

RESEARCH ARTICLE

The Effect of Using Travel-Observation Method in Teaching Environmental Problems on Academic Achievement

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ABSTRACT

This research, is there any effect of teaching the subject of environmental problems in the environment and society unit of the 11th grade high school geography course on the academic achievement of the students with the travel-observation method? It was carried out to seek an answer to the question. A quasi-experimental design with pretest-posttest control group was used in the study. The study group of the research consists of 60 students studying at a public school (Anatolian High School) in Kayseri. In the study conducted in the 2022-2023 academic year, the experimental group consisted of 30 students, 13 girls and 17 boys, while the control group consisted of 30 students, 12 girls and 18 boys. The experimental process was carried out over a period of three weeks. The quantitative data obtained as a result of the experimental procedures were analysed using SPSS 25 package programme. Frequency, percentage and arithmetic mean values were used in analysing the data; t- test and two-way Analysis of Variance for Repeated Measures on a Single Factor techniques were applied. According to the results obtained from the research, while the pre-test scores of the experimental and control group students on environmental problems were similar, significant differences were found in the post-test scores in favour of the experimental group. In the intra-group (pretest-posttest) comparison of the experimental and control groups, it was concluded that there was a significant difference in favour of the post-test scores in both groups, but when the effect size was taken into account, the increase in the experimental group was more significant. According to these results, it is recommended to encourage the use of the field trip-observation method in teaching subjects that can be understood by observation such as environmental problems.

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1. Introduction

Man is a creature with a desire to learn. The steps taken with the desire to know have led to the emergence of new learning areas for human beings. In the development of geography as a discipline, the human desire to learn has been an undeniable fact (Himmetoğlu & Türker, 2022). Geography is the science that examines the relationship between man and space, the distribution of natural and human events within the framework of the principle of causality (Ünlü, 2014). The aim of geography teaching is to raise a conscious world citizen who answers the

question of how geographical knowledge is formed, who can establish the relationship between human beings and the natural environment correctly, who has geographical skills, who protects the environment in which he lives, respects the natural environment, is sensitive to today's world problems (Aydın & Tülümen, 2018). Geography, which is a branch of science, is also taught as a course in many countries under the same name. It is known that there is a course called geography in Turkey's national education system only in secondary education institutions. In secondary education institutions, geography is

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taught as a compulsory course for 2 hours in grades 9 and 10 and in all high school types. In 11th and 12th grades, 2-3-4 hours of geography courses can be offered as elective courses depending on the type of school and department. Nature is a laboratory for the science of geography, which examines the relationship between the natural environment and human beings (Türker et al., 2020). Geography course in high schools is one of the most appropriate courses where the theoretical knowledge given in the classroom can be put into practice in out-of-school environments (Aydın & Çepni, 2021). It is possible for students to learn the information they learnt during the lesson better by doing and experiencing. This situation is summarised by the motto "I hear and forget, I see and remember, I do and understand". In order to realise this kind of learning, an enjoyable and exciting place or area should be preferred as a learning environment. Such environments can only be provided by geographical laboratories (Karakuş, 2006). Observations made in the natural environment contribute to the reflection of theoretical knowledge into practice. In this context, while planning the content of geography courses, travelling-observation and field studies should not be ignored. While excursions in the natural environment have particular pedagogical challenges, experiential learning can be seen as part of a larger push for a return to outdoor education (Barton, 2017). The 2018 Geography Curriculum, which is being implemented in Turkey, includes eight skills, which are 1- geographical observation, 2- working in the field, 3- geographical inquiry, 4- perceiving time, 5- perceiving change and continuity, 6- map skills, 7- preparing and interpreting tables, graphs and diagrams, 8- using evidence. According to the programme, the skills of geographical observation, working in the field and using evidence are explained in a way to suggest teaching directly outside the school (MEB, 2018). Given the importance of increasing students' geographical thinking skills, teachers need to learn and apply appropriate learning methods (Hamid et al., 2021).

