

## Perceptions of Teacher Candidates regarding Project-Based Learning

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### Abstract

*Problem Statement.* Project-based learning (PBL) is a learning and teaching approach that makes students search for new knowledge and skills, helps them overcome real-life questions, and makes them design their own studies and performances. Research in Turkey reveals that teachers are not well-informed about PBL, can not guide students in this process, and have problems in implementing PBL. This situation raises questions on the effectiveness of teacher education and pedagogical courses in the attainment of knowledge and skills on PBL. Thus, it is important to examine teacher candidates' perceptions regarding PBL during their teacher education.

*Purpose of Study.* The purpose of this study was to investigate teacher candidates' perceptions about the PBL approach in terms of different variables. In this direction, the research question has been specified as 'What are the perceptions of teacher candidates toward PBL?'

*Methods.* It was a qualitative phenomenological study. The research group consisted of 58 students (40 female, 18 male), who were in their third and fourth years in a public university in Istanbul in the 2014-2015 academic year. In order to gather data, open-ended questions were asked. The data were analyzed using content analysis.

*Findings and Results.* According to the findings, more than half of the teacher candidates expressed that they learned PBL approach in theory, but almost half said that they did not have the opportunity to apply it.

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None of them produced an exact definition of the PBL approach but referred to different aspects of it. Moreover, they mentioned that they will use the PBL approach after graduation. They had a positive attitude to this approach, and they believed that it is a useful approach in developing skills such as doing research, group work, and productivity.

*Conclusions and recommendations.* The results of the research show that teacher candidates are familiar with the PBL approach, but their lack of skills and knowledge in managing it might cause them to have difficulties during their implementation process. In order to equip them with the required skills and information, more space should be left to PBL practices in their pedagogical courses so as to provide opportunities for them to use and apply this approach. In further research, a pedagogical course can be designed according to PBL, and its impact on teacher candidates can be investigated.

*Key words:* project-based learning, teacher candidate, teacher education, qualitative research

## Introduction

Nowadays, our world has been changing and expanding as a part of its dynamic structure. One of the most important factors of this dynamic structure is education. In addition to passing down knowledge and cultural heritage, education also aims to change the behavior of individuals depending on the society and the era in which they live. In accordance with this main goal, approaches to education and instruction have been continuously changing. As we live in the 21st century, discipline-focused, curriculum-based and teacher-centered classical education approaches give way to student-centered education approaches, which aim to make students gain lifelong skills and consider their individual differences. In this respect, one of the most important approaches is constructivism, which has been shaped by many scholars and scientists, such as Dewey, Piaget, Vygotsky, Bruner, and Glasersfeld in the 20th century (Sirin, 2008).

Constructivism is a cognitive learning approach according to which learning occurs by reconstructing one's own mind, and in this approach the quality of learning depends on the transfer of knowledge, the reinterpretation of previous knowledge and construction of new knowledge (Erdem & Demirel, 2002). The experience and the attitude of the individual are very important for this cognitive process to work out properly.

The primary school curriculum was restructured based on the constructivist approach and has been implemented since the 2005-2006 academic year in Turkey. Together with this new transformation, a number of differences have been observed within many aspects of the Turkish primary education system. These differences include recognition of the importance of problem-solving skills related to real life, involvement of new instructional strategies, change of course content, increase in the

use of technology in the teaching-learning process, and change in the assessment mechanisms and in the roles of teacher and students (Koc, Isıksal & Bulut, 2007). Undoubtedly, one of the most significant changes in the system involve the roles of students and teachers, who are the two main inputs. Erdem and Demirel (2002) emphasized that while teachers are expected to guide students and be supportive leaders, students are expected to play an active role in the learning process, make research, relate their learning to their environment and real life, and construct knowledge. In this context, the project-based learning (PBL) approach can ensure this intended role change, even bring out new skills for teachers and students, and improve their existing skills (Basbay, 2010).

