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THE EFFECT OF OUTSIDE-SCHOOL LEARNING COURSES ON PROSPECTIVE TEACHERS' AIMS OF PERFORMING OUTSIDE-SCHOOL LEARNING ACTIVITIES

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ABSTRACT

One of the methods used in educating 21st-century individuals is outside-school learning. This article investigates the effect of outside-school learning courses on teacher candidates' aims of performing outside-school learning activities. The research uses single group pre-test and post-test design. The participants of the research are 37 prospective teachers studying at the 3rd grade of the Department of Mathematics and Science Teaching of a state university in Istanbul during the fall semester of the 2016-2017 academic year. The purposive sampling method is used to determine the study group. "Outside School Learning Activities Performability Scale" developed by Karademir (2013) is used as a data collection tool in the study. According to the study findings, an increase is observed in all dimensions in favor of the post-test. Additionally, it is determined that there is a statistically crucial difference in the Behavioral Expectation, Behavioral Assessment, Behavioral Easiness, Expectations of Individuals, Institutions and Organizations and Special Norm dimensions. These dimensions are the factors that affect behavior as attitude against behavior, subjective form and perceived behavior control. When all the results are evaluated together, it can be said that the outside-school learning course positively affects teacher candidates' aims of performing outside-school learning activities.

Keywords: *Outside-School Learning, Teacher Candidates, Science Teaching, Outside-School Activities*

INTRODUCTION

In the new century, where it is effortless to access information, learning of life can occur anywhere, anytime (Laçin Şimşek, 2011). As a complement to formal education, outside-school learning offers several benefits in educating individuals with 21st-century skills. Many factors affect teachers' performance in out-of-school learning activities. In this context, practical out-of-school education is important by enabling pre-service teachers to get to know and experience different out-of-school learning environments.

Classroom environments are not the only environments where educational program outcomes are achieved, and students' scientific literacy is improved. In fact, most of the students' learning experiences occur inside the classroom and in informal learning environments. Such learning can appear outside school learning environments, at home, in the museum, etc. Being busy with experiences outside of the school offers a great learning potential for students (Gerber et al., 2001).

Out-of-school learning covers all the activities performed outside the classroom. According to this view, everywhere is a learning environment (Şen, 2019). Priest (1986, p.13) defines out-of-school learning as follows: it is an experiential learning method that occurs primarily in outdoor spaces, which calls for the usage of all senses, is based on the interdisciplinary curriculum subject, and consists of relations among people and natural resources. Outside school learning has a great capability to assist people to develop and learn assertive senses towards science (Eshach, 2007). Out-of-school learning helps learners to associate school, lessons, and real life with each other and has positive effects on learners' attitudes, values and beliefs (Özyıldırım & Durmaz, 2022). While learning activities carried out in out-of-school learning environments provide a different learning experience for students, they also allow teachers to recognize, practice and evaluate different teaching approaches (Demir & Çetin, 2022). Examples of outside learning environments include zoos, science centers, information technologies-robotic coding, science cafes, planetariums, museums, aquariums, national parks, botanical gardens, nature educations and nature schools, art galleries, artist workshops, design studios, health institutions, hospitals, industrial institutions and organizations, sports centers (Şen, 2019). According to Eshach (2007), outside-school science learning environments are divided into two informal places that we visit every day and non-formal places that we visit sometimes.

Studies in education focus more on formal education. However, it has been observed that studies related to outside-school education have increased gradually in recent years (Üner, 2019). Since the subjects that include science courses are intertwined with daily life, the performability of learning by living, outside school activities etc. becomes important. It is also pointed out that changes in teaching programs and educational approaches are insufficient to have classes only in classrooms. Thus, the performability of outside school activities by teachers will help students love science lessons and make them learn the difficult and abstract concepts in science lessons more entertainingly and easily (Dori & Tall, 2000; Melber, 2006).

