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AN EXAMINATION OF TEACHERS' SUSTAINABLE DEVELOPMENT AWARENESS IN TERMS OF BRANCHES, GENDERS, AGES AND YEARS OF SERVICE

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Abstract

Sustainable development is an interdisciplinary structure that includes the dimensions of environment, economy and society. The aim of this research was to determine the sustainable development awareness of science, social studies and primary school teachers. The research designed with the survey approach was carried out with 2982 teachers working in different regions of Turkey in 2019. In the research, Sustainable Development Awareness Scale consisting of 3 sub-dimensions and 36 items developed by Atmaca, Kiray and Pehlivan (2019) was used. Significance level was taken as .05 in the analyses that examined the signification between the groups. As a result of the research, no significant difference was found between the teachers' sustainable development awareness and their branches and years of service, while a significant difference was found between the teachers' ages and gender and their sustainable development awareness scores.
Keywords: *descriptive research, science education, sustainable development.*

Introduction

Humankind continues his life process in relation to his environment since his existence. He meets his nutritional and shelter needs from his environment for the continuation of life. The human-environment relation is initially carried out only to meet the vital needs. However, as time passes, the changes in the desires and expectations of humankind and the relationship between human and the environment turned into destruction of the environment by the human (Özerkmen, 2002).

As a result of environmental destruction, environmental problems began to emerge in various parts of the planet. In particular, the industrialization and industrial migration that came with the industrial revolution and the distorted urbanization resulting from the migration from the village to the city, the rapid increase of the population and the unconscious use of the environment to meet the needs of the increasing population became a threat to the future of living beings and even the entire planet (Alagöz, 2004; Yeni, 2014). In addition to environmental problems, the increase in social problems such as unemployment, hunger, lack of social justice, inequalities in income distribution, unhealthy living spaces, and adult and child deaths caused by epidemics that emerged with the use of certain countries and societies as colonial and raw material sources revealed the necessity of a comprehensive movement for the solution (Berr, 2009).

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The international community has realized that the limited resources of our planet cannot consistently meet the unconscious consumption of humankind, whose population is rapidly increasing. It is understood that economic growth is a necessity for developed and developing societies, but this growth should be designed in line with the needs and benefits of the society and the environment (Pisani, 2007). Some of the advances in science and technology to meet the needs of contemporary people led to controversies in social, environmental and ethical terms. In order to maintain the habitable nature of this planet, it emerged that individuals, institutions, and societies must change their behaviors that cause environmental destruction (Derman & Gurbuz, 2018; Gunes, 2020; Ozturk & Altan, 2019).

Sustainable development, formally introduced into our lives with Our Common Future report published in 1987, has since become the main theme of many important international conferences. The conferences were held with the participation of many countries on the basis of the fact that the problems of the planet we live in are universal and that we will have a healthy planet with global solutions. In the conferences held, joint action was taken to achieve sustainable development. At the conferences, it was stated that sustainable development cannot be achieved by development only in the environment or only in the economy or only in the society; It was emphasized that sustainable development can be achieved by realization in the fields of environment, economy and society all together. With the conferences held, the scope of sustainable development was expanded, and the known framework today was emerged (Çınar, 2017; Erdinç, 2016; Uzun, 2007). When the literature on sustainable development is reviewed, it is seen that three main dimensions are mentioned. These are environmental sustainability, economic sustainability and social sustainability. Sustainable development is achieved through the combination of these three main dimensions.

Environmental sustainability, which is one of the three sub-dimensions of sustainable development, includes conservation of our natural resources, biodiversity, green field works, prevention of pollution, dissemination of renewable energy sources, dissemination of recycling awareness, prevention of global warming and its effects, and reduction of ecological footprint. Social sustainability means ending gender discrimination; social justice; the right to benefit from social services, equal education, health, safe and peaceful life, housing for every individual living in the world; the provision of cultural diversity; and the establishment of well-equipped healthy living units for individuals to live in prosperity. What is meant by economic sustainability is to plan economic policies without any negative impact on the environment and society, to form production societies, to shape production and consumption models around the main theme of sustainability (Atmaca, et al., 2018; Dinç, 2015; Hürol, 2014; Tosunoğlu, 2014; Unesco, 2006).

