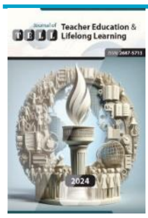

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Opinions of Science and Art Center Teachers About Out-Of-School Learning Environments [1]

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ABSTRACT

In this study, it investigated whether there was a significant difference between level of use the Out-of-School Learning Environments by Science and Art Center (Bilsem) teachers and their “Attitude”, “Effectiveness”, “Competence” and “Behavior” levels towards these environments according to gender, age, the higher education institution of graduation and branch. The study was conducted with science, chemistry, physics and biology teachers working at Bilsem. 277 teachers participated in the study voluntarily. Data were collected using the out-of-school learning environments scale, which consists of 24 items and is arranged in a 5-point Likert type. According to the analysis results, it can be stated that the skills of Bilsem teachers regarding “attitude towards out-of-school learning environments” and “effectiveness towards out-of-school learning environments” are high, while “competence towards out-of-school learning environments” and “behavior towards out-of-school learning averages” are high. It was concluded that their skills were at a medium level compared to others. As a result of the analysis of the effectiveness of the variables of branch, gender and graduated faculty on the teachers’ out-of-school learning environments scale score, it was seen that there was no significant difference between the teachers’ levels of use of out-of-school learning environments.

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INTRODUCTION

Science is based on logical thinking, questioning, and researching to understand nature (Tatar & Bağrıyanık, 2012). According to Çepni (2014), science allows examining nature and predicting situations that have not yet occurred. Based on this, it can be said that life skills such as analytical thinking, creative thinking, and innovative thinking are among the skills that science education is expected to provide to individuals.

Understanding scientific information, knowing scientific facts and concepts, understanding the history and philosophy of science, adapting scientific information to daily life, and being able to produce solutions to daily life problems are among the basic goals of science education (Çepni, 2014). Individuals who receive science education are expected to have acquired these characteristics. Individuals with these achievements are individuals who can adapt to every situation and every change and can produce in every environment.

There is a rapid development in technology today. This situation increases the need for scientifically literate individuals (Çiçek & Saraç, 2017). We can say that the reason for this is that science education forms the basis of scientific and technological developments (Yavuz, 2012). The relationship between science and technology is not one-way, but a relationship based on mutual influence and development. In this context, the need to examine science education and developments in this field have emerged. As the quality of science education increases, the number of scientifically literate individuals will increase, and technology will develop accordingly, and as technology develops, new scientific developments will emerge. Many examples from the past to the present have demonstrated the accuracy of this situation. How science education is carried out, with which methods, in which environments, and where, are of great importance in this sense. Science education can be done in different environments such as classrooms, laboratories, and outside of school environments (Orion & Hofstein, 1994). Apart from planned and programmed learning within the boundaries of the school, individuals can also acquire new information on the street, in newspapers, and in their circle of friends, and informal learning can occur. When comparing the time school-age individuals spend at school and outside of school, Eshach (2007) revealed through his research that individuals spend 85% of their time outside of school. It should not be ignored that learning, especially in terms of science, takes place in the time spent outside of school. Because science is daily life itself, and the things that enable us to make sense of daily life are the information, facts, and concepts that science explains. When viewed from this aspect, learning that takes place outside of school is effective and important in terms of raising scientifically literate individuals.

Since learning does not only take place within the boundaries of the school, but informal learning is also an important factor in the development of individuals (Aktaş, Tokmak & İlhan, 2025; Türkmen, 2010). Informal learning can take place anywhere we are in our daily lives or during communication with someone. When informal learning takes place in planned and programmed trips outside the school or in school gardens, it is referred to as out-of-school learning (Çavuş, Topsakal & Kaplan, 2012). Although it is different from the education carried out within the classroom walls, the purpose of the educational activities carried out in out-of-school learning environments where planned and programmed informal learning is expected to take place is to create permanent changes in individuals, that is, to ensure that learning takes place. Out-of-school learning environments offer an important space that supports learning processes by providing students with experiences beyond classroom education. According to the experiential learning approach, students learn through direct experience in this environment and actively explore knowledge (Nelson, 2012). The informal learning approach (Maden & Dincel, 2015) argues that learning takes place in an unstructured and natural way; students have spontaneous learning opportunities in environments such as museum visits, nature trips and science festivals. These approachs provide a strong theoretical framework for how out-of-school learning processes support students' cognitive, social and emotional development.

Out-of-school learning environments are important for students at all levels and for every educational institution. The importance of out-of-school learning environments is obvious for students, teachers, administrators and parents in different types of schools. The importance and impact of out-of-school learning environments should be investigated for parents, teachers, administrators and teachers, whom we should consider as different pillars of education, and various steps should be taken in this regard when necessary.