Outside-school learning activities have numerous benefits for students. The student's brains are influenced by diversity, and many students are happy to explore the world outside of their classroom. Adopting outside-school learning activities encourages students to participate more in classroom studies. It provides students with a new perception of learning and improves their high-level learning, creativity, and motivation. Additionally, participating in outside school learning activities helps students connect with nature and lead an active and healthy lifestyle (Les Elfes International, 2019). It is stated in the literature on this subject that outside school learning experiences develop positive environmental attitudes and may positively impact science's success. Studies also show that outside-school learning experiences applied in a familiar environment such as a school garden by a trained teacher can enhance students' participation and science success. Teachers can use outside-school learning convenience as a tool for developing science teaching and environmentally sensitive students (Rios & Brewer, 2014).

In addition to all the benefits, teachers' lack of education on outside school learning before or after their service or lack of travel experience related to these places may affect the performability of these

activities. As a matter of fact, according to Rios and Brewer (2014), elementary school students have restricted convenience to enroll in science outside school learning environment. It is claimed that this is partly due to teachers' lack of outside school education.

In outside-school learning, it is essential that the subject to be covered in the program must be performed in the predetermined and appropriate outside-school environment, that is, the course must take place in the out-of-school environment. From this point of view, the activity to be made in out-of-school learning environment is not only a class trip (Şen, 2019). It requires a professional preparation that covers the teacher's plans about before the trip, during the trip and after the trip, a learning plan that he relates his learning effects with the out-of-school learning environment, and the assessment that he has prepared worksheets for his students. Loxley et al. (2016) mention that it is a high-powered job to take children away from school and out-of-school activities can be both costly and a waste of time as well as risky for children's safety. It is stated that in order to prevent possible risks, obstacles, and to maximize the learning of children, outside school activities should be carefully planned and prepared, and the teacher should have the necessary knowledge and skills.

One of the most significant elements for the performability of outside school learning is undoubtedly the development of teachers' knowledge and skills. Eliminating teachers' anxiety about this issue may cause them to benefit from outside school learning environments (Üner, 2019). In this context, teacher candidates' trips to different learning environments can contribute to their aims of performing outside school learning activities by increasing their knowledge, equipment, in addition to reducing their anxiety and gaining experience.

Science aims at learning, discovery of nature, scientific research and questioning. It is not possible to achieve these goals completely in the classroom environment. Therefore, the concept of out-of-school learning emerges. Out-of-school learning is essential so that students do not fall behind in science learning, discovery of nature, or simply, life. However, teachers and school administrators see out-of-school learning as a waste of time, do not have sufficient knowledge of the activities in the field of out-of-school learning and do not have enough awareness about out-of-school learning. This is an obstacle in the way of students to discover science (Şen, 2019; Dönel Akgül & Arabacı, 2020; Gürbey et al., 2022). With out-of-school learning courses, it can be ensured that pre-service teachers develop their goals of performing out-of-school activities and thus plan activities for out-of-school learning environments when they become teachers.

Therefore, this article aims to investigate the effect of outside-school learning courses on teacher candidates' aims of performing outside-school learning activities. For this purpose, the research question of the present study is "Does outside-school learning courses have an effect on teacher candidates' aims of performing outside-school learning activities?"

METHODOLOGY

Research Design

This research aims to investigate the outcome of outside-school learning courses on teacher candidates' aims of performing outside-school learning activities. For this purpose, single group pre-test and post-test weak experimental design, which is one of the experimental research models, was utilized in the study. Experimental research is the study conducted to test the cause-impact relationship between the variables. The effect of the experimental process in a single group pre-test and post-test pattern is tested on a single group (Karasar 2000; Büyüköztürk et al., 2016). Creswell (2012) states that single-group experimental design should be preferred in research where a new training module is developed and implemented (Yamak, Bulut & Dündar, 2014). Outside-school learning courses are not included in the science program. Therefore, the control group was not utilized in the research.

