warming [11]. Mutlu, examined the awareness of candidate teachers studying in Physics, Chemistry and Biology departments at different universities about renewable energy sources. Thus, a questionnaire was administered to 161 candidate teachers studying in 2014-2015. Additionally, 30 teachers graduated from the same departments were asked their opinions and thoughts on renewable energy sources. Thus, he used qualitative and quantitative observations together. As a consequence of the analyses, the "Renewable Energy Awareness Survey" was created. Subsequently, it was clarified that there was no significant difference between the students who were still studying and graduate students about the awareness of renewable energy sources [27] Eren et al, conducted a survey on renewable energy sources and environmental problems to 261 students studying at Mustafa Kemal University, Faculty of Agriculture. They determined that the students did not have enough knowledge about renewable energy sources [13].

Assali et al, conducted a survey to determine the knowledge level of students studying at An-Najah National University in Palestine on renewable energy sources. In conclusion, they determined that renewable energy sources were independent of gender, education level, education level of parents and they had incomplete information on this subject. In addition, they found out that students from vocational high schools were more knowledgeable about renewable energy sources [3]. Mertoğlu, conducted a survey on 395 university students studying at different universities in order to examine their awareness about renewable energy sources. As a result of the study, the author found that the students' awareness did not change in respect of faculties [25]. Uğur et al, examined the opinions of candidate teachers studying in the department of science teaching about renewable energy sources. In the study, the phenomenology pattern, which was one of the qualitative research methods, was used. Consequently, it was determined that the students were conscious of the matter of renewable energy sources [33]. Oral, investigated awareness of renewable energy sources through survey data collection. In the research, he used the "Renewable Energy Resources Attitude Scale" developed by Morgil et al, in 2006. The survey was applied to 303 students who studying Literature Faculty at Karabük University between 2019 and 2020. Eventually, it was found that students had information about renewable energy sources [26, 28].

Arı and Yılmaz, conducted a survey on the renewable energy perceptions of Eskişehir Osmangazi University Department of Statistics and Erciyes University Energy Systems Engineering students. Concerning the analysis,

it was concluded that the rise in the environmental concerns of the people reflected positively on the perception of renewable energy benefits [2]. Çorakbaş and Çeken, compiled the studies on renewable energy resources education between the years 2010-2020. At this point, they examined renewable energy education researchers in terms of methodological features. In their studies, they identified researches on renewable energy education and analyzed them methodically [10]. Durmuş et al, researched the awareness grades of students studying at the department of agricultural economics at Çanakkale Onsekiz Mart University about renewable energy. In the study, they applied a questionnaire to 150 students using the proportional sampling method. As a consequence, it was clarified that the students had information about renewable energy sources, but their information grade was not sufficient [12]. Eşme et al, examine candidate teachers' awareness of environmental problems and renewable energy. In the study, they applied it to 222 teacher candidates studying in different departments in the 2020-2021 academic year. They used the "Renewable Energy Awareness Scale" in the survey study. They used the SPSS program for data analysis. In conclusion, it was clarified that the candidate teachers' awareness of environmental issues and renewable energy sources was loud [14]. Kazazoğlu and Erkal investigated the environmental awareness levels of 392 undergraduate students at Hacettepe University Beytepe Campus and their perspectives on environmental problems. In their research, they used the "Environmental Awareness" and "Behaviour towards Environmental Problems" scales. Ultimately, they discovered that there was a difference between the status of students' membership in environmental organizations and their participation in environmental-related activities [24].

When the studies related to the subject in the domestic and foreign literature are examined, it is seen that the level of knowledge about renewable energy sources is generally at a medium or high level among individuals who receive education on the subject. It is generally at a low level in individuals who have not received any training on the subject. However, it has been determined that there are limited studies on the awareness of renewable energy resources of associate degree students studying in the field of social sciences in the literature. At this point, the goal of this study is to clarify the determining features of the awareness of renewable energy resources of the students studying at the associate degree in social sciences departments. In this regard, 414 associate degree students studying at Trabzon University, Beşikdüzü and Vakfikebir Vocational Schools, Department of Office Services and Secretarial, Foreign Trade, Accounting and Tax, Marketing and Advertising, Management and Organization, Finance-Banking and

Insurance were examined. In the study, two independent groups t-test and ANOVA test were applied. SPSS 23 program was utilized in the analysis of the data. Results were reported in tables and the findings were evaluated.