One of the educational institutions in our country is Science and Art Centers (Bilsem). Bilsem are institutions established to make gifted/talented students realize their individual talents and to develop and use these talents (Su et.al., 2021). MEB (2018) defined gifted/talented individuals as "individuals who learn faster than their peers, are ahead in creativity, art, and leadership capacity, have special academic talent, can understand abstract ideas, like to act independently in their areas of interest, and show high-level performance". Based on this definition, gifted/talented students can find solutions to daily life problems in out-of-school learning environments and benefit from their own knowledge while finding these solutions (Braund & Reiss, 2006). The development of the talents of gifted individuals is important not only for the country where the gifted is located but also at the international level. Because these individuals are important values in the production of knowledge and the development of technology accordingly (Satmaz & Gencel 2016). The field of science attracts the attention of gifted/talented students in every sense. This situation reveals the importance of the science course for gifted/talented students (Yılmaz & Çaylak, 2009). In our country, the education given under the name of science course at the middle school level is called physics, chemistry and biology when it is passed to the high school level. In Bilsem, students who make the necessary progress in science courses take physics, chemistry and biology courses. In this context, it is possible to talk about the importance of science subjects for Bilsem students in general. Today is called the brain age and individual developments are the basis of social progress. Gifted/talented students' thinking skills and understanding of scientific concepts are more advanced than their peers (Şahin, 2018). Students who attend Bilsems will direct state policies in the future with the talents they have. Therefore, the increase in the equipment that students have is of particular importance. Teachers play an important role in the development of the high potential of gifted/talented students (Clark, 2002). The pedagogical knowledge and skills of teachers in the education of gifted students are a determining factor in maximizing the potential of students (Gökdere & Çepni, 2003). In this context, teachers who will take part in the education of gifted/talented students should be equipped and diverse in terms of knowledge and competencies (Chan, 2001). In the development of special talents, teachers should have developed themselves in creating instructional designs and preparing appropriate learning environments for these students (Fraser Seeto, Howard & Woodcock, 2015). The ability of teachers to implement educational programs specifically designed for gifted students makes students' learning processes more efficient (Dağlıoğlu, 2010).

When the interest of gifted individuals in science education and the contribution of out-of-school learning environments to the field of science are considered, the importance of Bilsem teachers' views on out-of-school learning environments becomes apparent. The fact that there is no study on out-of-school learning environments for Bilsem teachers in the literature review reveals the importance of this research. The aim of this research is to reveal the views of science, physics, chemistry and biology teachers working in Bilsem on out-of-school learning environments.

Students with special/extra-talented skills are individuals who have advanced language development, a developed sense of curiosity, a long focus period, can understand complex relationships between events, and have developed critical thinking skills. Having these characteristics shows that they are one or more steps ahead of their peers in terms of thinking skills. The importance of developing thinking skills is a subject that is included in all education systems, and there are various approaches to developing these skills. Content-based thinking instruction and skill-based thinking instruction are among the common approaches. The common point of these approaches is that the role of the teacher and therefore the teaching environment that the teacher creates in developing thinking skills is great (Şahin, 2018). When developed societies are examined, it is seen that the importance given to individuals with special and superior abilities is directly proportional to development (Uzun, 2004). In this sense, it can be said that gifted individuals contribute to the development of societies. Enç (2019) stated that the evaluation of the abilities of gifted/extra-talented students greatly contributes to societies becoming more contemporary and economically independent. While the importance of gifted/talented students for societies is so great, there is a common idea that the education of these individuals should be handled specifically. The importance of teachers in the education of gifted/ talented individuals also emerges at this point. Teachers have great importance in many aspects from the identification of gifted/talented individuals to their education (Yılmaz & Yılmaz, 2020). Some of the duties of teachers working in Bilsem specified in the Bilsem Directive of the Ministry of National Education (MEB) are to prepare an educational program in accordance with the purpose and model of the sciences, to help students reveal their creativity, to make appropriate evaluations for students during and at the end of the process in order to determine the effectiveness of the implemented programs, and to use environmental opportunities by establishing connections with the environment in the implemented activities. In the education of gifted/talented students, the expected curriculum differentiation from teachers includes the differentiation of the environment, space, time and material (Şahin, 2018). In this context, Bilsem teachers should take into consideration the out-of-school learning environments in terms of environment differentiation while designing the education and training needed by gifted/talented students. Learning environments are not limited to the classroom, but also include environments such as libraries, museums, planetariums, zoos and factories. Therefore, teachers have important duties in terms of using out-of-school learning environments that offer different and rich content to meet the needs of students in education and training activities. From this perspective, Bilsem teachers' opinions and knowledge about the process, especially in terms of providing a connection with the environment, are important.

When the literature was reviewed, many studies were found investigating the views of teachers and administrators on out-of-school learning environments (Anderson, Kisiel & Storksdieck, 2006; Arabacı ve Döngel Akgül 2020; Ay, Anagün & Demir, 2015; Aydemir & Toker-Gökçe, 2016; Batman, 2020; Bezzekçi, 2020; Cabello & Ferk Savec, 2018; Clarke-Vivier & Lee, 2018; Çetingüney & Büyük, 2022; Çiçek ve Saraç, 2017; Dere & Çiftçi, 2022a; Dere & Çiftçi, 2022b; Fırat Durdukoca, 2023; Fűz & Korom, 2019; Gül, Tağrikulu & Çobanoğlu, 2023; Henriksson, 2018; Kisiel, 2005; Köseoğlu & Mercan, 2020; Luehmann & Markowitz, 2007; Ocak & Korkmaz, 2018; Sarıoğlan & Küçükezer, 2017; Wilhelmsson, Ottander & Lidestav, 2012; Yıldız, 2022). However, no study was found on the view of Bilsem teachers who work in the education of gifted/talented students in out-of-school learning environments. This research will help Bilsem teachers make their educational processes more efficient by providing guidance on how they plan and implement out-of-school learning environments. In addition, the knowledge levels of teachers and the difficulties they face in using out-of-school learning environments will be better understood and solution suggestions will be presented through this research. It is thought that this research will contribute to literature and be beneficial to Bilsem teachers.

The main problem of the study was determined as,

"How do Bilsem teachers' use of out-of-school learning environments change according to various variables?"

In this context, the sub-problems were determined as follows:

"What are the levels of Bilsem teachers' use of out-of-school learning environments?

