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The Effect of Problem Based Learning Method on Students Academic Success and Their Attitudes towards Social Studies Course

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Abstract. The aim of the innovative learning approaches is to train individuals who are away from the memorisation, who are producers, who have problem-solving skills, and who can transfer what they have learned to real life. One of the innovative learning approaches is problem based learning method. According to the stated objectives, this research has been carried out to determine the effect of problem based learning on academic achievement in 6th grade social studies course. In this research, pre-test and post-test design that has experiment control group has been used. In order to collect the research data; achievement test to measure students' academic achievement, social studies attitude scale, scenarios based on problem-based learning method, study notes and instructional materials suitable for classroom environment were developed and applied. It was observed that there was no statistically significant difference between the students in the experimental group and the students in the control group in accordance with the results obtained from the statistical analysis regarding the data in the pre-test and attitude scale application. According to the results of the statistical analysis of the data obtained from the final tests based on the final measurements; it was concluded that problem-based learning method has a positive effect on the students' academic success in social studies course and social studies course attitudes.

Keywords: Problem based learning, social studies course, attitudes.

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Social studies course learning outcomes involve characteristics that aim to realize the individual's socialization function. The subjects of social studies course are based on real life and include current events and concepts (Deveci, 2007). The solutions to problem situations in real life constitute the basis of social studies course activities. The subjects of social studies course include activities that aim to get students to gain certain social functions specified in education (Ozturk and Dilek, 2004). Socialization of individuals as a part of the society, their gaining awareness of citizenship, and analysis of the individual's relation with physical and social environment in terms of time can be listed among the objectives of social studies course. In order for the gaining process to be realized, individuals should be able to use knowledge and skills produced in real life, and by making sense of their own life experiences, they should display development in the direction of social studies course program and objectives and gain the skill to restructure their characteristics in terms of problem solving skills (Deveci & Ozturk, 2016). In order for learners to adapt to these conditions, learning environment should encourage active participation and be learner-centered, and individuals are expected to display higher level thinking skills such as problem solving, reasoning, and critical and analytical thinking, establish cause-effect relationship between events and situations, transfer the issues learned, be sensitive towards the society and social issues, exhibit development in line with the requirements of the era, realize socialization process, have an inquisitive perspective, be able to produce one's own ideas and defend them, be able to deal with events analytically, adopt life-long learning, and use scientific research stages frequently in learning steps (Ocal & Tay, 2015).

As learning and teaching environments trigger the learner's awareness level, creative thinking, and problem solving skills, the individual, who can think multidimensionally, starts to display behaviors based on social benefit (Tyler, 2014). The individual, who approaches social events and problems with a sense of responsibility, will exhibit an effort to assume active roles in the solution to these problems (Seferoglu & Akbiyik, 2006). At this point, the issue of choosing learning methods related to these activities arises. In this context, in problem-based learning method, which is included among innovative learning approaches, problem scenarios created in line with the problems that students can encounter in real life are studied in groups with collaborative activities (Saban, 2004).

In problem-based learning method, it is aimed to get students to experience activities and problem scenarios that will ensure students' active participation in the process and their displaying of analytical and critical thinking skills in such a way to enable them to learn (Soyleyici, 2018). Thus, students can activate their problem solving skills within a group by sharing the solutions and the data they obtained from reference sources in their collaborative study groups (Gogus, 2013). The groups

share the data and solutions they have accessed in their active learning process with students in other groups and realize their peer evaluation and self-assessment activities based on problem solving processes (Tasdemir, 2007).

In problem solving process, it is important to test the solution to the problem through self-learning and brain storming activities in learning environments (Tavukcu, 2006). While students are performing self-learning activities, they gain the skill of assuming responsibility in problem solving. They find the opportunity to evaluate accessing necessary sources, prior knowledge, readiness competencies, and the suitability of the data obtained for problem solving (Fer, 2014). They can establish cause-effect relationships between events and situations, and thus they gain the skill of transferring the solution recommendations they have produced (Fer, 2014). It will be useful to get students to feel gaining problem solving skills as a need in schools as learning environments and for this purpose, to make arrangements that will enable them to use problem solving skills throughout their lives (Hun, 2017).