When the scope of sustainable development and the three sub-dimensions are examined, it is seen that these concepts cannot belong to only one discipline. Raising awareness on sustainable development and its sub-dimensions and creating awareness should be under the responsibility of many disciplines and institutions (Tekbiyik & Celik, 2019). In order for the sustainable development to be achieved, which is seen as the only solution for the world to remain as a livable planet, individuals should be aware of sustainable development and behave in accordance with sustainable development goals. Although this is an emergency for our planet, it should not be forgotten that education is a progressive process. Time is needed for individuals to change their thoughts, attitudes and behaviors. Waiting for all learners to live according to the principles and principles of sustainable development can be disappointing. But it is possible to educate individuals in this way with a sustainable development-based education. Before designing an effective education program for students, the effect of variables related to the subject should be investigated (Pace, 2010; Colak, 2012; McKeown, 2002; Uzun, et al., 2019).

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Research Problem

Sustainable development is a transdisciplinary concept and all disciplines must contribute to its teaching. However, sustainable development teaching takes place mainly in science and social studies curriculum in Turkey. Since these courses take place in the first stage of primary education as a Life Science course and then as a science and social studies course, it is expected that primary school teachers as well as science and social studies teachers contribute to raising sustainable development awareness of students. Therefore, in this research, the awareness of science, social studies, and primary school teachers on sustainable development who are expected to teach the concepts of sustainable development to the students was examined.

Research Focus

Education for sustainable development is essentially one of the most important tools for raising awareness for all environmental issues in a framework where environmental issues are taken into account together with economic, social, political and ethical issues (Leal Filho, 2010). Therefore, teachers have the greatest role in the realization of effective sustainable development education. In order to provide efficient education that adopts the principles of sustainable development, well-trained and equipped teachers with sustainable development awareness are needed.

Research Aim and Research Questions

In this research determining the awareness of sustainable development of science, social studies, and primary school teachers in terms of branches, genders, years of service and ages was aimed. For this purpose, the following questions were sought.

1. Is there a significant difference between the sustainable development awareness scores of science, social studies, and primary school teachers?
2. Is there a significant difference between the sustainable development awareness scores of science, social studies, and primary school teachers according to their gender?
3. Is there a significant difference between the sustainable development awareness scores of science, social studies, and primary school teachers according to their age?
4. Is there a significant difference between the sustainable development awareness scores of science, social studies, and primary school teachers according to their years of service?

Research Methodology

General Background

This research that aimed at determining the sustainable development awareness of teachers working in different branches was a quantitative study. This was a descriptive research that was carried out with the survey approach. The survey approach is one of the descriptive research designs which were used to determine the current situation (Karasar, 2017).

Sample

The population of research was all of the science, social studies, and primary school teachers who served in Turkey. According to Ministry of Education statistics by shared with

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the public in 2019, classroom teachers, science teachers and social studies teacher was the total number of approximately 300,000 in Turkey (MoNE, 2020). The sample of the research, including 994 teachers from each branch, was a total of 2982 science, social studies, and primary school teachers working in Turkey.

The sample of the research was formed by the convenience sampling method. Teachers voluntarily participated in the research. Only demographic data were collected from the teachers and the personal information of the teachers was kept confidential.

Instrument and Procedures

In the research, "Sustainable Development Awareness Scale" developed by Atmaca, et al. (2019) was used as a data collection tool in order to determine the sustainable development awareness of teachers working in science, social studies, and primary school branches. This scale addressed the three dimensions of sustainable development in the literature. These are economic sustainability, social sustainability, and environmental sustainability. The scale has 36 items related to these three dimensions. Scale items of 1-13 are related to the economic sustainability, 14-22 are related to the social sustainability, and 23-37 are related to the environmental sustainability.