Is there a significant difference between Bilsem teachers' out-of-school learning environments and their attitudes, effectiveness, competence and behavior levels towards these environments according to gender?

Is there a significant difference between Bilsem teachers' out-of-school learning environments and their attitudes, effectiveness, competence and behavior levels towards these environments according to age?

Is there a significant difference between Bilsem teachers' out-of-school learning environments and their attitudes, effectiveness, competence and behavior levels towards these environments according to the higher education institution they graduated from?

Is there a significant difference between Bilsem teachers' out-of-school learning environments and their attitudes, effectiveness, competence and behavior levels towards these environments according to their branch?"

METHOD

This section includes "research model, population, sample, data collection tool, statistical procedures used for data collection and analysis".

Research Design

The survey method, which is one of the quantitative research approaches, was used in the study. Survey method is a method based on collecting data to determine the opinions, interests, skills, abilities, etc. of a certain group regarding a subject or event (Büyüköztürk, et al., 2008). Therefore, the survey method was used to determine the views of teachers who have great importance in the education of gifted/talented students, which are key to the development of societies.

Research Participants

The participants in the study were science, physics, chemistry and biology teachers who educate gifted and talented students in Bilsem, try to associate science with daily life in a practical way and conduct science courses. The population of the study consisted of the teachers working in Bilsem. To determine the sample, the formula "$N= (N t^2 p q)/(d^2(N-1)+ t^2 p q)$" was used since the number of people in the population was known (Bougie, R. & Sekaran). According to the 2021-2022 statistical data of the Ministry of National Education, 2868 teachers work in 362 Bilsem. Based on the known population, the sample consists of 339 teachers in Türkiye. On 06.02.2023, due to the earthquake, which is referred to as the disaster of the century, this number decreased to 276. Among the 276 teachers, the research was conducted with participants working in the branches of science, physics, chemistry and biology and volunteering to participate in the research (Table 1).

Table 1. *Cronbach alpha values for the sub-dimensions of the out-of-school learning environments scale*

Variables		*f*	%
Branch	Science	78	28.26
	Biology	74	26.81
	Physics	53	19.20
	Chemistry	71	25.72
	Total	276	100
Graduated Institution	Faculty of Education	175	63.40
	Other	101	36.59
	Total	276	100
Gender	Male	102	36.96
	Female	174	63.04
	Total	276	100
Age	18-25	2	0.72
	26-35	61	22.10
	36-45	116	42.03
	45-55	81	29.35
	55-	16	5.80
	Total	276	100

In Table 1, it is seen that the number of science majors among the 276 Bilsem teachers participating in the study is 78, the number of biology majors is 74, the number of physics majors is 53, and the number of chemistry majors is 71. It is seen that 64.40% of the science teachers participating in the study graduated from the faculty of education, while 36.59% graduated from other faculties other than the faculty of education. It was concluded that 36.96% of the participants were female and 63.04% were male. According to the research data, it was concluded that 116 of the 276 Bilsem teachers participating in the research were in the 36-45 age range, and it was concluded that the individuals in this range were the most participants.

Research Instruments

The "Out-of-school learning environments scale" developed by Balkan Kıyıcı and Yavuz Topaloğlu (2018) with the necessary permissions was used as a data collection tool. The scale consists of 24 items and is organized in 5-point Likert type. The "Out-of-School Learning Environments Scale", which was developed to determine the attitudes, behaviors, effectiveness and competencies of teachers regarding the use of out-of-school learning environments in education, includes 4 factors: attitude, behavior, effectiveness and competence. Scale development studies were conducted with 170 classroom teachers and 350 science teachers. Expert opinions were taken for face and content validity. The Cronbach Alpha coefficient for internal consistency was .89 for the effectiveness dimension, .92 for the attitude dimension, .92 for the attitude dimension, .83 for the behavior dimension, and .79 for the competence dimension.

The Cronbach Alpha reliability coefficients for the whole scale and its sub-dimensions within the scope of this study conducted with the teachers are presented in Table 2.

Table 2. *Cronbach alpha values for the sub-dimensions of the out-of-school learning environments scale*

Dimensions of the Out-of-School Learning Environments Scale	Cronbach alpha
Attitude	.920
Behavior	.750
Effectiveness	.901
Competence	.901

When Table 2 is examined, according to the results of the reliability study, the Cronbach Alpha reliability coefficient of the whole scale was found to be .900. The Cronbach Alpha reliability coefficient for the sub-dimensions of the scale ranged between .750-.920.

There are 8 items (26, 27, 28, 31, 33, 34, 36, 38) in the first factor explaining the effectiveness dimension, 6 items (3, 6, 7, 8, 9, 10) in the second factor explaining the attitude dimension, 6 items (14, 15, 16, 21, 22, 23) in the third factor explaining the behavior dimension and 4 items (39, 40, 41, 45) in the last factor explaining the competence dimension.

The total variance explained by the 4 factors in the scale was calculated as 65.64%. As a result of the scale development study, it was seen that the out-of-school learning environments scale is a valid and reliable scale that can determine the attitudes, behaviors, effectiveness and competence dimensions of teachers' use of out-of-school learning environments in education.

Data Analysis

The data obtained were analyzed with statistical methods such as percentage, frequency, mean, standard deviation, Kolmogorov-Smirnov Test, Mann-Whitney U Test and Kruskal Wallis Test using the SPSS program and the findings of the research were obtained. Since it was determined that the skewness and kurtosis coefficients of the group did not change between the limits of -1 and +1 in the analysis results of the research (Tabachnick & Fidell, 2013) and accordingly it was concluded that the data did not have a normal distribution, nonparametric tests, was used. Therefore;

- Kolmogorov-Smirnov Test was performed for school learning disability performance and sub-dimensions of the changes in knowledge.