2. Methodology

2.1. The Purpose and Importance of the Research

In the paper, it is purposed to clarify the awareness of associate degree students studying in the field of social sciences about renewable energy sources. The principal motivation of the study is to identify the determining factors in the awareness grades of associate students studying in the field of social sciences about renewable energy sources and to compose an awareness of policy makers with the findings obtained.

2.2. Working Group

The study group of the study consists of associate degree students studying at Trabzon University in the department of Office and Secretarial Services, Foreign Trade, Accounting and Tax, Marketing and Advertising, Management and Organization, Finance-Banking and Insurance. In this context, a total of 414 students studying at Trabzon University, Beşikdüzü and Vakfikebir Vocational Schools joined in the study.

2.3. Data Collection Tool

Survey forms have been utilized as data collection tools in the study. The survey form has been designed concretely and has been conducted face-to-face on the relevant sample. The survey form consists of two parts. The first part consists of a total of 6 (six) questions with personal information. This section of the "Personal Information Form" contains questions about gender, age, educational status of parents, the educational department, and whether the student has previously taken a course or training on renewable energy sources. In the second part of the survey, the "Renewable Energy Awareness Scale" is included. In the study, Morgil et al. The "Awareness Scale of Renewable Energy Sources" developed by (2006) in English was utilized [26]. This scale, which was developed in the five-likert type, was organized to Turkish by Tiftikçi [32]. In the study, the Turkish version of the scale developed by Morgil et al. and consisting of 39 questions was used by Tiftikçi [26,32]. The questionnaire questions were evaluated within the five-point likert scope. Their responses were developed in the form of "I strongly disagree, I disagree, I am undecided, I agree, I definitely agree".

2.4. Data Set and Sample

The data obtained from the surveys applied to 414 students studying at Department of Office Services and Secretarial, Foreign Trade, Accounting and Tax, Marketing and Advertising, Management and Organization, Finance-Banking and Insurance at Trabzon University, which form the study group, compose the data set of the study. To determine the sample, acceptable sample size calculation for a particular universe developed by Sekaran and Bougie and generally accepted in the literature was used [31].

2.5. Limitation of The Study

The study includes students in departments of Office and Secretarial Services, Foreign Trade, Accounting and Tax, Marketing and Advertising, Management and Organization, Finance-Banking and Insurance, studying at Trabzon University, Beşikdüzü and Vakfikebir Vocational School. Accordingly, the results of the study are not generalized for other university students studying at the associate degree level in the field of social sciences.

2.6. Method

In the study, two independent groups t-test and ANOVA test were applied. During the analysis of the data, SPSS 23 program was utilized. The compliance of the research with the ethical rules was accepted with the permission of Trabzon University Social and Humanities Research and Publication Ethics Committee dated 08/04/2022 and numbered 2022-4/1.9.

3. Findings

3.1. Descriptive Statistics

The statistical findings regarding the personal information in the first part of the questionnaire utilized as a data collection tool in the study are presented in Table 1.

Table.1. Descriptive Statistics

Criteria		Number	Percentage (%)
Gender	Woman	154	37.2
	Men	260	62.8
Age	Between18-20	201	48.6
	Between 21-23	188	45.4
	24 and above	22	5.3
Department	Office and Secretarial Services	119	28.7
	Management and Organization	52	12.6
	Accounting and Tax	63	15.2
	Finance- Banking and Insurance	60	14.5
	Foreign Trade	56	13.5
	Marketing and Advertising	64	15.5
Mother's Educational Status	Primary school	199	48.1
	Secondary school	110	26.6
	High school	66	15.9
	Associate degree	21	5.1
	Bachelor's degree	4	1.0
	Master degree	1	0.2
Father's Educational Status	Primary school	160	38.6
	Secondary school	132	31.9
	High school	91	22,0
	Associate degree	13	3.1
	Bachelor's degree	11	2.7
	Master degree	4	1.0
Status of Education or Training on Renewable Energy Sources	Yes	71	17.3
	No	340	82.7