The travel-observation method, which is one of the most characteristic teaching methods used in geography education, is a process based on the observations made by students in places such as museums, factories, mines or in the field outside the classroom environment for educational purposes (Çalışkan, 2015). The travel-observation method is a teaching method that will enable an event, phenomenon or entity to make a planned and purposeful observation in its natural conditions, under the supervision of a guide, in order to put the theoretical knowledge given in the classroom into practice and to provide permanent learning, to examine this event, phenomenon or entity in depth and to make evaluations on them (Aydın, 2020). travel-observation activities are an extremely important method in the development of geography science. It is an effective approach in the production of scientific geographical knowledge in order to compile scientific information in geography science and to analyse its causes and consequences (Çakioğlu Oban, 2020). It

is known that learning takes place through five sense organs. However, the degree of influence of sensory organs on learning is different from each other. In general, individuals learn 83% of what they see, 11% of what they hear, 3.5% of what they smell, 1.5% of what they touch and 1% of what they taste (Taşpınar, 2020). In terms of enabling students to learn by doing and experiencing by using all five senses, the travel-observation method is known as a method frequently used by educators. The travel-observation method is a method that allows students to focus directly on the objects they study, to learn by doing and experiencing, and to make what they learn more permanent (Çalışkan, 2015). Especially in the high school level geography course, students should be taken to excursion-observation activities that give the opportunity to apply the theoretical knowledge instead of the geography course that is constantly taught in the classroom. In this context, Taşpınar (2020) summarises the benefits of the excursion-observation method as follows;

- It attracts students' attention and motivates them to learn.
- It is possible to see the events/processes in real environment.
- Thanks to the application, there is a positive development in the cooperation of the school with the environment.
- It enables the use of different teaching environments.
- It enables students to recognise their environment better.

Successful planning, implementation and finalisation of the excursion-observation method is important for the functionality of the method. Aydın (2019) listed the conditions necessary for the successful implementation of the travel-observation method as follows;

- Students should be informed about the trip, the region or regions and the aims of the trip.
- A detailed trip plan should be made and a sample of the plan should be given to the parents of the students.
- The rules to be followed during the trip should be explained to the students.
- Permission must be obtained from the students' parents by the school administration.
- The necessary official letters should be written to the administrative authorities of the place or places to be visited by the school directorate well in advance.
- Necessary precautions should be taken during the trip.
- In order for the scientific subjects covered during the excursion to be permanent, students should definitely take notes in their notebooks.
- Impressions, information gathered and experience gained during the trip should be discussed after the trip.

- It should be ensured that a homework on the results of the trip is prepared by the students and presented to the school administration.
- When the excursion-observation method is applied in geography teaching, it should be associated with other

teaching methods and techniques (narrative method, question-answer method, etc.).

In the 2018 Geography Curriculum, the achievements related to environmental problems are given in Table 1.

Table 1. Gains related to environmental problems in the geography course curriculum (MEB, 2018).

Unit	11th grade	12th grade
Environment and society	11.4.1. Classifies environmental problems according to their causes. (It is included in the 2-hour programme.)	12.4.1. Explains the limitations of the natural environment.
	11.4.2. Explains the effects of mines and energy resources on the environment with examples.	12.4.2. Compares the policies and practices of countries with different levels of development towards the prevention of environmental problems. (It is included in the 2-hour programme).
	11.4.3. Analyses the use of non-renewable resources in terms of exhaustibility and alternative resources. (Included in the 2-hour programme)	12.4.3. Explains the effects of environmental organisations and agreements on environmental management and protection. (It is included in the 2-hour programme).
	11.4.4. Evaluates the use of natural resources in countries with different development in terms of environmental impacts. (Included in the 2-hour programme)	12.4.4. Explains the threats to common natural and cultural heritage.
	11.4.5. Evaluates different land use practices in terms of their effects on the environment.	
	11.4.6. Analyses the formation and diffusion processes of environmental problems in terms of their global effects. (Included in the 2-hour programme)	
	11.4.7. Evaluates the sustainable use of natural resources in terms of recycling strategies. (Included in the 2-hour programme)	

When Table 1 is analysed, it is seen that the learning outcomes related to environmental problems are included in Grades 11 and 12. However, the geography course in grades 11 and 12 is taught as an elective geography course in Turkey. These courses are scheduled for 2-3-4 hours per week depending on the school type and curriculum (grades 11 2-3-4; grades 12 2-4 hours). Therefore, depending on the type of school and department they prefer, students either see all of these outcomes, some of them or none of them. Two different textbooks are used at the 11th grade level in educational institutions affiliated to the Ministry of National Education. In these two textbooks, the subject of environmental problems is included in accordance with the 2018 Geography Curriculum. In both textbooks, environmental problems are classified and explained in accordance with the outcome.