- Mann-Whitney U Test (gender and graduated higher education institution) was used for two-variable groups, Kruskal Wallis test (age and branch) was used to reveal the differences between groups with more than two variables.

Ethic

Ethics committee permission for the study was received from Hatay Mustafa Kemal University Human Research Ethics Committee (Date: 14.10.2022, Protocol No:35, Decision No: 24).

FINDINGS

Findings regarding the level of use of out-of-school learning environments by Bilsem teachers are given in Table 3.

Table 3. *Descriptive statistics of the out-of-school learning scale and its sub-dimensions*

	N	Number of items	Min	Median	Max	$\bar{X}$	ss	(5-Point Likert Type)	Ss (5-Point Likert Type)
Scale	276	24	60.00	106.00	120.00	104.48	9.67	4.35	0.40
Attitude	276	6	7.00	29.00	30.00	27.67	2.95	4.61	0.49
Behavior	276	6	8.00	25.00	30.00	24.79	3.15	4.13	0.52
Effectiveness	276	8	14.00	37.00	40.00	36.52	3.86	4.56	0.48
Competence	276	4	4.00	16.00	20.00	15.49	3.57	3.87	0.89

When Table 3 is examined, the mean of the first sub-dimension is 27.67 with a standard deviation (s.s.) of 2.95; the mean of the second sub-dimension is 24.79 with a standard deviation of 3.15; the mean of the third sub-dimension is 36.52 with a standard deviation of 3.86; and the mean of the fourth sub-dimension is 15.49 with a standard deviation of 3.57. In this context, it was calculated that the highest score in the first dimension was 120 and the lowest score was 60; the highest score in the second dimension was 30 and the lowest score was 7; the highest score in the third dimension was 30 and the lowest score was 8; and the highest score in the fourth dimension was 20 and the lowest score was 4. When the scale was evaluated in general, it was determined that the highest score was 120 points, and the lowest score was 60 points. In this context, when the descriptive statistical results such as mean, median, minimum and maximum and standard deviation calculated based on the research data given in the Table are examined; it can be stated that Bilsem teachers' skills related to "attitude towards out-of-school learning environments" (= 4.61) and "effectiveness towards out-of-school learning environments" (=4.56) are high, while their skills related to "competence towards out-of-school learning environments" (=3.87) and "behavior towards out-of-school learning averages" (=4.13) can be said to be at a medium level compared to others. In general, it can be emphasized that these teachers' "level of using out-of-school learning environments" (= 4.35) is high.

The averages of teachers' views on out-of-school learning environments according to the attitude sub-dimension are shown in Table 4.

Table 4. *Descriptive statistics of the out-of-school learning scale and its sub-dimensions*

ITEMS	N	$\bar{X}$	Sd	Level of participation
ATTITUDE				
The activities done within out-of-school learning environments are fun.	276	4.60	.59	Strongly agree
Out-of-school learning environments reinforce the recently learned information.	276	4.64	.55	Strongly agree
Out-of-school learning environments help students love science classes.	276	4.66	.55	Strongly agree
Out-of-school learning environments help students enjoy the educational activities.	276	4.61	.57	Strongly agree
Out-of-school learning environments enable students learn and have fun	276	4.58	.58	Strongly agree

together.				
Out-of-school learning environments eliminate the boredom of the science classes.	276	4.57	.62	Strongly agree

When Table 4 is examined, the highest mean of agreement in the teachers' opinions on the attitude dimension of the scale related to out-of-school learning environments is the item "Out-of-school learning environments increase students' love for science lessons." (= 4.66), which corresponds to the level of "strongly agree". These results show that teachers have a positive opinion in terms of using out-of-school learning environments in science lessons.

The averages of teachers' views on out-of-school learning environments according to the behavior sub-dimension are shown in Table 5.

Table 5. *Descriptive statistics of the out-of-school learning scale and its sub-dimensions*

ITEMS	N	$\bar{X}$	Sd	Level of participation
BEHAVIOR				
I search for the out-of-school learning environments.	276	4.11	.72	Agree
I share my experiences from out-of-school learning environments with my friends and colleagues.	276	4.30	.66	Agree
I suggest alternative solutions to the authorities for the problems encountered while using out-of-school learning environments.	276	4.02	.83	Agree
I follow the studies on out-of-school learning environments.	276	4.00	1.00	Agree
I discuss the alternative solutions for solving the problems of including informal learning environments to science classes with the school administration and with my colleagues.	276	4.04	.80	Agree
I try to emphasize the requirements of the curriculum on using out-of-school learning environments.	276	4.33	.63	Agree

When Table 5 is examined, the highest mean of participation in the opinions of the teachers regarding the behavioral dimension of the scale related to out-of-school learning environments is the item "I try to gain the achievements in the science curriculum for the use of out-of-school learning environments" and (= 4.33) corresponds to the level of "agree". These results show that teachers' level of using out-of-school learning environments in science lessons is high.

The averages of teachers' views on out-of-school learning environments according to the effectiveness sub-dimensions are shown in Table 6.