Table 1 shows the statistical findings regarding the gender, age, department of education, educational status of parents and whether they have received education about renewable energy sources of the respondents. According to the information in the table, it is seen that 154 (37.2%) of the 414 respondents are female and 260 (62.8%) are male. It is seen that 201 (48.9%) of the respondents are between the ages of 18-20, 188 (45.4%) are between the ages of 21-23, and 22 (5.3%) are 24 years old and over. It is discovered

that 3 out of 414 students (0.7%) who have participated in the survey has not answered the age question. It is observed that 119 students (%28.7) are studying in Office and Secretarial Services, 52 students (%12.6) in Management and Organization, 63 students (%15.2) in Accounting and Tax, 60 students (%14.5) in Finance-Banking and Insurance, 56 students (%13.5) in Foreign Trade, 64 students (%15.5) in Marketing and Advertising. Also, 199 (48.1%) of the respondents stated that their mother's educational status was primary school, 110 (26.6%) were secondary school, 66 (15.9%) were high school, 21 (5.1%) were associate degree, 4 (1%) were bachelor's degree, 1 (0.2%) were graduate. Regarding whether they had education or training on renewable energy sources, 71 (17.3%) of the respondents answered yes and 340 (82.7%) answered no. 3 people (0.7%) did not answer this question.

3.2. Reliability Analysis

Reliability analysis has been developed in order to interpret the characteristics and reliability of the tests used in the measurement of surveys or scales [23]. One of the models used in the reliability analysis is the Alpha (α) model.

It is a weighted standard mean of change calculated by proportioning the sum of the variances of the problem k on a scale to the overall variance. It is called the Cronbach's (Alpha) coefficient and has a value between 0 and 1. It is interpreted as follows [23]:

- The scale is not reliable if $\alpha \leq 0.00 \leq \alpha \leq 0.40$,
- If $\alpha \leq 0.40 \leq \alpha \leq 0.60$, the reliability of the scale is low,
- If the scale is $0.60 \leq \alpha \leq 0.80$, the scale is quite reliable,
- If the value is $0.80 \leq \alpha \leq 1.00$, the scale is a highly reliable scale.

The results of the reliability analysis conducted within the scope of the Alpha (α) model concerned to the study are presented in Table 2.

Table 2. Reliability Analysis References

Cronbach's Alpha	Standardized Cronbach's Alpha	Number of Questions
0.727	0.0734	39

In Table 2, it is seen that the Cronbach's Alpha coefficient of the scale is calculated as 0.727. In this direction, it is possible to state that the scale used in the study is at a fairly reliable level.

3.3. Normality Test

In the study, skewness and kurtosis values of the data were examined to examine whether the data indicated a normal distribution. Therefore, the skewness and kurtosis values related to the question items included in the study are presented in Table 3.

Table 3. Skewness and Kurtosis Values Related to the Question Items

Question Item	Skewness	Kurtosis	Question Item	Skewness	Kurtosis
1	0.694	0.614	21	-0.557	-0.387
2	0.665	0.255	22	0.736	0.421
3	0.008	-0.416	23	-0.414	-0.803
4	1.381	2.048	24	1.184	1.277
5	-0.255	-0.738	25	-0.676	-0.32
6	0,874	0.337	26	-1.345	1.437
7	-0.974	0.475	27	-0.694	-0.781
8	0.208	0.069	28	1.121	0.641
9	-0.078	-0.566	29	-1.07	0.582
10	-0.052	-0.72	30	1.101	1.341
11	-0.675	0.353	31	-0.154	0.237
12	-0.571	0.063	32	0.749	0.528
13	-0.72	0.283	33	0.333	-0.157
14	-0.786	-0.626	34	0.347	-0.546
15	-1.235	0.552	35	0.566	0.226
16	0.869	0.58	36	-0.476	-0.475
17	-0.48	-0.337	37	0.642	0.068
18	1.202	2.183	38	0.663	0.219
19	0.609	0.121	39	0.063	-0.843
20	0.989	1.22			

When Table 3 is examined, it is seen that the skewness and kurtosis values of the question items are in the range of ±1. According to George and Mallery, the fact that the skewness and kurtosis values of the data regarding the variables are within ±2 range is also accepted as a normal distribution [15]. In this context, it is possible to state that the data regarding the question items show a normal distribution.