Today, one of the biggest problems threatening the future of human life is undoubtedly environmental problems. On the basis of the environmental problems, human beings themselves come first and foremost as responsible (Arık & Yılmaz, 2017). People's positive attitudes towards the environment will lead to a decrease in the impact areas of environmental problems. Considering the aims of geography teaching, it is expected that

individuals who have geographical awareness at the end of the education and training process will be more sensitive to environmental problems, undertake important tasks in the protection of the environment and make efforts for this (Kocalar, 2014). Many branches of science related to the environment, especially environmental science and ecology, are interested in environmental problems. Because environmental problems are a multidimensional and wide subject (Yıldız et al., 2008). In this context, the science of geography is also interested in environmental problems. As seen in Table 1, secondary school geography courses also include learning outcomes related to environmental problems.

When the literature is examined, it can be said that there are very few studies on the subject of the research in Turkey for secondary school students. On the other hand, in the study conducted by Yılmaz (2023), geography teachers emphasised the field study and observation method as the most important teaching method. Öztürk (2008), on the other hand, stated that when the studies on geography teaching are examined, the importance of the travel-observation method is emphasised; however, this method is one of the least used methods due to reasons such as financial inadequacy, limited time and avoiding

responsibility. It is understood that the few studies on the field trip-observation method mostly focus on student achievement (Ertuğ, 2007; Özgen, 2011; Şen 2011; Aytaç, 2014).

2. Materials and Methods

2.1. Research Design

In this study, a quasi-experimental design with pretest-posttest control group was preferred. The experimental model is the research area in which the data to be observed are obtained under the direction of the researcher in order to reveal the cause-effect relationships between variables (Büyüköztürk, 2022; Karasar, 2023). Quasi-experimental design is the most preferred experimental design especially in educational researches when it is not possible to control all variables. In this model, groups are formed as experimental and control groups through random assignment (Balcı, 2022; Büyüköztürk, 2022). In the research process, in the experimental process, in the control group, the teaching based on the programme being implemented was continued, and in the experimental group, the study was carried out with the excursion-observation method. According to Garipağaoğlu (2001), in secondary education institutions, which are considered to be the first step of geography teaching, the excursion-observation method should be planned and implemented in the form of close neighbourhood excursions. Because this group of high school students may not be able to participate in long-term and long-distance trips for many reasons. This situation was not ignored and the excursion-observation activity was carried out in a close neighbourhood.

2.2. Study Group

In this study, in which a quasi-experimental design was preferred, the study group consisted of 60 eleventh grade students attending a public school (Anatolian High School) in Kayseri in the 2022-2023 academic year. The experimental group consisted of 30 students, 13 girls and 17 boys, while the control group consisted of 30 students, 12 girls and 18 boys.

2.3. Data Collection Tools

In the research process, the “environmental problems academic achievement test” consisting of 10 multiple-choice items developed by the researchers was used as a data collection tool. The achievement test was created in the first stage to cover the subject of “classification of environmental problems” and then designed as 20 questions by taking expert opinions. In the next stage, in order to test the reliability of the achievement test, a 20-question achievement test was applied to 100 students who were not in the experimental and control groups and who were continuing their education in the next grade. The data obtained at this stage were evaluated with KR20 (Kuder-Richardson) Reliability Analysis. The final version of the achievement test consisted of 10 items. As a result of the analysis, the KR20

reliability coefficient of the achievement test was found to be 0.71.