Table 6. *Descriptive statistics of the out-of-school learning scale and its sub-dimensions*

ITEMS	N	$\bar{X}$	Sd	Level of participation
EFFECTIVENESS				
Out-of-school learning environments help the students learn by using their 5 senses.	276	4.63	.60	Strongly agree
The activities done in out-of-school learning environments help students reinforce the in-class knowledge.	276	4.61	.56	Strongly agree
The activities done in out-of-school learning environments help students learn better.	276	4.58	.58	Strongly agree
Out-of-school learning environments help students interact with each other.	276	4.57	.61	Strongly agree
Out-of-school learning environments improve the problem solving abilities of the students.	276	4.48	.63	Strongly agree
Out-of-school learning environments give a different point of view to the students.	276	4.55	.61	Strongly agree
Out-of-school learning environments improve the general knowledge levels of the students.	276	4.54	.64	Strongly agree
Out-of-school learning environments enable the students establish a connection between science and daily life.	276	4.54	.75	Strongly agree

When Table 6 is examined, the highest mean of agreement in the teachers' opinions on the effectiveness dimension of the scale related to out-of-school learning environments is "Out-of-school learning environments help students learn by using 5 sensory organs." and (= 4.63) corresponds to the level of "strongly agree". These results show that teachers' opinions about out-of-school learning environments being effective on students' learning are positive. The averages of teachers' views on out-of-school learning environments according to the competence sub-dimensions are shown in Table 7.

Table 7. *Descriptive statistics of the out-of-school learning scale and its sub-dimensions*

ITEMS	N	$\bar{X}$	Sd	Level of participation
COMPETENCE				
I do not have enough knowledge about the out-of-school learning environments for science classes.	276	3.86	.99	Disagree
I do not have enough knowledge about the topics and equipments to be used in out-of-school learning environments.	276	3.88	1.00	Disagree
I am not aware of the out-of-school learning environments in the neighborhood.	276	3.97	.95	Disagree
I don't know anything about the correspondences about the process of including out-of-school learning environments.	276	3.76	1.12	Disagree

When Table 7 is examined, the lowest mean of participation in the scale of teachers' views on out-of-school learning environments was observed in the negative item "I do not have enough information about out-of-school environments that can be used in science lessons" ($\bar{X}$ =3.86) and this statement was answered as "Disagree". According to this finding, teachers showed a view that they consider themselves sufficient to ensure the use of out-of-school learning environments in schools and especially in science courses.

In general, teachers' views on out-of-school learning environments were "Strongly agree". In other words, it can be interpreted that teachers have sufficient knowledge and skills about the use of out-of-school learning environments and competence, effectiveness and behavior related to out-of-school learning environments and that they have positive opinions on this issue.

Statistical analyses were carried out to determine whether the use of Out-of-School Learning Environments by the Bilsem teachers differed according to variables such as gender, age, branch and education level. In this context, firstly, it was checked whether the data showed a normal distribution. Skewness and kurtosis coefficients were first examined to question whether the distributions of the group were normally distributed, and then the Kolmogorov-Smirnov Test was conducted. This test is used to examine the normality of the scores when the sample group size is 50 and above 50 (Büyüköztürk, Çokluk, & Köklü, 2010). In the study, it was determined that the skewness and kurtosis coefficients of the group did not vary between -1 and +1 limits. The fact that the skewness and kurtosis coefficients remain between -1 and +1 can be interpreted as the scores do not show a significant deviation from the normal distribution (Büyüköztürk, 2011).

Table 8 presents the content of the Kolmogorov-Smirnov Test Results related to the out-of-school learning scale and its sub-dimensions' score distributions of the Bilsem teachers.

Table 8. *Results of the Kolmogorov-Smirnov Test for the distribution of the scores belonging to the scale and its sub-dimensions of the Bilsem teachers*

	Statistics	sd	p
Scale	.082	276	.00
Attitude	.234	276	.00
Behavior	.111	276	.00
Effectiveness	.185	276	.00
Competence	.154	276	.00

When the results of the Kolmogorov-Smirnov Test and histogram distributions selected according to the sample size were examined, it was determined that the data did not show a normal distribution. When the results of the Kolmogorov-Smirnov Test were analyzed, it was determined that the calculated values were smaller than α= 0.05 ($p < 0.05$). Accordingly, since the analysis of the data scores did not meet the normality assumption, it was decided to conduct the data analysis with Mann-Whitney U Test and Kruskal-Wallis Test, which are nonparametric tests.

The Mann-Whitney U Test was conducted to determine the effectiveness of gender variable on teachers' out-of-school learning environments scale score and the results are given in Table 9.

Table 9. *The Mann-Whitney U Test results according to gender*

	Groups	N	Mean rank	Sum of ranks	U	P
Scale	Female	174	133.81	23282.50	8057.50	.202
	Male	102	146.50	14943.50		
Competence	Female	174	131.50	22880.50	7655.50	.050
	Male	102	150.45	15345.50		
Effectiveness	Female	174	138.00	24012.50	8787.50	.890
	Male	102	139.35	14213.50		
Attitude	Female	174	135.16	23517.00	8292.00	.339
	Male	102	144.21	14709.00		
Behavior	Female	174	137.30	23890.00	8665.50	.743
	Male	102	140.54	14335.50		

As can be seen in Table 9, because of the Mann Whitney U test, there was no significant difference between the mean scores of teachers on the Scale and Attitude, Effectiveness, Efficacy, Competence and Behavior sub-dimensions according to gender ($p>0.05$). When the rank averages of the groups were examined, the mean out-of-school learning averages scale scores of female teachers were 133.81, while the mean scores of male teachers were 146.40. While female teachers' mean effectiveness scores were 138.00; male teachers' mean effectiveness scores were 139.35. The mean ranks of male teachers' efficacy scores ($\bar{X}$= 150,45) were higher than the mean ranks of female teachers (X= 131,50). The mean attitude score of female teachers was 135.16, while that of male teachers was 144.21. The mean behavioral scores of female teachers were 137.30, while those of male teachers were 140.54. This finding shows that the groups are close to each other and the difference between the groups is not statistically significant and the groups are equivalent. In the light of this information, it can be stated that female and male teachers have similar levels of attitudes, effectiveness, competence and behavioral skills related to out-of-school learning environments.