3.4. Independent Two-Group T-Test Results

In this section, the findings of two independent group tests used in the analysis of the study are submitted. In this context, the results of the group statistics are included in Table 4 for the first time.

Table 4. The Energy Factor Group Statistics

Factor		Mean	Std. Error	Std. Error Mean
Energy Awareness Scale	**Gender**			
	Man	2.7150	0.32292	0.02912
	Woman	2.8006	0.27017	0.01925
	The Status of Receiving Energy Education			
	Yes	2.7831	0.25572	0.03329
	No	2.7630	0.30202	0.01877

Table 4 shows the references of the mean, standard error and standard error mean of the responses of the surveyed individuals to the status of receiving education regarding gender and renewable energy sources.

Table 5. The Results of Two Independent T-Tests for the Energy Factor

Factor			F	t	Df	Sig. (-2tailed)
Energy Awareness Scale	**Gender**	Equal Distribution of Variances	3.579	-2.554	318	0.011
		Unequal Distribution of Variances		-2.452	225.17	0.015
	The Status of Availability for Energy Education	Equal Distribution of Variances	1.071	0.475	316	0.635
		Unequal Distribution of Variances		0.527	98.480	0.599

According to Table 5, it is seen that there is a statistically significant difference at the level of 5% between the averages of the groups in terms of gender, in the awareness levels of the students participating in the survey about renewable energy sources, and there is no statistically significant difference between the averages of the groups regarding the status of had education or training on renewable energy sources.

3.5. ANOVA Test Findings

In this section, the findings related to the ANOVA test used in the analysis of the study are given. Accordingly, the results of the department in which education is provided are presented in Table 6, the results of the mother's educational status are presented in Table 7, and the results of the father's educational status are presented in Table 8.

Table 6: ANOVA Test References Regarding the Department of Education

	Sum of Squares	df	Mean Square	F	Significance
Between Groups	202.471	50	4.049	1.276	0.115
In-Group	853.651	269	3.173		
Total	1056.122	319			

According to Table 6, there is no statistically significant difference between the group averages of the departments studied in the awareness levels of the students participating in the survey about renewable energy sources.

Table 7: ANOVA Test Results Regarding Mother's Educational Status

	Sum of Squares	df	Mean Square	F	Significance
Between Groups	62.121	50	1.242	1.512	0.021
In-Group	212.876	259	0.822		
Total	274.997	309			

According to Table 7, there is a statistically significant difference at the level of 5% between the group averages of the mother's education level in the awareness levels of the students participating in the survey about renewable energy sources.

Table 8: ANOVA Test Results Regarding Father's Educational Status

	Sum of Squares	df	Mean Square	F	Significance
Between Groups	71.75	50	1.43	1.34	0.071
In-Group	284.11	267	1.06		
Total	355.86	317			

According to Table 8, there is a statistically significant difference at the level of 7% between the group averages of the father's education level in the awareness levels of the students participating in the survey about renewable energy sources.

4. Conclusions and recommendations

With the increasing population and developing technology, the need for energy is increasing more and more every day. Energy needs are still greatly provided by fossil fuels today. However, the world has turned to alternative energy sources because of its depletion and the damage it causes to the environment. In the search for alternative energy sources, renewable energy sources are of great importance due to their ability to renew themselves, continuity and environmental friendliness. Climate change induced by utilize of fossil fuels is not only a phenomenon related to ecology. With the changes it has created, it gives direction social life, investment decisions, agriculture, etc. and directly affects the future. For this reason, it is important to know renewable energy sources and to ensure that young generation is aware of them. In this way, they will be able to better understand the matter of the struggle against climate change.

In this paper, it is purposed to clarify determining factors in the awareness levels of students studying at Trabzon University at the associate degree level in the field of social sciences about renewable energy sources. For this goal, a face-to-face survey has been conducted with 414 students studying at Trabzon University Beşikdüzü Vocational School and Vakfikebir Vocational School in the departments of Office Services and Secretarial, Foreign Trade, Accounting and Tax, Marketing and Advertising, Management and Organization, Finance-Banking and Insurance.