PBL is based on progressivism, Dewey's concept of experiential learning, Bruner's approach of learning through invention, Kilkpatrick's project method, and Thelen's group research models (Korkmaz & Kaptan, 2001; Zorbaz & Cecen, 2009). According to Demirhan (2002), PBL is defined and described as an approach that (1) requires interdisciplinary study, (2) makes students take responsibility in a group or individually and study collaboratively on real-life problems based on a prespecified topic and their personal interests and skills, (3) gives teachers the roles of facilitating learning and guiding students, (4) results in students' authentic products or presentations, and (5) integrates different approaches within the self. PBL is a learning and teaching approach through which students gain new knowledge and skills while researching complex and realistic problems, designing and planning their own studies and performances, and producing authentic products. In particular, the PBL approach contributes to their subject-matter knowledge, problem-solving skills, and self-directed learning (Cole, Means, Simkins & Tavali, 2002; Eggen & Kauchak, 2001).

The main purpose of the PBL approach is to enable students to create solution-oriented products for new situations that they face by relating their learning to real life. Demirhan and Demirel (2003) emphasized that PBL uses an interdisciplinary approach. PBL is based on a process that encourages students to relate to real-life problems, subjects or conditions in different disciplines; consequently, students need to search for solutions within the scope of a scenario and end up with presentations of projects (Ay, 2013).

PBL begins by designing the final product in mind, which requires a specific content usage to solve a problem. Even though creating a final product is the main stimulating force in PBL, the fundamental and essential point is the attainment of the skills and content knowledge required to produce this final product during the project process (Ruangrit, 2009). In order to complete this process without any difficulties, teachers should present the topic, objectives and process clearly to students. The steps followed in PBL, with teacher guidance, can be summarized as setting up objectives, choosing the topic, forming groups, specifying the properties of the report and presentation style, deciding on a study plan and control dates, specifying assessment criteria, gathering data and information and, finally, organizing, reporting and presenting the project (Erdem & Akkoyunlu, 2002).

PBL does not only encourage students to learn by doing and living, but also enables them to gain scientific research skills (Raghavan, Coken-Regev & Strobel, 2001). During the PBL process, students are actively involved in learning. They study real projects by focusing on a real-world problem and learn the scientific research process. Winn (1997) notes that students understand topics better in this process because they enjoy studying projects that give them opportunities to learn by living. Furthermore, PBL applications also contribute to equipping students with 21<sup>st</sup>-century skills, identified as critical thinking, problem solving, creativity, access to and restructuring of information, usage of digital resources, taking responsibility, sharing ideas, self-control and reconciliation (Bell, 2010).

PBL also has disadvantages. It is time-consuming and students may wander off-topic when the boundaries of the project are not clear, it may be costly, and it may be difficult for students who are not well-informed about scientific research methods. There may be problems in the individual assessment of students, families may expect an examination-based instructional approach, and teachers may not be equipped with the skills and knowledge to manage PBL (Demirhan & Demirel, 2003).

Several research studies have focused on PBL, but mainly at the primary and secondary education levels (e.g., Alacapinar, 2008; Baki & Butuner, 2009; Cakiroglu, 2014; Cibik & Emrahoglu, 2008; Erdem & Akkoyunlu, 2002; Gomleksiz & Fidan, 2012; Korkmaz & Kaptan, 2002). These studies have generally investigated the perceptions of teachers and students about PBL, the impact of PBL on academic achievement, and the impact of environmental factors on PBL. Teachers' difficulties encountered while implementing PBL also have been investigated in a number of studies (e.g., Karakus & Schreglman, 2013; Onen, Mertoglu, Saka, & Gurdal, 2010; Sahin, 2012). Compared to these intensive studies at the primary and secondary education levels, the number of PBL studies involving teacher candidates at the higher education level is limited (e.g., Ay, 2013; Benzer, 2010; Dag & Durdu, 2012; Kalayci, 2008; Oflaz, 2012; Tertemiz, 2012; Zeren-Ozer & Ozkan, 2012).

It has been argued that teachers are not well-informed about PBL and are unable to adequately guide the students in this process (e.g., Baki & Butuner, 2009; Korkmaz & Kaptan, 2002). One of the reasons why teachers face difficulties in implementing PBL in Turkey is a lack of training opportunities in implementing PBL (Baki & Butuner, 2009); teachers have problems in managing PBL in Turkey. As Zeren-Ozer and Ozkan (2012) noted, teacher candidates should have successfully created and managed a project themselves in order to be able to support their students in carrying out projects in the future. Although teacher candidates may have opportunities for conducting projects during their higher education, they do not have teaching experience in helping students to set up projects or in managing the subsequent PBL process (Güven, 2013).