In problem-based learning process, while studies that aim to guide students are being made in the research process of solving the problem, students' motivation should be kept at a high level by choosing problems that are based on real life and are authentic. Problem situations should consist of solutions that comply with students' readiness, are easily noticeable, and have multidimensions. The problems should not be presented in a way for them to reach the result quickly, but it should make students follow the stages of the process effectively. Also, it should be observed that there is a strong connection between students' problem solving skills and their creative thinking skills (Demirel, 2012). In this context, social studies course is important in terms of getting students to gain problem solving skills. Problem solving activities to be used in this course can be considered to have an effect on achieving the objectives of the program. Hence, the present study aimed to analyze the effect of problem-based teaching activities on students' success in social studies course and their attitudes. It is expected that the results to be obtained will contribute to the authorities in terms of program development, teachers as practitioners, and scientists who will do research on the issue. To this end, answers to the following research questions were sought:

1. Is there a significant difference between the experimental group and control group students in terms of their pretest scores regarding their academic achievement?
2. Is there a significant difference between the experimental group and control group students in terms of their pretest and posttest scores regarding their attitudes?

3. Does problem-based learning method have an effect on the experimental group students' opinions about PBL method and their problem solving skills?

Method

Research Model

The study was conducted with a quasi-experimental model with pretest-posttest control group. Accordingly, while problem-based learning method was the independent variable in the study, academic achievement and attitude were the dependent variables. In order to compare the efficacy level of problem-based learning method with teaching guidebook activities, an experimental group and control group were formed from the classes of the students. While activities based on problem-based learning method were applied to the experimental group students, teaching guidebook activities were applied to the control group students.

Study Group

The study group consisted of students who studied at a state school. There were 24 students (12 girls and 12 boys) in the control group and 23 students (12 girls and 11 boys) in the experimental group.

Data Collection Tools

Career adaptability scale. Before and after the interventions, Grade 6 “Social Studies Course Achievement Test”, which was created based on the questions selected from MoNE EBA questions, and “Attitude Scale for Social Studies Course” (ASSSC) prepared by Deveci (2002) were applied to the students in the experimental group and control group. The Cronbach’s alpha coefficient of the “Attitude Scale for Social Studies Course” was determined to be .718.

Regarding the reliability of the questions in the achievement pretest according to Kuder-Richardson 20 descriptive statistics, KR-20 reliability coefficient of achievement pretest was found as .66, and reliability check was ensured ($0.60 < \alpha < 0.80$) (Karasar, 2011).

Regarding the reliability of the questions in the achievement posttest according to Kuder-Richardson 20 descriptive statistics, KR-20 reliability coefficient of achievement posttest was found as .85, and reliability check was ensured ($0.80 < \alpha < 1.00$).

Regarding item difficulty analyses of the questions in the pretest applied to the groups (pj), when item difficulty descriptive statistics were examined, difficulty arithmetic mean was found to be at a moderate level with a value of .4521.

Regarding item difficulty analyses of the questions in the posttest applied to the groups (pj), when item difficulty descriptive statistics were examined, difficulty arithmetic mean was found to be at a moderate level with a value of .5603.

Process

The experimental activities consisted of 12 class hours in 4 weeks conducted in a state school in Ankara. Before beginning the interventions, the students in the experimental group were informed about problem-based application processes, problem scenarios, the scope of the activities to be done in classes, evaluation form for students, and their questions and opinions about learning processes. Regarding the group studies that the students in the experimental group participated in, the students were placed into groups of 5-6 students depending on the class size. Attention was paid to forming heterogenous groups. The students in the groups were allowed some time to distribute the tasks within their groups and find a name for their groups. Lesson plans for activities to be done in line with unit learning outcomes were created with the experimental group students. Problem scenarios were distributed to the students once in a week, and they were asked to do studies within their groups.

The students in the experimental group defined the problem by using their existing knowledge and they shared research sources related to the problem situation and tasks of this research within their groups. They shared their research results with their group members in the next session through a presentation. At this stage, the teacher as a guide provided feedback and corrections for the missing information and the study was continued. In the ensuing session, with the guidance of other students and the teacher, the students in the groups reached common inferences for solutions created by the arrangement of the data collected related to the solution of the problem, and these solutions were discussed. Later, they were asked to report on their solutions and prepare for the presentation they would make. They kept the data and documents and evaluation forms in their research files. The students in the groups put forward their solutions based on the data they obtained from the Internet, source books, pictures, and visuals related to the problem scenarios they were given.

Regarding the students in the control group, they were provided education in line with the teaching guidebook for social studies course prepared by MoNE. These students came to classes prepared, and starting with question-answer activities, class activities were done according to the

guidebook. The classes held with the control group students were completed in the same amount of time as the experimental group students.

Data Analysis

The analysis of the data collected was performed through SPSS package program. Analyses for the achievement test were performed, including independent groups t test, frequency analysis, normal distribution analysis, KR-20 reliability coefficient, item difficulty analysis, and item discrimination analysis. ASSSC was subjected to independent group's t-test and frequency analysis.