In this paper, a survey containing 39 question items translated into Turkish by Tiftikçi of the "Awareness Scale of Renewable Energy Sources" improved by Morgil et al. in English as a five-point likert type was utilized [26,32]. Survey comprised of two main parts: "personal information" and "renewable energy awareness scale. In the designed personal information section of the survey, there were questions about the gender, age, department, educational status of the parents, and whether they had taken any training or education related to renewable energy sources before. The second part of the survey, the "Renewable Energy Awareness Scale", contained 39 question items. The answers were as follows; I strongly disagree, I disagree, I am undecided, I agree, I definitely agree.

The data obtained from the questionnaires constitute the data set of the study. In this context, the data of the study were subjected to independent group t-test and ANOVA test using SPSS 23 program. In the analysis process of the study, first of all, the reliability of the scale was measured with the Cronbach's Alpha model. As a result of the test, the reliability level of the scale was calculated as approximately 73%. Accordingly, it was concluded

that the reliability level of the scale was high. Secondly, the skewness kurtosis values of the data were calculated and their compliance with the normal distribution was determined. Thirdly, the t-test of our relationship was conducted according to the gender and renewable energy education status of the respondents. As a result of this test, it was determined that there was a statistically significant difference in terms of gender in the awareness levels of the students participating in the survey about renewable energy sources. The findings obtained at this point differ from those obtained by Bilen et al., Tiftikçi, Mertoğlu, and Oral [5,32,25,28].However, it represented parallelism with the findings obtained by Çakırlar [7]. However, it was concluded that there was no statistically significant difference in the awareness levels of the students about renewable energy sources in terms of whether they took a course or training on renewable energy sources or not. The results obtained from the study are similar to the findings of Mertoğlu's study [25]. Fourth and lastly, ANOVA test was conducted to examine the level of awareness of renewable energy sources among the students participating in the survey, the education level of the department, and the mother and father education. It was concluded that there was no statistically significant difference between the departments of education in the awareness levels of the students participating in the survey about renewable energy sources. Although this finding was similar to the study of Mertoğlu, it does not coincide with the study of Tiftikçi [25,32]. It was discovered that there was a statistically significant difference in the awareness levels of the mother and father regarding renewable energy sources in terms of the educational status of the mother and father. This result separated from the findings of Mertoğlu and Çakırlar [7, 25]. In this context, it was concluded that there was a significant difference between gender, education level of mother and father in the awareness levels of renewable energy resources of students studying in the field of social sciences within the scope of the sample. In addition, it was determined that there was no significant difference in the level of awareness of renewable energy sources, whether the department studied and whether they received education or training on renewable energy sources. Accordingly, the results of the study showed that gender and parental education were determinative in the differences of students regarding renewable energy sources.

It can be stated that the reason why some of the findings obtained from the study differ from the results of the studies in the literature is due to the differentiation of the study group under consideration. The scope of the sample discussed in the study consists of associate degree students studying in the field of social sciences and examining the determining factors in the

awareness of associate degree students studying in this field about renewable energy sources reveals the originality of the study.

The paper reveals important findings in terms of determining the awareness of students studying in the field of social sciences about renewable energy sources, at this point, determining the reasons for the differences among students. Especially in this period when the orientation towards renewable energy sources is increasing, it is an important issue to increase the awareness and knowledge level not only of students studying in the relevant field, but also of students who do not have sufficient knowledge and awareness about this issue. At this point, the results of the study indicate that renewable energy resources should be included in the social sciences curriculum or the training on the subject should be included not only in the relevant departments but also in different fields of social sciences.

The phenomenon of climate change and the environment is not only an ecological phenomenon, but also directly related to the economy, energy, industrial investments, social life and the law. As of today, climate change affects every stage of our lives, especially the physical and natural environment.

Consequently, it is highly important for a habitable world to ensure the awareness of society, especially students, in order to prevent global warming and climate change. It is necessary to disseminate the studies and information activities conducted on this issue to the entire society. Awareness of global warming and climate change in all aspects is of great importance for gaining awareness of living without harming nature and learning what needs to be done to solve the problems that cause these problems to arise.

The Declaration of Ethics Committee Approval

The compliance of the research with the ethical rules was accepted with the permission of Trabzon University Social and Humanities Research and Publication Ethics Committee dated 08/04/2022 and numbered 2022-4/1.9.

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