Consequently, our research questions concern to what extent teacher candidates are familiar with the PBL approach and to what extent they have gained the skills needed to apply this approach during their teacher education. The purpose of this study is to investigate teacher candidates' perceptions of PBL in terms of different

variables. The research question has been specified as "What are the perceptions of teacher candidates towards PBL?" To this end, we will search for answers to questions such as how the teacher candidates define PBL, whether they intend to implement the approach in their future teaching, and what variables determine their preferences. It is expected that this study will help educators to evaluate the effectiveness of pedagogical courses involving PBL in teacher education institutions, to identify the problems and needs of both teacher candidates and teachers related to PBL, to generate solutions, and to develop pedagogical courses enabling the effective implementation of PBL at any educational level.

## Method

### *Research Design*

This is a descriptive study with a phenomenological design. Its qualitative nature allows us to describe the teacher candidates' perceptions. In qualitative research, qualitative data collection methods such as observation, interview and document analysis are used and inherent perceptions and events are revealed in a realistic and holistic view (Yildirim & Simsek, 2000). A phenomenological design focuses on phenomena that we are aware of, but do not have deep and detailed understanding of, and aims to reveal experiences and meanings (Yildirim & Simsek, 2000). In this study, the perceptions of PBL by teacher candidates in a Faculty of Education in Istanbul were examined in detail.

### *Participants*

The participants of this study consisted of 58 teacher candidates who were third and fourth year undergraduate students at the Faculty of Education in one of the state universities in Istanbul, Turkey. They were selected according to a purposeful sampling method: teacher candidates who, enrolled on The Methods of Teaching II course in the 2014–2015 academic year, which included the topic of PBL. The Method of Teaching II course, during which students learn teaching methods and techniques, is an applied pedagogical course comprising two hours of theory and two hours of practice. This is the final pedagogical course that they take in their teacher education regarding teaching methods. This course was taught in two departments by the second author: English Language Education and Computer Education and Instructional Technologies. This study was limited to these departments in order to eliminate the effects of instructor differences on the responses. Forty female and 18 male teacher candidates participated; of this group, 36 were in the Department of English Teaching and 22 in the Department of Computer and Instructional Technologies.

### *Data Collection*

Data were gathered using open-ended questions to elicit teacher candidates' written perceptions about the PBL method. As the purpose was to uncover perceptions about PBL, the involvement of more teacher candidates was of importance. Thus, instead of face-to-face interviews with fewer students, written

responses were preferred in order to reach more students. The six open-ended questions were developed by the researchers. Concerning validity, five expert opinions were asked and according to their comments, revisions were made. The final six questions were: "Did you learn the PBL approach? If you did, did you have the chance to apply it or was your learning process just in theory?", "What is your opinion about the PBL approach?", "Would you apply this approach in your class after graduation, and why?", "What are the three most important skills that students will gain through PBL?", "Do you think that you will face difficulties while using the PBL approach? If you do, what would be these difficulties?" and lastly "How should a lesson be planned in order to apply the PBL approach more effectively?"

#### *Data Analysis*

Data obtained from the teacher candidates' responses were analyzed by content analysis. Content analysis is one of the most common qualitative data analysis methods; first, the collected data are conceptualized, then the resulting concepts are put in order in a rational way, and themes that explain the data are determined (Yildirim & Simsek, 2013). The content analysis steps that were applied to the data obtained from the open-ended questions can be summarized in the following way:

1. The data gathered from open-ended questions were read multiple times.
2. Initial codes were determined.
3. Responses were read carefully word by word, and the codes were specified and marked. For validity of codes, the research question was taken into account. Unrelated responses were not coded.
4. The codes were rechecked and revised. They were then categorized and themes were created according to the content integrity (Table 1). The themes were not determined in accordance with the questions asked. The themes and codes were encountered sometimes in the corresponding question's responses but sometimes in different question's responses.
5. Regarding reliability, this coding process was repeated by a researcher working in the Curriculum and Instruction field with expertise in qualitative research methods.
6. The codes and themes extracted from the data by both researchers were compared. Points of difference were reviewed and resolved by compromise.