2.4. Data Collection Process

The experimental process was carried out for three weeks. At the beginning of the study, achievement test (pre-test) was applied to both groups in the first week of the experimental process. The data obtained were analysed and reported. In the second week, the draft plan prepared for the pre-trip preparation was shared with the students and the students in the experimental group were informed about the route where the travel-observation activity would be carried out. Students were informed about the rules to be followed during the trip. The objectives of the trip were given to the students in writing and it was explained what should be observed during the trip. In addition, each student was given one copy of the prepared trip plan. In the third week of the experimental process, the students in the experimental group were taken to the field around the Bünyan Stream located within the borders of the Kocasinan district of Kayseri province and the travelling and observation activities were carried out. The trip-observation activity was carried out during the week and in one day, by obtaining the necessary permissions from the school administration and the students' parents. The activity was carried out on Wednesday, and an academic achievement test (post-test) was applied to both the experimental and control groups on Thursday.

2.5. Analysis of Data

The quantitative data obtained at the end of the experimental process were analysed using SPSS 25 package programme. During the analysis, frequency, percentage and arithmetic mean values were used to analyse the data; t-test and two-way Analysis of Variance for Repeated Measures on a Single Factor techniques were applied.

3. Findings

3.1. Findings Related to the Pretest Scores of Experimental and Control Group Students

In order to determine whether the pre-test scores of high school students' knowledge of environmental problems showed a significant difference according to the group variable, t-test for unrelated samples was performed. The results of the analysis are given in Table 2.

Table 2. Unpaired sample t test results for the intergroup (experimental-control) difference of pre-test scores.

Group	N	\bar{X}	S	t	p
Experiment	30	10.70	2.94	1.869	.067
Control	30	9.33	2.72		

According to the t-test results in Table 2, the pre-test scores did not show a significant difference according to the group (experimental-control) variable [$t_{(58)} = 1.869$; $p > .05$]. While the

average of the experimental group pre-test scores was $\bar{X}=10.70$, the average of the control group pre-test scores was $\bar{X}=9.33$. The numerical difference was not statistically significant. This finding can be interpreted as that the pre-test scores of the experimental and control group students on environmental problems and types are similar.

3.2. Findings Related to Pre-test-Post-test Scores of Experimental and Control Group Students

In the analysis of the data obtained from the research, it was examined whether the achievement scores of the experimental and control group students in the subject of environmental problems and types in the geography course differed according to the groups (experiment-control), measurements (pretest-posttest) and their common effect. The results of the analyses (pretest-posttest mean scores and standard deviation values) are given in Table 3.

As seen in Table 3, while the mean score of the achievement test of the students in the experimental group, in which the travel-observation method was applied, was $\bar{X}=10.70$ before the experiment, this value was realised as $\bar{X}=19.60$ after the travel-observation activity. The same scores of the students in the control group in which the programme-based instructional

lecture method was applied were $\bar{X}=9.33$ and $\bar{X}=16.00$, respectively.

Table 3. Pretest-posttest average scores and standard deviation values of students from the achievement test on environmental problems and types.

Group	PRETEST			POSTTEST		
	N	\bar{X}	S	N	\bar{X}	S
Experiment	30	10.70	2.94	30	19.60	2.03
Control	30	9.33	2.72	30	16.00	2.78

Accordingly, it can be said that both the students of the experimental group in which the travel-observation method was applied and the students of the control group in which the curriculum-based teaching method was applied had an increase in their achievement levels on environmental problems and their types. The results of the two-way analysis of variance regarding whether the changes observed in the achievement scores of the students exposed to two different experimental procedures in the subject of environmental problems and their types after the experiment compared to the pre-experiment show a significant difference are given in Table 4.

Table 4. ANOVA Results of the pre-test and post-test scores on the environmental problems and types of environmental problems.

Source of Variance	Sum of Squares	df	Mean Square	F	Sig.	Eta squared
Between Groups	840.491	59				
Group (E/C)	185.008	1	185.008	16.370	.000	.220
Error	655.483	58	11.301			
Within groups	2007.499	60				
Factor (Pretest-Posttest)	1817.408	1	1817.408	690.381	.000	.922
Factor* Group	37.408	1	37.408	14.210	.000	.197
Error	152.683	58	2.632			
Total	2847.99	119				

When Table 4 is analysed, the findings obtained can be explained as follows.