Results

The findings obtained as a result of the analyses performed on the data collected throughout the research are presented below:

Table 1.

Independent Groups T Test Descriptive Statistics for Social Studies Course Pretest Scores of the Experimental and Control Group Students

| | Groups | N | X | SD | t | P | Confidence Interval |
|-----------|--------------------|----------|----------|-----------|----------|----------|----------------------------|
| Pre-test | Experimental Group | 23 | 11.3913 | 4.05041 | -.961 | .342 | 0.05 |
| | Control Group | 24 | 10.3333 | 3.46068 | | | |
| Post-test | Experimental Group | 23 | 16.0870 | 5.02633 | -3.458 | .001 | |
| | Control Group | 24 | 10.9167 | 5.21633 | | | |

According to the research data presented in Table 1, it is seen that pretest mean score of the experimental group students was 11.3913 out of 24, and pretest mean score of the control group students was 10.3333. In line with the p value of .342 obtained, no significant difference was found between the pretest mean scores of the experimental group and control group students. Considering the pretest mean scores of the experimental and control group students obtained prior to the applications within the scope of the research, it can be inferred that there is no statistically significant difference.

As regards posttest mean scores, it is seen that posttest mean score of the experimental group students was 16.0870 out of 24 points, while posttest mean score of the control group

students was 10.9167, and t test result showed a significance level of $p=.001$. According to the results obtained, it was determined that there was a significant difference between the experimental group and control group in terms of posttest mean scores in favor of the experimental group. In this context, it was concluded that learning activities done through problem-based learning method positively affected academic achievement of experimental group students in social studies course.

Table 2.

Descriptive Statistics Regarding Social Studies Course Attitude Scale Pre-Measurements of the Experimental Group and Control Group Students

| | Group | N | Min. Score | Max. Score | X | St. (SD) | Dev. | t | p | Confidence Interval |
|-----------|--------------------|----|------------|------------|---------|----------|------|--------|------|---------------------|
| Pre-test | Control Group | 24 | 38.00 | 76.00 | 57.1667 | 7.49879 | | | | |
| | Experimental Group | 23 | 46.00 | 76.00 | 58.5652 | 6.99887 | | -.660 | .512 | 0.05 |
| Post-test | Control Group | 24 | 23.00 | 78.00 | 57.7083 | 13.40499 | | | | |
| | Experimental Group | 23 | 51.00 | 80.00 | 66.3913 | 9.36016 | | -2.564 | .014 | 0.05 |

According to the study data presented in Table 3, it is seen that while attitude scale mean score of the experimental group students was 58.5652 out of 80 points, the attitude scale mean score of the control group students was 57.1667, and t test significance level is $p=.512$ ($0.005 < p$). In line with the statistical data, no significant difference was found between the experimental group and control group students in terms of pretest attitude scale scores.

Regarding the posttest scores, while the attitude scale mean score of the experimental group students was 66.3913 out of 80 points, the attitude scale mean score of the control group students was 57.7083, and significance level was $p=.014$. Hence, it was concluded that a significant difference existed between the two groups in favor of the experimental group students.

Table 3.

PBL Students' Opinions Form Statistics

| Gender | \bar{x} | N (Ind.) | SD | Min. Score | Max. Score | Variance |
|---------|-----------|----------|------|------------|------------|----------|
| Girl | 45.17 | 12 | 3.79 | 38.00 | 50.00 | 14.33 |
| Boy | 42.37 | 11 | 5.03 | 33.00 | 49.00 | 25.26 |
| General | 43.83 | 23 | 4.55 | 33.00 | 50.00 | 20.70 |

In Table 4, statistical data regarding students' opinions about problem-based learning method are presented. Accordingly, the mean score of girls was $\bar{x} = 45.17$, the mean score of boys was $\bar{x} = 42.37$, and the general score was $\bar{x} = 43.83$. Hence, it was concluded that students expressed positive opinions about problem-based learning method. The results obtained from frequency analysis are presented in the table below.

Table 4.