The reliability coefficients (Cronbach's alpha) of the scale which was carried out with 425 pre-service teachers in the development process were .77 for the economic sustainability, .87 for the social sustainability, and .82 for the environmental sustainability. The reliability coefficient for the whole scale was calculated as .91. For this research, the reliability coefficients of the whole scale were calculated as .84.

The construct validity of the scale was provided with confirmatory factor analysis. The fit indices of the Sustainable Development Awareness Scale are given in Table 1. When the values are analyzed on the basis of the fit indices, it is seen that the construct validity of the scale was achieved (Table 1).

Table 1

Fit indices of sustainable development awareness scale as the result of confirmatory factor analysis

Fit Indices	**Perfect fit**	Acceptable Fit	Observed Fit Indices in the model
χ^2/df	$\chi^2 df \leq 3$	$3 < \chi^2/df < 5$	1.67
RMSEA	$0 < RMSA \leq 0.05$	$0.06 < RMSA < 0.08$	.040
S-RMR	$0 \leq S\text{-}RMR \leq 0.05$	$0.05 < S\text{-}RMR < 0.01$	.044
GFI	$GFI \geq 0.90$	$0.85 < GFI < 0.90$	.889
AGFI	$AGFI \geq 0.90$	$0.85 < AGFI < 0.90$	.871
IFI	$IFI \geq 0.95$	$0.90 < IFI < 0.95$	.931
TLI	$TLI \geq 0.95$	$0.90 < TLI < 0.94$	.923

Google-Forms were used to collect research data that was conducted to determine the sustainable development awareness of science, social studies, and primary school teachers. Within the scope of this research, the scale used as the data collection tool was converted to Google form, the link of the form was sent to teachers via e-mail and the data were collected online.

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Data Analysis

Before seeking answers to the problems of the research, Kolmogorov-Smirnov test was applied to the data obtained from 2982 teachers and it was checked whether the normal distribution was achieved. As a result of Kolmogorov-Smirnov test, it was determined that the data did not show normal distribution. For this reason, Mann-Whitney *U* and Kruskall Wallis tests, which are non-parametric tests, were used in the analysis of data regarding main and sub-problems. The analysis of the research data was carried out with SPSS package program.

Research Results

The average scores of science, social studies, and primary school teachers that they took from the general and sub-dimensions of the scale are given in Table 2. The highest possible score for the economic sustainability that is one of the sub-dimensions of the scale is 65; the highest possible score for the social sustainability is 45 and the highest possible score for the environmental sustainability is 70. The highest possible score that can be obtained from the overall scale was calculated as 180. When the mean scores of science, primary school and social studies teachers were examined, it is seen that the awareness scores of teachers regarding sustainable development and its sub-dimensions were quite high (Table 2).

Table 2
Central tendency and distribution measures of teachers' scores that they took from sustainable development awareness scale

	Sub-dimensions	*N*	$\bar{X}$	*SD*	Min.	Max.
Science teachers	Economic sustainability	994	60.7686	.14682	15.00	65.00
	Social sustainability	994	43.5070	.10338	9.00	45.00
	Environmental sustainability	994	66.0050	.15788	14.00	70.00
	Sustainable development	994	170.2807	.35835	39.00	180.00
Social studies teachers	Economic sustainability	994	61.2384	.14185	13.00	65.00
	Social sustainability	994	43.6610	.09501	9.00	45.00
	Environmental sustainability	994	65.7002	.15140	15.00	70.00
	Sustainable development	994	170.5996	.33848	42.00	180.00
Primary school teachers	Economic sustainability	994	61.2928	.11606	26.00	65.00
	Social sustainability	994	43.4608	.08440	13.00	45.00
	Environmental sustainability	994	65.6227	.13050	21.00	70.00
	Sustainable development	994	170.3763	.26428	60.00	180.00

Sustainable Development Awareness and Teachers' Branches

In this research, Kruskal Wallis test was applied to determine whether there was a significant difference between the sustainable development awareness and economic, environmental and social sustainability awareness scores and branches of teachers in different branches. According to the results of the analysis, there was no significant difference between the sustainable development awareness total scores of the teachers and their branches. However, when the sub-dimensions were examined, there was a significant difference between

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the economic sustainability and environmental sustainability awareness scores of the teachers and their branches (Table 3).