1- There is a significant difference between the pre-test and post-test total environmental problems and their types achievement scores of the experimental and control groups before and after the experiment [$F_{(1-58)}= 16.370$; $p > .05$]. This finding indicates that the achievement scores of the students in the experimental and control groups on environmental problems and their types differed without making a measurement distinction (pre- and post-experiment).

2- There is a significant difference between the pre-test and post-test mean achievement scores of the students in relation to their achievement in the subject of environmental problems and their types [$F_{(1-58)}= 690.381$; $p > .05$]. This finding can be interpreted as that the achievements of the students on

environmental problems and their types vary depending on the teaching model applied.

3- According to the results of the analyses in Table 4, it is understood that the achievement scores of the experimental and control group students, to whom two different teaching models were applied, for the test on the subject of environmental problems and their types showed a significant difference from before to after the experiment. In other words, it was found that the common effects of being in different treatment groups (experimental and control groups) and repeated measurements factors on the achievement levels of the test on the subject of environmental problems and their types were significant.

When the eta squared value is analysed, it is seen that the effect size of this significance is approximately .20. This finding shows that applying curriculum-based teaching and

travel-observation methods have different effects on increasing students' achievement in the subject of environmental problems and their types. In other words, as a result of the experimental process applied, their achievements on environmental problems and their types change. It can be said that these differences observed in the achievements of the students on environmental problems and their types stem from the travel-observation approach. It is seen that the excursion-observation method, in which a higher increase was observed in the test scores of the subject of environmental problems and species compared to the pre-experiment, was more effective in increasing the achievement of the students in the subject of environmental problems and species compared to the curriculum-based teaching method (Narration method) (Figure 1).

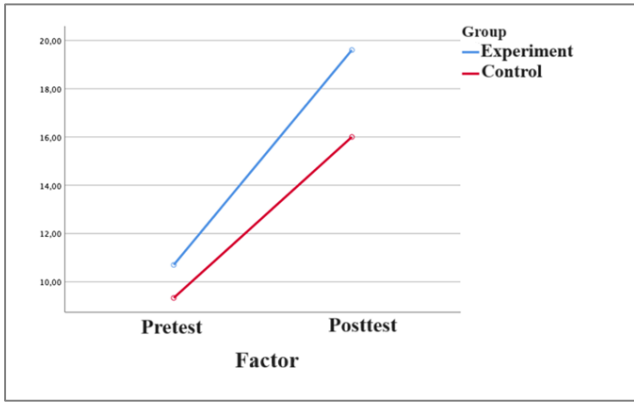


Figure 1. Pretest- posttest achievement graph of environmental problems

4. Discussion and Conclusion

In this study, quantitative data were collected from the participants in order to find out whether the teaching of the subject of environmental problems in the environment and society unit of the 11th grade high school geography course with the travel-observation method has an effect on the academic achievement of the students. The answers given by the students participating in the research to the achievement test on environmental problems were evaluated by statistical methods and the following conclusions were reached based on the findings obtained.

It was understood that the pre-test scores of the experimental and control group students on environmental problems and their types were similar and there was no significant difference in the answers given by the two groups. This finding can be interpreted as that both groups had similar knowledge about environmental problems before the experimental process.

As a result of the experimental process, it can be said that an increase was observed in the achievement levels of both the students in the experimental group where the travel-observation method was applied and the students in the control group where the curriculum-based teaching method was applied on

environmental problems and their types. However, it is understood that this increase was higher in the experimental group where the travel-observation method was applied.

It is a fact that geography teachers working in high schools will contribute to the achievement of the objectives of the programme by carrying out planned travel-observation activities in line with the acquisitions and skills in the geography curriculum (Yıldırım & Aribaş, 2018). In the study conducted by Ballı (2009), it was concluded that among the methods and techniques used in the geography teaching process, the travelling-observation method was the most effective method in student achievement. In the study conducted by Bozdoğan et al. (2015), it was determined that students who had the opportunity to get first-hand information and make observations in the travel-observation activity also stated that their learning was more permanent. In addition, it was also concluded that a well-planned excursion-observation method can achieve its purpose. According to Kaya et al. (2010), it was concluded that the studies conducted in the field developed positive attitudes of students towards geography lessons and were effective in permanent learning.