The Mann-Whitney U Test was conducted to determine the effectiveness of the variable of the higher education institution of graduation on the scale score of the teachers and the results obtained are given in 10.

Table 10. *The Mann-Whitney U Test results according to graduated Institution*

	Groups	N	Mean rank	Sum of ranks	U	P
Scale	Faculty of Education	175	138.02	24153.00	8753.00	.895
	Other	101	139.34	14073.00		
Competence	Faculty of Education	175	138.57	24249.50	8825.00	.985
	Other	101	138.38	13976.50		
Effectiveness	Faculty of Education	175	136.79	23937.50	8537.50	.629
	Other	101	141.47	14288.50		
Attitude	Faculty of Education	175	140.54	24595.00	8480.00	.556
	Other	101	134.96	13631.00		
Behavior	Faculty of Education	175	135.45	23704.00	8304.00	.401
	Other	101	143.78	14522.00		

When the findings in Table 10 are examined, because of the Mann-Whitney U test, there was no significant difference between the mean scores of the teachers in the sub-dimensions of Attitude, Effectiveness, Behavior and Competence of the teachers on the OLSLS and according to the higher education institution they graduated from ($p>0.05$). When the rank averages of the groups were examined, the mean score of the teachers originating from faculties of education was 138.02, while the mean score of the teachers originating from other educational institutions was 139.34. While the mean competence score of the teachers originating from education faculties was 138.57, it was 138.38 for the teachers originating from other educational institutions. While the average of the effectiveness scores of the teachers originating from faculties of education is 136.79, it is 141,47 for the teachers originating from other educational institutions. While the mean attitude scores of the teachers originating from faculties of education are 140.54; it is 134.96 for the teachers originating from other educational institutions. While the mean behavioral scores of the teachers originating from faculties of education are 135.45; it is 143.78 for the teachers originating from other educational institutions. This finding shows that the groups are close to each other and the difference between the groups is not statistically significant and the groups are equal. In the light of this information, it can be stated that teachers have similar levels of attitudes, effectiveness, behaviors and competence skills related to out-of-school learning environments regardless of their education faculties or different education levels.

Kruskal Wallis Test was conducted to determine the effectiveness of age variable on teachers' out-of-school learning environments scale score and the results are given in Table 11.

Table 11. *Kruskal Wallis Test results according to age*

Scale and its sub-dimensions	Groups	N	Mean rank	sd	Chi-Square	p
Scale	18-25	2	45.50	4	8.034	.090
	26-35	61	151.93			
	36-45	116	127.78			
	46-55	81	148.19			
	56-above	16	127.66			
Competence	1	2	37.00	4	6.869	.143
	2	61	151.43			
	3	116	129.42			
	4	81	142.91			
	5	16	145.44			
Effectiveness	1	2	64.00	4	6.108	.191
	2	61	150.71			
	3	116	134.91			
	4	81	142.14			
	5	16	108.81			
Attitude	1	2	89.25	4	3.636	.457
	2	61	148.74			
	3	116	140.25			
	4	81	133.78			
	5	16	116.78			
Behavior	1	2	55.50	4	14.640	.006
	2	61	137.78			
	3	116	122.10			
	4	81	161.78			
	5	16	152.66			

When the results in Table 4.9 are analyzed, it is seen that there is no significant difference (χ^2= 8,034; p >.05) in terms of age variable in terms of teachers' level of using out-of-school learning environments. When the age variable is examined in terms of the sub-dimensions of scale, it is seen that there is no significant difference on the sub-dimensions of competence (χ^2= 6.869; p >.05), effectiveness (χ^2= 6.108; p > 0.05) and attitude (χ^2= 3,636; p >.05) related to out-of-school learning environments, while there is a significant difference in the sub-dimension of behavior (χ^2= 16.442; p ≤.05). Table 11 shows that most of the participants were between the ages of 36-45. The number of teachers between the ages of 18-25 is only two. This shows that the participant teachers are young educators. Although they are a young group, it can be said that they have no tendency to use out-of-school learning environments. Mann Whitney U Test was used to determine which groups the difference was between and to make pairwise comparisons. As a result of the analysis carried out to determine between which age groups the difference occurred, it was determined that there was a significant difference between the groups between the ages of 36-45 and 46-55 (U= 3387,000, p<.05, r: - 0.017).

Kruskal Wallis Test was conducted to determine the effectiveness of the branch variable on the out-of-school learning environments scale score of the teachers and the results obtained are given in Table 12.