In terms of economic sustainability awareness scores, a significant difference was found between science teachers and social studies teachers in favor of social studies teachers (U = 446281.000, p <.05), and a significant difference was found between science teachers and primary school teachers in favor of primary school teachers (U = 456513.000, p <.05). For environmental sustainability awareness scores, a significant difference was found between science teachers and social studies teachers in favor of science teachers (U = 467740.500, p <.05), and a significant difference was found between science teachers and primary school teachers in favor of science teachers (U = 453659.500, p <.05). Finally, social sustainability awareness scores did not differ according to their branches (Table 3). There was no significant difference between teachers' social sustainability awareness scores and their branches. While economic sustainability awareness scores of teachers differed in favor of social studies teachers and environmental sustainability awareness scores in favor of science teachers, social sustainability scores did not differ according to their branches (Table 3).

Table 3
Kruskal Wallis test results for teachers' sustainable development awareness scores and branches

	Group	*N*	Mean Rank	χ^2	*df*	*p*
Sustainable development awareness	Science teachers	994	1484.78	2.646	2	.266
	Social studies teachers	994	1525.66			
	Primary school teachers	994	1464.05			
Economic sustainability	Science teachers	994	1405.74	15.703	2	.0001
	Social studies teachers	994	1549.91			
	Primary school teachers	994	1518.85			
Social sustainability	Science teachers	994	1479.64	5.730	2	.057
	Social studies teachers	994	1537.50			
	Primary school teachers	994	1457.36			
Environmental sustainability	Science teachers	994	1558.54	10.568	2	.005
	Social studies teachers	994	1480.00			
	Primary school teachers	994	1435.96			

Sustainable Development Awareness and Teachers' Gender

In this research Mann-Whitney U test was applied to determine whether there was a significant difference between the sustainable development awareness and gender of the teachers working in different branches (Table 4). According to the results of the analysis, there was a significant difference between science teachers' sustainable development awareness total scores and their gender in favor of females (Table 4).

When the sub-dimensions were examined, a significant difference was found between science teachers' environmental sustainability awareness scores and their gender in favor of females, while no significant difference was found between economic sustainability and social sustainability awareness scores and their gender. While the total sustainable development

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awareness and environmental sustainability awareness scores of teachers differed according to their gender, economic and social sustainability awareness scores did not differ according to their branches (Table 4).

There was no significant difference between the gender and sustainable development awareness scores of social studies teachers. It was seen that the gender of social studies teachers was not a determining factor for sustainable development awareness scores (Table 4). When the results of the analysis were examined for the sub-dimensions, it was seen that there was no significant difference between the social studies teachers' economic, environmental and social sustainability awareness scores and their gender (Table 4).

There was no significant difference between the primary school teachers' sustainable development awareness scores and their gender. It was seen that the gender of primary school teachers was not a determining factor for sustainable development awareness scores (Table 4). When the results of the analysis were examined for the sub-dimensions, it was seen that there was a significant difference between the primary school teachers' economic sustainability awareness scores and their gender in favor of males, and environmental sustainability awareness scores and their gender in favor of females. However, there was no significant difference between social sustainability awareness scores and gender of primary school teachers. While environmental and economic sustainability awareness scores of primary school teachers differed according to their gender, social sustainability awareness scores did not differ according to their gender (Table 4).