With the findings obtained as a result of the research, it was concluded that teaching the subject of environmental problems in the environment and society unit with the travel-observation method was effective in increasing academic achievement. Considering the results of the study, it is suggested that a similar application can be repeated with different sample groups in other studies that may be conducted on this subject. Especially in the secondary school geography course, the travel-observation method can be used starting from the immediate environment in accordance with the acquisitions. This method, in which it is possible to learn with many senses, can be carried out by making the necessary planning, informing and obtaining permission.

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Conflict of Interest

The authors declare that they have no conflict of interest.

References

- Arık, S., & Yılmaz, M. (2017). Fen bilimleri öğretmen adaylarının çevre sorunlarına yönelik tutumları ve çevre kirliliğine yönelik metaforik algıları. *Kastamonu Eğitim Dergisi*, 25(3), 1147-1164. (In Turkish)
- Aydın, F. (2019). Coğrafya dersi öğretim yöntem ve teknikleri ile bunların derslerde uygulama örnekleri. In Ü. Ünalı (Ed.), *Coğrafya öğretimi I* (pp. 59-123). Pegem. (In Turkish)

- Aydın, F. (2020). Coğrafya öğretiminde okul dışı öğrenme ortamları. In Ü. Ünalı (Ed.), *Coğrafya öğretimi II* (pp. 29-44). Pegem. (In Turkish)
- Aydın, F., & Çepni, O. (2021). Coğrafya eğitiminde okul dışı öğrenme ve kullanımı. In E. Artvinli & Y. Değirmenci (Eds.), *Uygulamalı örnekleriyle coğrafya eğitiminde yeni yaklaşımlar II* (pp. 175-200). Nobel. (In Turkish)
- Aydın, F., & Tülümen, M. (2018). Examining the anxiety and attitudes of secondary school students towards geography lessons in terms of some variables. *Review of International Geographical Education Online (RIGEO)*, 8(3), 473-499. <https://doi.org/10.33403/rigeo.505247>
- Aytaç, A. (2014). Sosyal bilgiler öğretmen adaylarının eğitimlerinde gezi-gözlem metodunun yeri ve önemi. *Hasan Ali Yücel Eğitim Fakültesi Dergisi*, 11(21), 55-69. (In Turkish)
- Balcı, A. (2022). *Sosyal bilimlerde araştırma yöntem, teknik ve ilkeler*. Pegem. (In Turkish)
- Ballı, A. (2009). 9. Sınıf fiziki coğrafya konuları öğretiminde gezi gözlem yönteminin önemi (Bağcılar ilçesi örneği) (Master's thesis, Marmara University). (In Turkish)
- Barton, K. (2017). Exploring the benefits of field trips in a food geography course, *Journal of Geography*, 116(6), 237-249. <https://doi.org/10.1080/00221341.2017.1296481>
- Bozdoğan, A. E., Okur, A., & Kasap, G. (2015). Planlı bir alan gezisi için örnek uygulama: Bir fabrikası gezisi. *Karadeniz Sosyal Bilimler Dergisi*, 7(2), 79-90. (In Turkish)
- Büyüköztürk, Ş. (2022). *Deneyisel desenler: Ön test-son test kontrol grubu, desen ve veri analizi*. Pegem Akademi. (In Turkish)
- Çakıoğlu Oban, R. (2020). Coğrafi gözlem becerisi. In Ç. Öztürk Demirbaş (Ed.), *Coğrafi beceriler* (pp. 1-40). Nobel. (In Turkish)
- Çalışkan, O. (2015). *Coğrafya eğitimi ve arazi çalışmaları*. Pegem. (In Turkish)
- Ertuğ, A. (2007). *Lise 2. Sınıf biyoloji dersinde okutulan "Biyosferdeki yaşama birlikleri" konusunun geleneksel ve gezi-gözlem yöntemiyle öğretimin öğrenmeye olan etkisinin karşılaştırılması* (Master's thesis, Selçuk University). (In Turkish)