PBL Students' Opinions Item Frequency Analysis

| Opinions on Problem-Based Learning Method | Totally Agree | Agree | Neutral | Disagree | Totally Disagree |
|--|---------------|-------|---------|----------|------------------|
| 1. I find problem-based learning method useful. | 16 | 4 | 2 | 0 | 16 |
| 2. I am satisfied with the application of problem-based learning method. | 18 | 4 | 0 | 1 | 18 |
| 3. Problem-based learning method has some negative aspects. | 16 | 2 | 2 | 1 | 16 |
| 4. I want problem-based learning method to be applied in other courses as well. | 12 | 5 | 5 | 0 | 12 |
| 5. I don't see it necessary for problem-based learning method to be applied in different subjects. | 15 | 1 | 2 | 2 | 15 |
| 6. I had difficulty regarding the application of problem-based learning method. | 17 | 2 | 2 | 2 | 17 |
| 7. Activities of problem-based learning method were enjoyable. | 19 | 1 | 2 | 1 | 19 |
| 8. I see myself competent in the applications in problem-based learning method. | 17 | 3 | 3 | 0 | 17 |
| 9. Problem scenarios had few similarities to real life issues. | 11 | 4 | 3 | 0 | 11 |
| 10. I can apply what I have learned through problem-based learning method to real life. | 20 | 1 | 2 | 0 | 20 |

Regarding the useful aspects of problem-based learning method applied in the study, the students in the experimental group expressed that they wanted to show an effort to understand and find solutions to problems by sharing and exchanging opinions with their friends in their group, complementing their deficiencies, and being motivated for research. In terms of their satisfaction with the application of problem-based learning method, the students expressed that

they learned the subjects and activities better with PBL method and that they were satisfied. In addition, the students stated that their interest and motivation for the course increased.

Regarding learning activities done through problem-based learning method, the students stated that class hours allocated for activities were not enough, and that they were sometimes bored with the frequent emphasis on problem scenarios. In addition, they indicated that as they did not have adequate experience related to the application of problem-based learning method, they experienced certain difficulties. The students also expressed that application of problem-based learning to other courses would increase their motivation and increase their success. Besides, they stated that the scenarios being selected from real life within the scope of problem-based learning method increased their excitement and interests, that they had difficulties at certain stages, but that they usually did the activities by having fun.

Discussion and Conclusion

In the present study, which was conducted in order to determine the effect of problem-based learning method applied in social studies course on students' academic achievement and their attitudes, quasi-experimental model with pretest-posttest control group was used. According to the results of the study, it was observed that problem-based learning method had a positive effect on students' success and their attitude towards the course.

When the findings obtained as a result of the application process of the study were examined in terms of posttest and attitude scores of the experimental group and control group students, it was concluded that there was a statistically significant difference between the groups in favor of the experimental group students regarding their academic success and attitudes, that their success increased, and that their attitude towards social studies course changed positively. In this context, the study results are consistent with studies conducted in the literature in which applications through problem-based learning method yielded higher results in attitudes and academic achievement compared to applications made according to guidebook instructions (Deveci, 2002; Germi, 2020). In addition, it was observed in the present study that the experimental group students displayed effective communication skills in their group studies on problem scenarios, that they were enthusiastic to find solutions to the problems, and that they actively participated. Regarding students' observations and opinions, it was observed that as a result of problem-based learning activities, the students took responsibilities for their learning in their groups, developed higher thinking skills, and gained problem solving skills (Balım, 2014, Tathisu, 2020). In conclusion, due to its nature, social studies course is a

course in which there are subjects on real life, and cognitive and emotional life skills are developed (Bayram, 2021). Therefore, in order for students to develop these aforementioned life skills, a teaching-learning process in which students are active and real life related problems are provided should be realized, which overlaps with the study results (Saban, 2004; Balbag, 2016). Moreover, availability of materials suitable for students' developmental periods in learning environments and their use in line with learning outcomes are important in problem-based learning method, as in other methods (Yanpar, 2006, Kardipah ve Wibawa (2020). It was observed that the variety and effective use of learning materials positively affected students' participation in learning activities.

Recommendations

It was determined that the time allocated for learning activities done in the study was not adequate for certain learning outcomes. Hence, class hours can be reconsidered according to these learning outcomes.

In order for problem-based learning method, which has a suitable structure for structural learning environments, to be used in classes more frequently, updates and arrangements can be made in the curriculum guidebooks prepared by MoNE, and thus classes can be rendered more effective.

In learning activities conducted with collaborative study groups for problem-based learning method applications, in order to prevent students from being passive in group studies, teachers should follow-up these students and give them responsibilities that will ensure their active participation in group activities.

The experimental groups and the number of students in the groups consisted of excessive number of students due to the crowded classes of the school. Therefore, certain difficulties are experienced in providing students with guidance. It is believed that reducing the class sizes may provide solutions for the stated problem. The study data are limited to the quantitative data collected at the beginning and end of the application process. New studies can be conducted by enriching the data through observations made and interviews held with students throughout the study. Finally, similar studies can be conducted with different grade levels and on different courses.

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Conflict of Interest

It has been reported by the authors that there is no conflict of interest.