The final codes and themes obtained as a result of content analysis are provided in Appendix 1. The findings were interpreted under each theme, and quotations from responses were used to illustrate the themes. Regarding the credibility of the findings, we noted that alternative or rival themes, codes and responses, that is, not only the supportive but also unsupportive ones, should be taken into account (Lincoln & Guba, 1985; Patton, 1999). Thus, during the content analysis process, alternative, rival and unsupportive responses were also coded and used as evidence.

**Table 1.***An Example of Data Coding*

	Code	Category	Theme
<p>Question1: Did you learn the PBL approach? If you did, did you have the chance to apply it or was your learning process just in theory?</p> <p>S40: In education courses that I have taken since high school I learned PBL [always in theory, have not had a chance to apply it yet].</p>	Learning just in theory	Having learned	Learning PBL
<p>Question2: What is the PBL approach in your opinion?</p> <p>S40: [Making students more active and efficient by building instructional activities on a project]. [The teacher is a guide while the student is doing a project or producing a product].</p>	Active student Guide teacher	Teacher-student roles	Definition of PBL

*Validity and Reliability*

For validity of the instrument, five expert opinions having PhD in the field of Educational Sciences and teaching pedagogical courses were asked. Concerning ethical and reliability issues, informed consent was obtained from each teacher candidate during the data collection process. Data were collected by the researchers. The participants were voluntarily involved after they had been informed about the purpose of the study, use of the results, time to respond, anonymity of their name in the results, and their right to ask questions or to withdraw from the study at any time (AERA, 2011; APA, 2010). Also mentioned were the importance of the study for the Faculty and the value of their perceptions of PBL towards improving the pedagogical courses. To ensure confidentiality and anonymity, the teacher candidates' responses were coded with a number and the quotations from their responses were given by using these codes. For all participants, data collection was conducted on the same day and time and took approximately 15 minutes. No problems were encountered during this process. In terms of reliability of coding procedure, coding process was repeated by a researcher working in the Curriculum and Instruction field with expertise in qualitative research methods.

## Results

As a result of the content analysis, six themes were extracted from the data. These themes were learning PBL, definition of PBL, use of PBL in the future, contributions of PBL, difficulties in the implementation of PBL, and suggestions for the application of PBL. The findings obtained are presented under these themes and exemplified by quotations of the responses.

### *Theme One: Learning PBL*

All of the teacher candidates gave information about their learning of the PBL approach during their teacher education. While a third of the candidates indicated that they learned and applied PBL, approximately half mentioned that they did not have any chance to apply PBL; their learning was limited to theory. A few teacher candidates stated that they could not learn the PBL approach. Some expressions are:

S19: "I do not think that we fully learned it. We did not have the chance to apply it, it was glossed over in theory."

S57: "I learned. I had the chance to apply this method in a few classes during this term."

### *Theme Two: Definition of PBL*

Most of the teacher candidates mentioned the definition of the PBL approach. In the definitions, they generally focused on creating a product within a specified time period. It was noted, however, that they also considered the process important for creating a product. Moreover, they indicated that PBL requires a long period of time and involves a lot of group work. A few teacher candidates defined the PBL approach as ensuring learning via a project.

S8: "It is an approach which results in a product and for which the process is important and, during the process, the teacher has a guidance role."

S16: "A project-based learning approach means making the learning process real by using projects."

Learning by doing and living was emphasized more in some definitions. The teacher candidates' responses included statements concerning, for example, students learning on their own, doing research and applying what had been learned:

S12: "Project-based learning means that the student conducts research, investigates, makes observations, and receives information from primary sources by directly reaching the source of information."

A group of teacher candidates emphasized teacher-student roles in their PBL definitions and mentioned that the student has an active role, and the teacher a guidance role, during the process. Some expressions are:

S40: "Making students more active and efficient by building instructional activities based on a project. The teacher is a guide while the student is doing a project or producing a product."

S18: "We assign a topic to students – or students can choose a topic related to the course – and ask them to design a project. The teacher has a guidance role in this picture. The student is the active participant, and permanent learning is the goal."

Although most of the teacher candidates' definitions emphasized only one aspect of the PBL approach, a few teacher candidates confused it with performance tasks and term projects:

S17: "The teacher gives daily or weekly performance homework and pursues instructional process based on this project."