Working Group

The research participants are 37 teacher candidates studying in the 3rd grade at the Department of Mathematics and Science Teaching of a public university in Istanbul during the fall semester of the

2016-2017 academic year. The criterion sampling of the purposive sampling method was used to determine the study group. Students volunteered to participate in the present study. As the outside-school learning course is an elective course in the science teaching program, it was studied with the students who chose this course. Teacher candidates stated that they did not receive any education related to outside-school learning and voluntarily participated in the study.

Data Collection Tools

"Outside-School Learning Activities Performability Scale" developed by Karademir (2013) was used as a data collection tool to investigate the effect of outside-school learning courses on teacher candidates' aims to perform outside-school learning activities. This scale is based on "Behavioral Expectation" (K1), "Behavioral Assessment" (K2), "Behavioral Difficulties" (K3), "Behavioral Easiness" (K4), "Individual, Institutions or Organizations" (K5), "Motivation towards the Subjective Norm" (K6), "Attitude towards Behavior" (K7), "Perceived Behavior Control" (K8), "Special Norm" (K9), "Goal towards Behavior" (K10), comprising 10 sub-dimensions and 50 items in total. In the analysis phase, since the K6 sub-dimension consists of a single expression, it was excluded from the evaluation and the effectiveness of the outside-school learning course was examined over the other 9 dimensions. According to Karademir (2013), people's social behavior is controlled by certain elements, resulting from specific causes and emerging in a planned way. For a behavior to occur, the "Goal towards Behavior" must first be formed. Factors affecting "Goal towards Behavior", "Attitude towards Behavior", "Subjective Norms" and "Perceived Behavior Control" are specified as factors affecting behavior.

Cronbach's Alpha reliability test was applied for the scale used in the study. Depending on the alpha (α) coefficient, the reliability values of the scale are included in Table 1.

Table 1
Reliability of the Scale

Pre-test	**Cronbach's Alpha**	**Items**	**Post-test**	**Cronbach's Alpha**
K1-Behavioral Expectation	.941	8	**K1**	.821
K2-Behavioral Assessment	.958	8	**K2**	.874
K3-Behavioral Difficulties	.907	8	**K3**	.868
K4-Behavioral Easiness	.973	8	**K4**	.933
K5-Individual, Institutions - Organizations	.886	7	**K5**	.885
K7-Attitude towards Behavior	.691	3	**K7**	.610
K8-Perceived Behavior Control	.792	3	**K8**	.781
K9-Special Norm	.839	3	**K9**	.602
K10-Goal towards Behavior	.650	3	**K10**	.741

The scale used in the study and the sub-dimensions of this scale were determined to exceed 60 in terms of Alpha values. If $60 \leq \alpha < .80$, the scale is a highly reliable scale (Nunnally, 1978). In this study, it can be said that the reliability level is sufficient since the Cronbach Alpha internal consistency coefficient for the scale sub-dimensions is calculated as 0.60.

Application

In order to examine the impact of the outside-school learning course on teacher candidates' aims of performing outside-school learning activities, in this article, some activities were conducted with the working group for a period of time. In the Department of Mathematics and Science Teaching, Outside-School Activities is an elective course in the Fall Semester 3 hours theoretically in Science Teaching

Curriculum. The content of the course is briefly: "Outside-school learning in science education, introducing outside-school learning environments, outside of school, planning, performability and evaluation of outside-school activities, preparing course plans".