Table 4

Mann-Whitney U test results related to teachers' sustainable development awareness and gender

		Group	*N*	Mean Rank	*Z*	*p*
Science teachers	Economic sustainability	Female	456	499.34	-.187	.851
		Male	538	495.94		
	Social sustainability	Female	456	514.25	-1.880	.060
		Male	538	483.30		
	Environmental sustainability	Female	456	535.50	-3.890	.0001
		Male	538	465.29		
	Sustainable development awareness	Female	456	526.45	-2.932	.003
		Male	538	472.96		
Social studies teachers	Economic sustainability	Female	216	496.19	-.077	.939
		Male	778	497.86		
	Social sustainability	Female	216	516.77	-1.267	.205
		Male	778	492.15		
	Environmental sustainability	Female	216	523.00	-1.491	.136
		Male	778	490.42		
	Sustainable development awareness	Female	216	516.55	-1.105	.269
		Male	778	492.21		
Primary school teachers	Economic sustainability	Female	364	473.66	-2.007	.045
		Male	630	511.27		
	Social sustainability	Female	364	512.52	-1.389	.165
		Male	630	488.82		
	Environmental Sustainability	Female	364	521.93	-2.061	.039
		Male	630	483.38		
	Sustainable development awareness	Female	364	505.46	-.666	.505
		Male	630	492.90		

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Sustainable Development Awareness and Teachers' Years of Service

In this research, Kruskal Wallis test was applied to determine whether there was a significant difference between the sustainable development awareness and the years of service of the teachers working in different branches (Table 5). According to the results of the analysis, there was no significant difference between science teachers' sustainable development awareness scores and their years of service. For science teachers, years of service were not an effective factor on sustainable development awareness. Similarly, when the results of the analysis were examined, no significant difference was found between the economic, environmental and social sustainability awareness scores, which are the sub-dimensions of sustainable development, and the years of service (Table 5).

The years of service for social studies teachers was not an effective factor on sustainable development awareness. Similarly, when the results of the analysis were examined, no significant difference was found between the years of service and the economic and environmental sustainability awareness scores that are the sub-dimensions of sustainable development. A statistically significant difference was found between the social sustainability awareness scores and the years of service in favor of the teachers with 1-10 years of service for the teachers with service years between 1-10 and 11-20 (U = 74700.000, p <.05).

According to the analysis, there was no significant difference between the sustainable development awareness scores of primary school teachers and their years of service. Years of service for primary school teachers were not an effective factor on sustainable development awareness. Similarly, when the results of the analysis were examined, no significant difference was found between the economic, environmental and social sustainability awareness scores, which are the sub-dimensions of sustainable development, and the years of service (Table 5).

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Table 5

Kruskal Wallis test results related to teachers' sustainable development awareness and years of service

		Group	*N*	Mean Rank	χ^2	*df*	*p*
Science teachers	Economic sustainability	1-10 years	471	490.52	.538	2	.764
		11-20 years	369	503.65			
		21 years and above	154	504.13			
	Social sustainability	1-10 years	471	506.16	2.920	2	.232
		11-20 years	369	499.82			
		21 years and above	154	465.48			
	Environmental sustainability	1-10 years	471	500.54	4.847	2	.089
		11-20 years	369	512.21			
		21 years and above	154	452.96			
	Sustainable development awareness	1-10 years	471	498.08	3.121	2	.210
		11-20 years	369	511.27			
		21 years and above	154	462.73			
Social studies teachers	Economic sustainability	1-10 years	371	506.09	1.868	2	.393
		11-20 years	444	500.71			
		21 years and above	179	471.73			
	Social sustainability	1-10 years	371	525.63	7.357	2	.025
		11-20 years	444	479.80			
		21 years and above	179	483.08			
	Environmental sustainability	1-10 years	371	513.42	1.966	2	.374
		11-20 years	444	490.39			
		21 years and above	179	482.13			
	Sustainable development awareness	1-10 years	371	518.82	3.886	2	.143
		11-20 years	444	490.49			
		21 years and above	179	470.71			
Primary school teachers	Economic sustainability	1-10 years	296	503.89	.811	2	.667
		11-20 years	410	501.78			
		21 years and above	288	484.85			
	Social sustainability	1-10 years	296	519.76	4.101	2	.129
		11-20 years	410	496.23			
		21 years and above	288	476.43			
	Environmental sustainability	1-10 years	296	486.93	1.530	2	.465
		11-20 years	410	493.21			
		21 years and above	288	514.47			
	Sustainable development awareness	1-10 years	296	499.79	.156		.925
		11-20 years	410	499.80			
		21 years and above	288	491.87			