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Ethical Standards

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References

- Balım, A. G., Türkoğuz, S., Ormancı, U., Kaçar, S., Evrekli, E., & Özcan, E. (2014). Teachers' views about problem-based learning through concept cartoons. *Journal of Baltic Science Education*, 13(4), 458-468.
- Bayram, H. (2021). 6. Sınıf Sosyal Bilgiler Dersinde Probleme Dayalı Öğrenmenin Öğrencilerin Girişimcilik Düzeyine Etkisi, (*Unpublished doctoral dissertations*). *Anadolu University*.
- Demirel, Ö. (2012). *Öğretim İlke ve Yöntemleri Öğretme Sanatı*. Ankara: Pegem.
- Deveci, H. (2002). Sosyal Bilgiler Dersinde Probleme Dayalı Öğrenmenin Öğrencilerin Derse İlişkin Tutumlarına, Akademik Başarılarına ve Hatırlama Düzeylerine Etkisi. (*Unpublished doctoral dissertations*). *Anadolu University*.
- Deveci, H. (2007). Sosyal Bilgiler Dersinde Güncel Olayların Öğretimine İlişkin Öğretmen Görüşleri. *KUYEB*, 7(1).
- Deveci, H., & Öztürk, C. (2016). Farklı Ülkelerin Sosyal Bilgiler Öğretim Programlarının Değerlendirilmesi. C. Öztürk (Eds.). *Farklı Ülkelerin Sosyal Bilgiler Öğretim Programları* (s. 1-40). Ankara: Pegem.
- Fer, S. (2014). *Öğrenme Öğretme Kuram ve Yaklaşımları S. Fer (Ed.) (2. baskı)*. Ankara: Anı.
- Topal Germi, N. (2020). Probleme dayalı öğrenmenin 5. sınıf öğrencilerinin maddenin değişimi ünitesinde başarılarına, yaratıcı düşünme becerilerine, kavram algılama düzeylerine ve motivasyonlarına etkisi. (*Doctora Disertations, Ondokuz Mayıs University*)
- Göğüş, R. (2013). Fen Bilimleri Öğretiminde Probleme Dayalı Öğrenme Yönteminin Öğrencilerin Akademik Başarı ve Tutumları Üzerine Etkisi. (Master Degree dissertations, *Kırıkkale University*).
- Hun, F. (2017). Probleme Dayalı Öğrenme Yöntemi İle Geliştirilmiş 5E Öğretim Modelinin 7.Sınıf Öğrencilerinin Akademik Başarı ve Tutumlarına Yönelik Etkisi. (Master Degree dissertations, *Kırıkkale University*).
- Karasar, N. (2011). *Bilimsel Araştırma Yöntemleri Kavramlar İlkeler Teknikler*. Ankara: Nobel.
- Kardipah, S. ve Wibawa, B. (2020). A flipped-blended learning model with augmented problem based learning to enhance students' computer skills. *TechTrends*, 64(3), 507-513.
- Öcal, A., & Tay, B. (Ed.). (2015). *Özel Öğretim Yöntemleriyle Sosyal Bilgiler Öğretimi (4. baskı)*. Ankara: Pegem.
- Saban, A. (2004). *Öğrenme ve Öğretme Süreci: Yeni Teori ve Yaklaşımlar*. Ankara: Nobel.
- Seferoğlu, S. S., & Akbıyık, C. (2006). Eleştirel Düşünme ve Öğretimi. *Hacettepe Education Faculty of Journal*. (30), (193-200).
- Söyleyici, H. (2018). Probleme Dayalı Öğrenmenin Ortaokul Öğrencilerinin Bilimsel Süreç Becerilerine, Tutumlarına Ve Başarılarına Etkisinin İncelemesi: Işık Ünitesi Örneği. (*Master Degree dissertations, Edirne University*).
- Tatlısu, M. (2020). Eğitsel robotik uygulamalarda probleme dayalı öğrenmenin ilkökul öğrencilerinin problem çözme becerilerine etkisi. Yüksek Lisans Tezi. Bursa: Bursa Uludağ Üniversitesi, Eğitim Bilimleri Enstitüsü.
- Taşdemir, M. (2007). *Öğretim İlke ve Yöntemleri*. Ankara: Nobel.

- Tavukcu, K. (2006). Fen Bilgisi Dersinde Probleme Dayalı Öğrenmenin Öğrenme Ürünlerine Etkisi.(*Master Degree dissertations, Zonguldak Karaelmas University*).
- Tyler, R. W. (2014). *Eğitim Programlarının ve Öğretimin Temel İlkeleri*. (M. E. Rüzgar, & B. Aslan, Çev.)
- Yanpar, T. (2006). *Öğretim Teknolojileri ve Materyal Tasarımı*. Ankara: Anı.