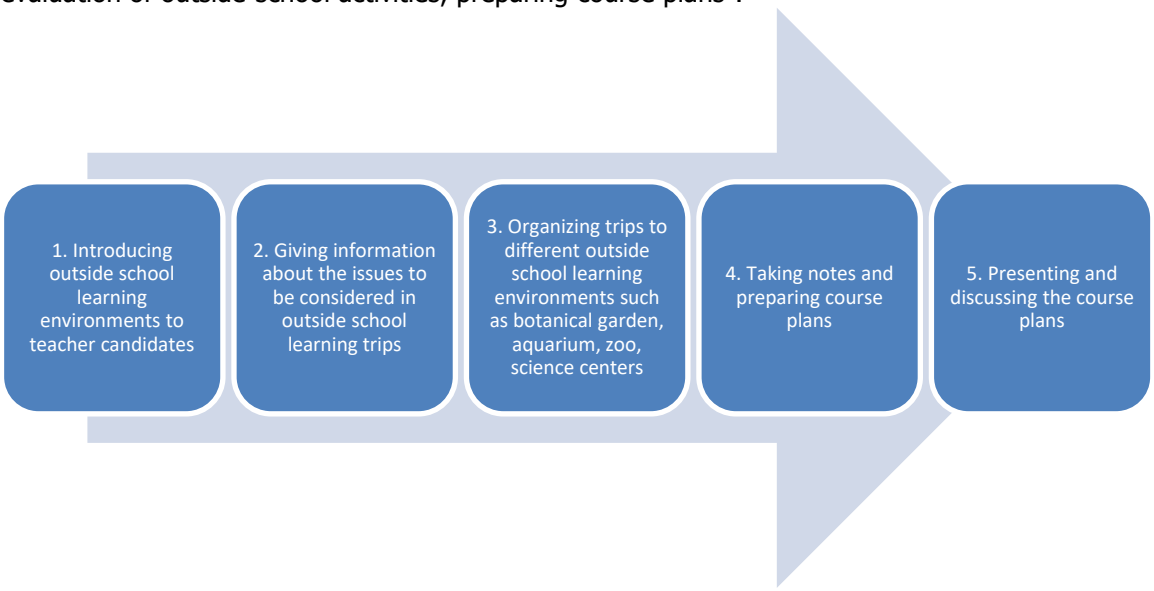

Figure 1. *Plans of application steps*

Figure 2. *Examples of Outside School Learning Environments*

Figure 3. *Examples of Outside School Learning Environments*

Within the scope of the course, outside-school learning environments were introduced to teacher candidates, and information was given about the issues to be considered in outside school learning trips. Later, teacher candidates organized trips to different outside school learning environments such as botanical garden, aquarium, zoo, science centers, in which they took notes and prepared course plans. These trips were presented in class and course plans were discussed. Thus, science teaching and outside-school learning environments were correlated with experience.

"Outside School Learning Activities Performability Scale" was applied as a pre-test and a post-test at the beginning and end of the term.

Analysis of the Data

SPSS package program was utilized to analyze the data. In the pre-test and post-test evaluation, Paired Sample T-Test was used for scale sizes showing normal distribution, and the nonparametric Wilcoxon Signed-Rank Test was used for scale sizes not showing normal distribution. The normal distribution test was carried out with the Kolmogorov-Smirnov test.

FINDINGS

In this section, the findings obtained from the statistical processes and the related tables are presented to test the problem of the study.

Descriptive features of the scale are given in Table 2. Accordingly, the minimum value, maximum value, average and standard deviation in each dimension of the scale are as shown in Table 2.

Table 2

Descriptive Features of the Scale

Scale	Min.	Max.	$\overline{X}$	SD	Scale	Min.	Max.	$\overline{X}$	SD
K1PRE	2.00	7.00	6.1171	1.05765	K1POST	5.75	7.00	6.6858	.37107
K2PRE	4.50	7.00	6.4595	.61241	K2POST	6.00	7.00	6.7736	.31018
K3PRE	2.00	7.00	5.0203	.96892	K3POST	1.75	7.00	4.6424	1.11889
K4PRE	2.75	6.00	4.9088	1.10932	K4POST	3.25	7.00	5.3142	.87580
K5PRE	2.43	7.00	5.4015	.92511	K5POST	3.71	7.00	5.7579	.86851
K7PRE	3.67	7.00	6.0631	.80061	K7POST	4.67	7.00	6.2037	.65358
K8PRE	1.00	7.00	2.9640	1.22672	K8POST	1.33	7.00	2.9099	1.39587
K9PRE	1.67	7.00	5.4234	1.20095	K9POST	4.67	7.00	6.1802	.61159
K10PRE	2.33	7.00	5.8559	0.89422	K10POST	2.00	7.00	6.1171	1.05765