S51: "Evaluating based on project homework which will point out the student's performance instead of using traditional teaching methods."

#### *Theme Three: Use of PBL in the Future*

Almost all candidates said that they would use PBL after graduation because of the benefits of PBL they perceived, such as permanent learning, active learning, encouraging students to learn by themselves and taking responsibility for their learning, encouraging productivity, reinforcing learning, and making lessons efficient. Some responses are:

S29: "Yes, I will apply. I think that the learning will be permanent if the students have an active role in a project."

S35: "If I become a teacher, I will apply this method because it gives a sense of responsibility to the student and enables the self-learning and reinforces the learning."

A few teacher candidates said that they would not use PBL because they were unfamiliar with this approach, and it would require a long period of time and increased work load:

S8: "Now when I graduate, I do not think that I will apply this method and the reason why I will not is that I do not know the details of this method completely."

S56: "I do not plan on applying it because applying this method is too much work for both students and teachers."

#### *Theme Four: Contributions of PBL*

According to the teacher candidates' responses, the three most important skills that students would gain through PBL were conducting research, group work and creating a product. Moreover, after having scrutinized responses in the content analysis process, the skills that the teacher candidates thought students would gain through the PBL approach were grouped into three categories: social skills, academic skills, and personal skills. The social skills that would be gained by the PBL approach were collaboration, socializing and group work; the academic skills were systematic study, self-regulation, designing and conducting research, active learning and

problem solving; and the personal skills involved developing a sense of responsibility, self-confidence and presentation skills. Regarding these contributions, some indicated:

S24: "Communication, collaboration, socializing"

S18: "Learning by experiencing, research skills, presentation and speaking skills"

S29: "Self-confidence, expressing oneself, permanent learning"

*Theme Five: Difficulties in the Implementation of PBL*

Almost all of the teacher candidates thought they would face difficulties while using PBL. These difficulties were grouped under three main categories: related to the student, related to the teacher, and related to the learning environment. Teacher candidates' responses referred to the following as student-centered difficulties: uninterested students, individual differences, inadequacy of students' readiness level, inequity in distribution of roles in the project groups, using inappropriate sources, not knowing how to do research, and not being able to study in a group. Some of the responses are:

S19: "Uninterested students, not having enough background about the topic."

S7: "Every student may not know how to do research, they might learn erroneously from sources that they found or a student may not learn by him/herself."

The difficulties related to the teacher were determined as having problems in managing a classroom, finding a different project topic, and assessing projects such as:

S36: "... It is hard to assess, especially the process."

In addition to student- and teacher-related problems, some teacher candidates mentioned difficulties related to the learning environment, such as lack of materials, crowded classes and limited time:

S40: "It is hard for a teacher to use the project-based learning method in a crowded class or a physically insufficient environment."

S35: "Depending on the length of the project, time could be limited."

Among all three categories, the outstanding difficulties comprised uninterested students, limited time, and problems in classroom management. However, one-tenth of the teacher candidates said that they did not think they would face any difficulties while using PBL.

*Theme Six: Suggestions for the Application of PBL*

Almost one-fifth of the candidates had no suggestions about the application of PBL. However, analysis of the expressed suggestions revealed that precautions related to the teaching-learning process and the project process should be taken into

account for a better and more useful application of PBL. Related to the teaching-learning process, the candidates suggested that prior to PBL the lessons should be well-planned and personal differences and learning styles should be considered in the planning. Also, it was suggested that students should be encouraged to carry out projects after theoretical information had been given in PBL-based lessons. Some suggestions of the participants are:

S2: "It should be planned according to individual differences and students' learning styles."

S17: "The purpose of the project, the order of research process, the resources, and the time must be well-planned, and variables should be considered."

Additionally, it was indicated that students should be informed about the objectives, given enough time during the project process, and actively involved. At this point, some of the teacher candidates emphasized the importance of process evaluation during the project:

S16: "Enough time and information must be given to students in order to prepare the project."

S14: "Not only product evaluation but also process evaluation should be important during the teaching-learning process. Students should be given the chance to play an active role and they should learn the importance of this."

Among all the suggestions, the outstanding ones concerned giving theoretical information prior to the project, considering students' learning style differences, and giving enough time.