Sustainable Development Awareness and Teachers' Ages

In this research, Kruskal Wallis test was applied to determine whether there was a significant difference between the sustainable development awareness and the ages of the teachers working in in different branches (Table 6).

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Table 6

Kruskal Wallis test results related to teachers' sustainable development awareness and age

		Group	*N*	Mean Rank	χ^2	*df*	*p*
Science teachers	Economic sustainability	23-33	389	467.52	8.634	2	.013
		34-44	467	524.65			
		45 and above	138	490.14			
	Social sustainability	23-33	389	507.74	4.336	2	.114
		34-44	467	501.35			
		45 and above	138	455.61			
	Environmental sustainability	23-33	389	507.49	6.993	2	.030
		34-44	467	506.68			
		45 and above	138	438.28			
	Sustainable development awareness	23-33	389	489.60	7.800	2	.020
		34-44	467	519.71			
		45 and above	138	444.62			
Social studies teachers	Economic sustainability	23-33	267	515.51	1.517	2	.468
		34-44	560	492.18			
		45 and above	167	488.54			
	Social sustainability	23-33	267	536.13	8.528	2	.014
		34-44	560	483.31			
		45 and above	167	482.32			
	Environmental sustainability	23-33	267	514.85	1.393	2	.498
		34-44	560	492.15			
		45 and above	167	487.70			
	Sustainable development awareness	23-33	267	530.46	4.868	2	.088
		34-44	560	486.47			
		45 and above	167	481.77			
Primary School Teachers	Economic sustainability	23-33	306	492.83	1.727	3	.422
		34-44	410	510.90			
		45 and above	278	482.87			
	Social sustainability	23-33	306	511.86	4.478	3	.107
		34-44	410	505.48			
		45 and above	278	469.93			
	Environmental sustainability	23-33	306	474.71	3.176	3	.204
		34-44	410	512.78			
		45 and above	278	500.05			
	Sustainable development awareness	23-33	306	486.00	3.642	3	.162
		34-44	410	518.01			
		45 and above	278	479.90			

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According to the results of the analysis, there was a statistically significant difference between the 34-44 and 45 and above age groups and sustainable development awareness scores of science teachers in favor of the teachers in the 34-44 age group (U = 27304.000, p <.05). According to the results, age of science teachers was an effective factor on their sustainable development awareness (Table 6). According to the results of the analysis, a significant difference was found in the economic sustainability awareness scores of science teachers in the 23-33 and 34-44 age range in favor of the teachers in the 34-44 age group (U = 80477.000, p <.05). When the environmental sustainability awareness scores were analyzed, a significant difference was found between 23-33 and 45 and above age groups in favor of the science teachers in the 23-33 age group (U = 23168.000, p <.05), and between 34-44 and 45 and above age groups in favor of the science teachers in the 34-44 age group (U = 27723.00, p <.05). However, there was no significant difference between science teachers' social sustainability awareness scores and their ages. While the economic and environmental sustainability awareness scores of the teachers differed according to their age, social sustainability awareness scores did not differ according to their age (Table 6).

According to the results of the analysis, there was no significant difference between the social studies teachers' sustainable development awareness scores and their ages. According to the results of the analysis, there was no significant difference between the economic and environmental sustainability awareness scores and age of social studies teachers. However, when the social sustainability awareness scores were analyzed, a significant difference was found between 23-33 and 34-44 age groups in favor of the social studies teachers in the 23-33 age group (U = 66761.500, p <.05), and between 23-33 and 45 and above age groups in favor of the social studies teachers in the 23-33 age group (U = 19979.500, p <.05). While the social studies teachers' sustainable development awareness scores and economic and environmental sustainability awareness scores did not differ according to their age, their social sustainability awareness scores differed according to their age (Table 6).