- Garipağaoğlu, N. (2001). Gezi-gözlem metodunun coğrafya eğitimi ve öğretimindeki yeri. *Marmara Coğrafya Dergisi*, 2(3), 13-30. (In Turkish)
- Hamid, N., Roehrig, G., Setyowati, D. L., Rachmah, H., Royyani, M. A., & Mahat, H. (2021). Development model for environment based learning to improve junior high school students geographical skills. *Review of International Geographical Education (RIGEO)*, 11(2), 461-481. <https://doi.org/10.33403/rigeo.833857>
- Himmetoğlu, İ., & Türker, A. (2022). Arazi çalışmalarının coğrafya öğretmeni adaylarının öğrenme ve öğretme stillerine etkileri. In H. Şahin (Ed.), *Eğitim bilimleri çalışmaları* (pp. 187-207). Livre De Lyon. (In Turkish)
- Karakuş, U. (2006). *Coğrafya' da iklim konularının öğretiminde deney yönteminin öğrenci başarı düzeyine etkisi* (Doctoral dissertation, Gazi University). (In Turkish)
- Karasar, N. (2023). *Bilimsel araştırma yöntemi: Kavramlar, ilkeler, teknikler*. Nobel. (In Turkish)
- Kaya, H., Demirkaya, H., & Aydın, F. (2010). Undergraduate students' experiences in a geography fieldwork. *Middle-East Journal of Scientific Research*, 6(6), 637-641.
- Kocalar, A. O. (2014). Coğrafya öğretiminde çevre eğitimi. In H. Kaya, A. Karatepe & A. Özder (Eds.), *Modern yöntem ve tekniklerle Coğrafya öğretimi* (pp. 237-262). Pegem. (In Turkish)
- MEB. (2018). *Coğrafya dersi öğretim programı*. Milli Eğitim Bakanlığı (MEB). https://mufredat.meb.gov.tr/Dosyalar/20181202037244_82-Cografya%20dop%20pdf.pdf (In Turkish)
- Özgen, N. (2011). Fiziki coğrafya dersi öğretim metoduna farklı bir yaklaşım: Gezi- gözlem destekli öğretim. *Marmara Coğrafya Dergisi*, (23), 373-388. (In Turkish)
- Öztürk, Ç. (2008). Coğrafya öğretiminde gezi-gözlem tekniğini kullanabilme öz-yeterlilik inanç ölçeğinin geliştirilmesi. *Ondokuz Mayıs Üniversitesi Eğitim Fakültesi Dergisi*, (25), 13-23. (In Turkish)
- Şen, A. N. (2011). *10. Sınıf biyoloji dersinde okutulan popülasyon ekolojisi konusunun öğretilmesinde sunuş yolu ve gezi-gözlem yöntemi kullanılarak öğrenme üzerindeki etkisinin karşılaştırılması* (Master thesis, Selçuk University). (In Turkish)
- Taşpınar, M. (2020). *Kuramdan uygulamaya öğretim ilke ve yöntemleri*. Pegem. (In Turkish)
- Türker, A., Ünalı Eser, Ü., & Karagüç Çakır, C. (2020). Arazi çalışmalarının coğrafya öğretmeni adaylarının yeryüzü şekillerini kavrama ve tasvir etme becerilerine etkileri. *Anadolu Kültürel Araştırmalar Dergisi*, 4(2), 144-161. <https://doi.org/10.15659/ankad.v4i2.99> (In Turkish)
- Ünlü, M. (2014). *Coğrafya öğretimi*. Pegem Akademi. (In Turkish)
- Yıldırım, T., & Arıbaş, K. (2018). Coğrafya öğretiminde gezi gözlem yöntemi: Örnek bir rota çalışması. *Marmara Coğrafya Dergisi*, (37), 16-29. <https://doi.org/10.14781/mcd.386092> (In Turkish)
- Yıldız, K., Yılmaz, M., & Sipahioğlu, Ş. (2008). *Çevre bilimi ve eğitimi*. Gündüz Eğitim ve Yayıncılık. (In Turkish)
- Yılmaz, M. (2023). Coğrafya öğretmenlerinin öğrenci merkezli öğretimi destekleyen öğretim yöntemlerini kullanımı: 9. Sınıf örneği. *International Journal of Geography and Geography Education (IGGE)*, (50), 63-81. <https://doi.org/10.32003/igge.1312244> (In Turkish)