Accordingly, while K1 (Behavioral Expectation) pre-test minimum value was 2, post-test minimum value increased to 5.75. While the average of K1 was 6.11 for the pre-test, it increased to 6.68 in the post-test. Similarly, while the pre-test score of K2 (Behavioral Assessment) dimension was minimum 4.50, the post-test value was calculated as 6. The average value also increased from 6.45 to 6.77. It is also possible to say that there is an improvement in the K3 (Behavioral Difficulties) dimension in terms of averages. Accordingly, the pre-test average of the K3 (Behavioral Difficulties) dimension decreased from 5.02 to 4.64 in the post-test. While K4 (Behavioral Easiness) pre-test average was calculated as 4.90, post-test average was calculated as 5.31. The other dimensions were calculated as K5 (Individual, Institutions or Organizations) pre-test average 5.40 post-test average 5.75, K7 (Attitude towards Behavior) pre-test average 6.06, post-test average 6.20, K8 (Perceived Behavior Control) pre-test test average 2.96, post-test average 2.90 and K9 (Special Norm) pre-test average 5.42, post-test average was 6.18 respectively. K10 (Goal towards Behavior) was determined as the pre-test average of 5.85 and the post-test average of 6.11. When looking at the descriptive statistics of the pre-test and post-test scores in general, it is possible to say that the "Outside School Learning Course" has a positive effect on the averages. Hypothesis Testing was used to evaluate this effect statistically. The developed hypothesis is as follows.

H0: "Outside School Learning Course has no effect on Teacher Candidates' Aims of Performing Outside School Learning Activities"

H1: "Outside School Learning Course has an effect on Teacher Candidates' Aims of Performing Outside School Learning Activities".

Paired difference tests were used for statistical testing of hypothesis. For this, firstly, the normal distribution condition test of the scale dimensions was performed. Accordingly, the results of the Kolmogorov-Smirnov test are as follows.

Table 3

Normal Distribution Test Results

Kolmogorov-Smirnov				Kolmogorov-Smirnov			
Scale	**Statics**	**df**	**p**	**Scale**	**Statics**	**df**	**p**
K1PRE	.208	34	.001	K1POST	.266	34	.000
K2PRE	.200	34	.001	K2POST	.290	34	.000
K3PRE	.153	34	.052	K3POST	.141	34	.084
K4PRE	.233	34	.000	K4POST	.157	34	.034
K5PRE	.135	34	.120	K5POST	.137	34	.107
K7PRE	.188	34	.004	K7POST	.220	34	.000
K8PRE	.146	34	.064	K8POST	.136	34	.114
K9PRE	.194	34	.002	K9POST	.153	34	.043
K10PRE	.227	34	.000	K10POST	.202	34	.001

According to the results of the Kolmogorov-Smirnov normal distribution test, K3PRE, K5PRE, K8PRE, K3POST, K5POST and K8POST dimensions fit the normal distribution. For this reason, the statistical crucial of the difference among the pre-test and the post-test and the significance of other dimensions were examine with the Paired Sample T-Test, and the significance of other dimensions that did not assume the normal distribution assumption was examined with the Wilcoxon Signed-Rank Test.

Table 4

Paired Sample T-Test Results

	Difference of Pre-Test and Post-Test						
	Average Difference	Standart Deviation	Average Standart Deviation	95% Difference of Confidence Interval		T	p
				Low	High		
K3PRE–K3POST	.36458	1.26751	.21125	-.06428	.79345	1.726	.093
K5PRE – K5POST	-.39286	1.01555	.16926	-.73647	-.04924	-2.321	.026***
K8PRE – K8POST	.05405	1.39999	.23016	-.41272	.52083	.235	.816

***The difference at the 0.05 level is statistically significant.

According to the paired sample t-test consequences for the dimensions that fit the normal distribution condition, the difference between K5 (Individual, Institutions or Organizations) pre-test and post-test is statistically important in favor of post-test at high levels. Accordingly, it was concluded that Outside School Learning Course has an effect on teacher candidates' K5 (Individual, Institutions or Organizations) levels (t: -2.321, p: 0.026 <0.05). In other words, this course is effective in teacher candidates' aims of performing outside school science activities under the influence of the individuals, institutions or organizations they see as reference.