Table 12. *Kruskal Wallis Test results according to branch*

Scale and its sub-dimensions	Groups	N	Mean rank	sd	Chi-Square	p
Scale	Science	78	144.73	3	3.991	.262
	Biology	74	147.68			
	Physics	53	136.58			
	Chemistry	71	123.52			
Competence	Science	78	140.18	3	1.021	.796
	Biology	74	142.85			
	Physics	53	129.08			
	Chemistry	71	139.15			
Effectiveness	Science	78	137.61	3	2.138	.544
	Biology	74	145.60			
	Physics	53	143.78			
	Chemistry	71	128.13			
Attitude	Science	78	148.66	3	3.092	.378
	Biology	74	135.32			
	Physics	53	142.40			
	Chemistry	71	127.75			
Behavior	Science	78	142.13	3	4.337	.227
	Biology	74	150.34			
	Physics	53	136.54			
	Science	71	123.63			

When the results in Table 4.10. are analyzed, it is seen that there is no significant difference (χ^2= 3.991; p>.05) in terms of branch variable. In terms of the sub-dimensions of the scale of the use of out-of-school learning environments with the branch variable, it is seen that there is no significant difference on the sub-dimensions of competence (χ^2= 1.021; p>.05), effectiveness (χ^2= 2.138; p >.05) behavior (χ^2= 4.337; p>.05) and attitude (χ^2= 3.092; p>.05) regarding out-of-school learning environments. In general, it can be stated that biology teachers working in Bilsem have higher levels of using out-of-school learning environments compared to other branches.

DISCUSSION, CONCLUSION, RECOMMENDATIONS

Education and training activities do not only take place within the school and classroom walls. Education and training activities can also take place outside the classroom. Like the educational activities that take place at school, the activities that take place in out-of-school environments also work within the framework of a plan and program. In this direction, the desired behaviors expected to emerge in students emerge outside the school and classroom walls at their own pace and because of their own experiences. In this study, it was concluded that the "level of using out-of-school learning environments" of Bilsem teachers was high. In other studies, in literature, it is generally concluded that the level of teachers' use of out-of-school learning environments is low. Arabacı and Dönel Akgül (2020) conducted a study with science teachers and stated that the number of teachers who did not use out-of-school learning environments during their professional life was considerable. Bozpolat and Alem (2022) concluded in their study that secondary school teachers' knowledge of planning out-of-school learning activities was at a medium level. Ergin Aydoğdu, Aydoğdu, and Aktaş (2023) stated in a study investigating out-of-school learning environments in secondary school mathematics schools that teachers' level of organizing out-of-school learning should be increased and teachers' competencies should be increased in planning, implementing, and evaluating out-of-school learning activities. Gül, Tağrikulu and Çobanoğlu (2023) stated that teachers' levels of organizing out-of-school learning should be increased and teachers' competencies in the dimensions of planning, implementing and evaluating out-of-school learning activities should be improved. Anderson, Kisiel and Storksdieck (2006) emphasized that some of the problems teachers face in out-of-school environments are universal and that, accordingly, there should be improvements in the relationship between museums and schools. It can be said that the difference between the studies in literature and this study is the Bilsem teachers who constitute the sample of the study. Bilsem teachers were selected among teachers who had participated in various projects before applying to Bilsem, had been project coordinators, received postgraduate education, published in various fields, and participated in in-service trainings. In-service training courses of teachers continue while they are attending Bilsem. All these are indicators that Bilsem teachers are versatile, constantly self-renewing and well-equipped teachers. In this context, different results were obtained in terms of out-of-school learning environments competency levels in this study conducted with Bilsem teachers who attach more importance to their professional development, unlike the teachers who make up the sample of other studies in literature.

In the study, the highest agreement average in the teachers' opinions on the scale regarding out-of-school learning environments belongs to the item "Out-of-school learning environments increase students' love for science lessons." Out-of-school learning environments support teachers in the education process since they appeal to more than one sense organ of the students. In this sense, we can say that the high agreement of Bilsem teachers to this item is an expected situation. As a result, this obtained data can be interpreted as the teachers' idea that out-of-school learning environments increase students' interest and motivation in science group courses such as science/physics/chemistry/biology. When the literature is examined, Tatar and Bağrıyanık (2012) concluded in their study that out-of-school learning environments are effective in increasing students' interest and curiosity in science lessons. Henriksson (2018) investigated primary school teachers' perceptions of out-of-school learning in science education and concluded that teachers think that out-of-school learning environments increase students' interest in science, but economic reasons negatively affect these activities. Ay, Anagün and Demir (2015) mentioned in their study that out-of-school learning environments are effective in science education. In their study on revealing the views of science teachers on their experiences in out-of-school learning environments, Çiçek and Saraç (2017) reached the theme of the contributions of out-of-school learning environments to science lessons. When this theme is examined, it is seen that they reach the conclusion that out-of-school learning environments increase students' attitudes and motivation towards science lessons. Batman (2020) reached the conclusion in his study with physics teachers that they think that out-of-school learning environments will positively affect students' attitudes towards physics lessons. Arabacı and Dönel Akgül (2020) stated in their study that science teachers are of the opinion that out-of-school learning environments provide advantages in science education. Köseoğlu and Mercan (2020) concluded in their study with biology teacher candidates that teacher candidates think that out-of-school learning environments will contribute to the increase in students' interest and motivation towards the lesson. Çetingüney and Büyük (2022) concluded in their study conducted with science teachers that teachers' out-of-school learning environments contribute to students' development of positive attitudes towards science lessons. All these results in literature overlap with the results obtained in the study. Based on this, it can be said that the studies carried out in out-of-school learning environments increase students' interest in lessons, contribute to the development of positive attitudes, increase their motivation towards lessons and even reduce their anxiety levels towards learning, in terms of providing students with a concrete learning experience of learning by doing.