According to the results of the analysis, there was no significant difference between primary school teachers' sustainable development awareness scores and their ages. According to the results, the age of primary school teachers was not an effective factor on their sustainable development awareness (Table 6). When the results of the analysis were examined for the sub-dimensions, there was no significant difference between primary school teachers' social, economic and environmental sustainability awareness scores and their ages. Social, economic and environmental sustainability awareness scores of primary school teachers did not differ according to their age (Table 6).

Discussion

In this research, sustainable development awareness of teachers in different branches was examined in terms of teachers' branches, gender, years of service, and age. As a result of the research, it was found that teachers' awareness of sustainable development did not change according to their branches. When the sub-dimensions of sustainable development were examined, it was determined that social studies teachers and primary school teachers were more aware of economic sustainability while science teachers were more aware of environmental sustainability than the other two branches. The reason for this difference between the sub-dimensions may be due to the fact that environmental issues have more place in the science curriculum among the three branches, whereas social studies and primary school teachers give more attention to the economic issues (MoNE, 2018a, 2018b, 2018c). Teachers' branches were not an effective factor for social sustainability awareness. In the study of Türer and Çobanoğlu (2015), there was no significant difference between the sustainable development awareness of the prospective teachers studying in social studies and science teaching and the departments

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they studied in. Öztürk Demirbaş (2015), as an example of studies with the opposite result, determined the sustainable development awareness of prospective teachers who were studying in different departments, and as a result of this study, a significant difference was found between the prospective teachers' sustainable development awareness and departments. Kayalı (2010) determined the attitudes of prospective teachers studying in different branches towards environmental problems and found a significant difference in favor of social studies teaching department.

In the research, it was found that female science teachers had higher awareness of sustainable development than male science teachers. In the environmental sustainability, which is one of the sub-dimensions that constitute sustainable development awareness, it was determined that the awareness of female science teachers and female primary school teachers were higher than male teachers. Only in the economic sustainability sub-dimension, the awareness of male primary school teachers was higher than that of female teachers. In his study, Erten (2012) determined the environmental awareness of Turkish and Azeri prospective teachers and found a significant difference between gender and environmental awareness in favor of female students. Ek et al. (2009) determined students' attitudes and sensitivity towards the environment and found that female students were more sensitive to the environment. Tuncer et al. (2009) found that prospective teachers' environmental literacy was significantly affected by gender factor and this effect was in favor of females. Tuncer, et al. (2006) found a significant difference in favor of female prospective teachers in their study that investigated the effect of gender on the beliefs of prospective teachers about sustainable development. The findings obtained in these studies are in line with the findings of this study regarding that environmental sustainability scores differed in favor of females in two branches. This difference in environmental sustainability may have led to differences in science teachers' sustainable development awareness scores in favor of female teachers. In primary school teaching and social studies branches, sustainability development awareness scores did not differ according to gender. Demirbaş Öztürk (2015) examined the prospective teachers' sustainable development awareness in terms of gender factor and did not find a statistically significant difference. Türer (2010) examined the relation between gender and sustainable development awareness of prospective teachers studying in science and social studies department and found no statistically significant difference. The findings in these researches are similar to those obtained from primary school and social studies teachers, but not from science teachers in this study.