According to the paired sample t-test results, the crucial in terms of K3 (Behavioral Difficulties) and K8 (Perceived Behavior Control) was not statistically significant in both dimensions (p> 0.05).

Table 5

Wilcoxon Signed-Rank Test Results

Post-test Monitoring Test **K1POST-K1PRE**	**N**	**Average of Rank**	**Total Rank Sum**	**Z**	**p**
Negative Rank	8	10.13	81.00	-2.202	0.028***
Positive Rank	17	14.35	244.00		
Equal	12				
Post-test Monitoring Test **K2POST-K2PRE**	**N**	**Average of Rank**	**Total Rank Sum**	**Z**	**p**
Negative Rank	8	8.31	66.50	-2.781	0.005***
Positive Rank	18	15.81	284.50		
Equal	11				
Post-test Monitoring Test K4POST-K4PRE	**N**	**Average of Rank**	**Total Rank Sum**	**Z**	**p**
Negative Rank	11	12.32	135.50	-2.206	0.027***
Positive Rank	20	18.03	360.50		
Equal	6				
Post-test Monitoring Test K7POST-K7PRE	**N**	**Average of Rank**	**Total Rank Sum**	**Z**	**p**
Negative Rank	12	12.54	150.50	-.933	0.351
Positive Rank	15	15.17	227.50		
Equal	9				
Post-test Monitoring Test **K9POST-K9PRE**	**N**	**Average of Rank**	**Total Rank Sum**	**Z**	**p**
Negative Rank	4	8.75	35.00	-3.304	0.001***
Positive Rank	20	13.25	265.00		
Equal	13				
Post-test Monitoring Test **K10POST-K10PRE**	**N**	**Average of Rank**	**Total Rank Sum**	**Z**	**p**
Negative Rank	10	13.45	134.50	-1.567	0.117

Positive Rank	18	15.08	271.50
Equal	9		

According to the Wilcoxon Signed-Rank Test results for the scales that do not comply with the normal distribution condition, it was concluded that there was no crucial difference among pre-post test scores of pre-service teachers in terms of K7 (Attitude towards Behavior) and K10 (Goal towards Behavior) ($p>0.05$).

The difference between the teacher candidates' K1 (Behavioral Expectation), K2 (Behavioral Assessment), K4 (Behavioral Easiness) and K9 (Special Norm) score averages is statistically significant. Accordingly, in terms of these dimensions of the scale, the average of the post-test scores of the teacher candidates are higher than average of the pre-test scores in view of statistical significance.

According to Karademir (2013), K1 (Behavioral Expectation) and K2 (Behavioral Assessment) are the factors that determine the attitude towards behavior. K4 (Behavioral Easiness) is identified by explaining as perceived behavior control. K5 (Individual, Institutions or Organizations) and K9 (Subjective Norm and Motivation) are defined as the social pressure or environmental impact (situations occurred outside the individual) on the individual and are the subjective norm factor. These factors determine the purpose towards the behavior on the scale. When all the findings are evaluated together, in short, it can be said that the outside school learning course contributes to the behavioral aims of outside school activities by affecting the attitudes and goals of prospective teachers towards behavior.

DISCUSSION

In accordance with the findings of the research, it was found that the "Outside School Learning Course" has a positive impact on teacher candidates' aims of performing outside-school learning activities. When the factors affecting the scale dimensions are considered, it is determined that there is an improvement in favor of the post-test in the teacher candidates' Attitude towards Behavior, Subjective Norm and Perceived Behavioral Control dimensions. In other words, it can be said that prospective teachers of outside-school learning course contribute to their aims and attitudes towards behavior in view of outside-school activities.