Pekin and Bozdoğan (2021) concluded in their study that there was no significant difference in terms of self-efficacy scores of teachers in different branches to organize educational trips to out-of-school environments. Gül and Saz (2023), in their study conducted with teachers in 25 different branches, concluded that there was no significant difference between teachers' out-of-school learning proficiency levels and their branches. When the data of different studies are examined, it is seen that the results are parallel to the data obtained from this study, which shows that there is no significant difference in the sub-dimensions examined regarding out-of-school learning environments based on branches. The knowledge that out-of-school learning environments are not limited to museums only, and that there are many environments that support formal education, has become widespread with recent studies and projects. In this context, out-of-school learning environments that fall within the scope of the achievements of each branch can be found. With student-centered education being the basis, the desire of teachers, who are faced with the need to apply methods that will meet these needs of students, to integrate out-of-school learning environments into their lessons has increased in direct proportion. In this sense, it is thought that there is no significant difference between the views of teachers in different branches regarding out-of-school learning environments. As a result, the use of out-of-school learning environments in accordance with the lessons of all teachers will contribute to the development of students' cognitive, affective and psychomotor skills. Teachers want to include out-of-school learning environments in the education process to conduct more effective and efficient lessons and to provide meaningful learning. It can be said that the behavior, competence, effectiveness and attitude levels of Bilsem teachers in different branches are close to each other regarding out-of-school learning environments is a result of the educational goals expected to be realized in the 2023 vision.

The study concluded that Bilsem teachers have high effective skills in out-of-school learning environments. According to the findings of his study, Sarıgül (2021) stated that the teachers who participated in the study stated that trips to out-of-school environments contribute to the permanence of learning, students' recall of information, and their conversion of what they have learned into daily life skills. Clarke-Vivier and Lee (2018) concluded that primary and secondary school teachers believe that out-of-school learning environments allow for the expansion and diversification of the subjects covered in school and contribute to the development of students' characteristics such as research and asking questions. Batman (2020) concluded that physics teachers have positive thoughts about out-of-school learning environments and the use of these environments to support formal education. In this sense, it can be concluded that the data of the studies support each other.

In the study, it was concluded that there was no significant difference between the average scores of the teachers from the Out-of-School Learning Environments Scale and Attitude, Effectiveness, Competence, and Behavior subscales according to their gender. Sontay and Karamustafaoğlu (2017) concluded in their study that the self-efficacy belief scores of science teachers regarding organizing trips were not affected by the gender variable. Gül, Tağrikulu and Çobanoğlı (2023) concluded that there was no difference in teachers' levels of organizing out-of-school learning in terms of their gender, in line with the data obtained from their study. In the quantitative study conducted by Bozpolat and Alem (2022) on secondary school teachers, they again stated that they could not find a difference in teachers' perceptions of organizing out-of-school environments according to gender. The data of this study are similar to the studies in literature in this sense. The opinions and competencies of teachers regarding out-of-school learning environments do not differ in terms of gender. The reason for this is that in general, individuals' abilities, successes and interests are not related to gender, but to individuals' abilities, efforts, motivations and learning styles. In this regard, it can be concluded that teachers' interests, attitudes, behaviors and competencies towards out-of-school learning environments are not affected by their gender but by their individual experiences, abilities and motivations.

Sontay and Karamustafaoğlu (2017) conducted a study with science teachers to examine teachers' self-efficacy beliefs in organizing trips, and when the data obtained were examined, it was seen that the self-efficacy scores of science teachers who were older increased according to the age variable and that the scores created a significant difference between age groups. In this study conducted with Bilsem teachers, it was concluded that teachers' behavioral levels increased as age increased. As age increases, teachers' experiences increase because they could work with students with different characteristics. Experience of working with different students contributes to the development of understanding that students' needs may also be different and provide development in terms of pedagogical skills. As teachers get older, the importance they give to professional development increases and their desire to use different teaching methods and techniques increases. In addition, in general, as people get older, their ability to empathize increases, which helps teachers establish deeper connections with students in the teaching profession and contributes to better understanding their requests. Teachers who become more competent in such matters realize the importance of out-of-school learning environments for students. This supports the result that out-of-school learning environment behavior levels increase as age increases.

As a result the descriptive statistics used to determine the level of use of Out-of-School Learning Environments by Bilsem teachers, it can be said that the skills of Bilsem teachers regarding “attitude towards out-of-school learning environments” and “effectiveness towards out-of-school learning environments” are high, while their skills regarding “sufficiency towards out-of-school learning environments” and “behavior towards out-of-school learning averages” are at a medium level compared to others. In general, it can be emphasized that these teachers have a high “level of using out-of-school learning environments”. As a result of the statistical analysis of teachers’ views on out-of-school learning environments conducted on an item basis, the highest agreement average in the scale was observed in the item “Out-of-school learning environments increase students’ love for science lessons”, and the lowest agreement average was observed in the negative item “I do not have enough information about out-of-school environments that can be used in science lessons”.

Recommendations for Researchers

The sample of the study consists of science, physics, chemistry and biology teachers working in Bilsem. In future studies, studies can be conducted with teachers from different branches and administrators working in Bilsem.

Interviews can be conducted with Bilsem’s parents to determine their views on out-of-school learning environments.

Studies can be planned with students to determine the views of gifted/talented students on out-of-school learning environments.

The difference between the views of Bilsem teachers working in different educational institutions on out-of-school learning environments can be examined.

Recommendations Based on the Result

The same sample group can be examined in terms of different variables such as professional seniority, whether they have received postgraduate education or not.

More in-depth and detailed data can be collected by conducting semi-structured interviews with science, physics, chemistry and biology teachers working at Bilsem regarding the use of out-of-school learning environments scale.

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