Another result of the research was that teachers' years of service was not an effective factor on their awareness of sustainable development. When the sub-dimensions were examined, it was seen that economic sustainability awareness did not change according to the years of service. While the teachers' years of service were not an effective factor on environmental sustainability awareness, a significant difference was found between social sustainability awareness and the years of service. This difference was in favor of teachers who have 1-10 years of service in social studies. Toprak (2017) stated that teachers' level of knowledge about the environment did not differ according to their years of service. Liu et al. (2015) stated that there is no significant difference between teachers' years of service and environmental behaviors. Ahi and Özsoy (2014), Aksu and Erduan-Avcı (2009), and Karadayı (2005) stated that there was no statistically significant difference between teachers' attitudes towards the environment and their years of service. The fact that environmental sustainability awareness scores did not differ according to the years of service obtained in this study is similar to the results of these studies. Social sustainability awareness scores differed in favor of social studies teachers who had years of service between 1and10. Kaya and Tomal (2011) stated that the concept of sustainable development has been under the shadow of the concept of environmental sustainability. In their document analysis, it was revealed that the social sustainability dimension of the sustainable development in the social studies curriculum has come to the forefront and the objectives

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related to economic sustainability were also included. Environmental sustainability is the least involved sub-dimension. The fact that social studies teachers with low service years were educated based on the current education programs may be the reason for their higher social sustainability awareness scores. The fact that social sustainability awareness score of the social studies teachers in the 23-33 age group was higher than the other age groups was also in line with this result.

In the research, a meaningful difference was found between the ages of teachers and sustainable development awareness scores of teachers working in different branches in favor of science teachers in the 34-44 age groups. The age of social studies and primary school teachers was not an effective factor on sustainable development awareness. When the sub-dimensions were examined, a significant difference was found in the economic sustainability awareness in favor of the science teachers in the 23-33 age groups, whereas no statistically significant difference was found for social studies and primary school teachers. In addition, a significant difference was found in the environmental sustainability awareness in favor of the science teachers in the 23-33 and 34-44 age group, whereas no statistically significant difference was found for social studies and primary school teachers. Also, a significant difference was found in the social sustainability awareness in favor of the social studies teachers in the 23-33 age groups. Karahan, et al. (2017) stated that environmental awareness levels of university students differed according to their age. In their study, Çabuk and Karacaoğlu (2003) examined the environmental sensitivity of university students and found that younger university students were more sensitive to the environment. Kanbak (2015) examined environmental attitudes and behaviors of university students and found that the age of the students was an effective factor on environmental attitudes and behaviors. The fact that environmental sustainability awareness score was in favor of science teachers in the 23-33 age group in this study is in line with the findings of these studies. At the same time, the environmental sub-dimension of sustainable development in the science curriculum developed by the Ministry of National Education over the last 15 years may be effective in differentiating environmental sustainability in favor of science teachers.

Conclusions and Implications

This research revealed that science, social studies and primary school teachers have a high level of sustainable development awareness. Science teachers have higher environmental sustainability awareness and social studies and primary school teachers have higher economic sustainability awareness. Female science teachers have higher awareness of sustainable development and environmental sustainability, whereas female primary school teachers have higher environmental sustainability awareness than males. The only sub-dimension in which males have higher awareness than females is economic sustainability awareness of primary school teachers. Male primary school teachers have higher awareness scores than females in economic sustainability sub-dimension. In terms of years of service, there is only awareness in favor of social studies teachers who have between 1-10 years of service in the social sustainability sub-dimension. Similarly, in this category, the social sustainability awareness of young social studies teachers between the ages of 23-33 is higher than the other categories. In the comparisons made according to age ranges, it was found that young science teachers had higher environmental sustainability scores and teachers in the 34-44 age groups have higher scores in the economic sustainability and sustainable development awareness. It was seen that the sustainable development awareness scores of teachers who have 21 years of service and are 45 years and above old were lower than the other categories, although they did not make a statistically significant difference.

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In the light of these results, it can be suggested that workshops to increase environmental sustainability awareness of social studies and primary school teachers and economic sustainability awareness of science teachers should be carried out. At the same time, efforts can be made to increase environmental sustainability awareness of male science and primary school teachers. It may be advisable to plan in-service trainings to increase the sustainable development awareness of teachers who have 21 years of service and are over the age of 45 years.

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