Through the literature reviewed, it is an evitable fact that past studies support this result. A study by Atmaca (2012) stated that prospective teachers take the subject more seriously from a professional point of view after taking the outside school science activities course. It is stated that this course contributes to teacher candidates being able to design outside-school activities by completing their insufficiencies both in theoretical and practical terms. In another similar study by Gürsoy (2018), it is stated that outside-school learning activities increase the self-efficacy beliefs of teacher candidates for organizing excursions for educational purposes. In a study by Gürbey, Mertoğlu, Sayan and Akgül Macaroğlu (2022), prospective teachers' goals for behavior are explained mostly by the effect of attitude towards behavior and least by the effect of subjective norms. In other words, pre-service teachers will perform out-of-school science activities thanks to their own attitudes. In a study conducted by Bozdoğan (2012), outside school activities were conducted with preservice science teachers. As a consequence of the study, it was defined that teacher candidates gained information about planning outside school trips and their self-confidence increased. According to Carrier (2009), teacher candidates outside school learning experiences can contribute to their science teaching. There are many places outside the classroom for outside school science teaching. These environments offer many learning opportunities to teachers and students. In this context, teacher education programs that try to provide teacher candidates with positive experiences to work with students can create opportunities to improve their self-efficacy in science teaching.

According to the findings obtained from the study, it can be said that the aims of preservice teachers to realize their outside school activities are generally high. This result of the study was interpreted as the course given to prospective teachers was effective in this direction. Şen (2019) touches on the importance of teachers making preparations to implement outside-school learning. He draws attention to the preparations to be made before, during and after the trip. As a matter of fact, in this study, preservice teachers were given training by giving them an opportunity to live and prepare by doing these issues. Additionally, this result of the study bears a resemblance to similar research. In a study conducted by Hamurcu, Karcıoğlu, Göbeklioğlu, Aymak, Atalay, and Topaloğlu (2019), self-efficacy beliefs of elementary school teacher candidates from different universities for organizing educational trips out of school were investigated. As a consequence of the research, it is stated that teacher candidates have a high level of self-confidence in organizing educational trips outside of school. In a study conducted by Özyıldırım and Durmaz (2022), it was determined that the field study, which was supported by the participants' interdisciplinary approach, had a positive effect on the behaviors of prospective teachers to perform out-of-school learning activities. In his research, Kulalıgil (2016) states that outside school learning is more effective in improving the creativity of students and increasing their motivation for science learning compared to teaching practices applied in classroom environment. In the studies conducted by Altıntaş (2014), Bozdoğan (2008), Çavuş et al. (2013), Ertaş et al. (2011), it was determined that the activities performed in outside-school learning environments caused an increase in the cognitive and affective skills of the students.

This research was carried out in the outside-school learning course, which was included as an elective in the Department of Mathematics and Science Teaching. Similar studies can be done with teacher candidates studying at different departments. It is also recommended to give "outside school teaching" to teachers who are working in order to contribute to teacher training before the service.

The consequences of the study are crucial in terms of revealing that the outside-school learning course has a positive effect on teacher candidates' aims of performing outside-school learning activities. For this reason, it is recommended that this course be given as compulsory, not an elective. Many studies in literature and today's educational approaches emphasize the importance and necessity of outside-school learning.

CONCLUSION

As a conclusion, it is found that the "Outside-School Learning Course" positively impacts teacher candidates' aims of performing outside school learning activities. According to the findings obtained from the study, it was effective on Behavioral Attitude, Subjective Norm and Perceived Behavioral Control factors, which determined the aims of outside school learning course prospective teachers to perform outside school science activities. Additionally, according to the findings obtained from the study, the perceptions of teacher candidates' performing outside school activities were determined at a high level. This study can be repeated with different methods, different outside-school learning scale, with qualitative findings to be obtained from teacher candidates, with varying grade levels, and in different regions.

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