### **Discussion and Conclusion**

The main purpose of this study was to determine the perceptions of a sample of teacher candidates regarding PBL. More than half of the teacher candidates said that they learned the PBL approach in theory, but almost half said that they had not been given the opportunity to apply it. One of the main reasons is that PBL is just one of several topics taught in a few pedagogical courses; it is limited to one lecture hour and this does not allow for practice. Theoretical knowledge acquired by teacher candidates in these courses is meaningful only if they have a chance to practice the theory through such activities (Ozkan, Albayrak, & Berber, 2005). Therefore, opportunities for practicing should be given to teacher candidates beginning in their first year, and they should be involved in projects and teaching practice (Dag & Durdu, 2012).

Teacher candidates defined PBL generally by emphasizing the terms "product-focused," "student and teacher roles," "process-focused," "project as a tool" and "learning by experiencing." Almost none of the teacher candidates defined PBL precisely; each referred to a different aspect of PBL. Similarly, Onen, Mertoglu, Saka and Gurdal's (2010) study also indicated that the teachers were not able to define

PBL. The reason for this might be that they did not learn the concept in any depth during their training.

Almost all of the teacher candidates mentioned that they would use PBL after graduation, even though most were not familiar with all aspects of it. They appeared to have little insight into their knowledge deficiencies regarding PBL; this is worrying in terms of the proper implementation of PBL by them. They seemed to have a positive attitude towards using this method, believing that PBL has a number of benefits for students. They mentioned numerous contributions of this method to students' learning and self-improvement. These findings agree with those in other studies, in which teacher candidates were found to have a positive attitude towards PBL (e.g., Cibik, 2009; Erdem & Akkoyunlu, 2002; Gultekin, 2007). In their experimental study, Baran and Maskan (2008) found that, according to physics teacher candidates, having the opportunity to practice this approach prior to their professional life would be more useful for their career. As a result, it is believed that it would be beneficial if teacher education enabled teacher candidates to experience PBL by providing opportunities for practicing and by basing their pedagogical courses on PBL.

Teacher candidates said that PBL would develop the skills of conducting research, working in group, and being productive; these findings are consistent with those of other studies (e.g., Baran & Maskan, 2008; Cakan, 2005; Gultekin, 2007; Larmer & Mergendoller, 2010; Ovez, 2007). Larmer and Mergendoller (2010) noted that PBL helps students to develop skills peculiar to the 21st century, such as research, reaching information, collaboration, communication, critical thinking and usage of technology.

Almost all of the teacher candidates thought they would have difficulties while implementing PBL; these comprised uninterested students, limited time, and problems in classroom management. These difficulties are consistent with the results of previous studies (e.g., Ay, 2013; Baran & Maskan, 2009; Cakan, 2005; Dag & Durdu, 2012; Gultekin, 2007). Dag and Durdu (2012), referring to the problem of limited time, noted that problems with time-management during the project arose because the students were unable to properly analyze the workload of the project. Another factor related to a perceived time limitation may be the well-known procrastination behavior that causes students to try to complete the project at the last minute, instead of extending the project process over a period of time. In this case, the skills cannot be gained successfully and in the intended way.

According to the teacher candidates, PBL can be used well if it is based on active participation and learning by doing and living. Cibik and Ermanoglu (2008) focused on active participation and learning by doing and experiencing in order to improve the logical thinking skills of the students. The teacher candidates also said that individual differences and students' learning styles should be considered in lessons based on PBL, and these lessons should be planned step by step. Parallel to this result, Ay (2013) noted that PBL is perceived mostly as a process in which learners' differences are used for their learning and development, learners gain more self-

knowledge, and the learning environment supports the development and sharing of learning styles and strategies.

In conclusion, the teacher candidates appeared to be familiar with PBL, but they lacked the appropriate knowledge and practice regarding this approach, and they believed that they would have difficulties putting it into practice. Despite their deficiency of knowledge and practice, almost all said that they would apply the method after graduation. These results raise questions about how well they would implement it without the required knowledge and skills. This is thought-provoking in terms of the quality and effectiveness of teacher education in the field of PBL. In this context, this study highlights the need for more practice and effective content regarding PBL. In order to equip teacher candidates with the required skills and information, more emphasis should be placed on PBL practices in their pedagogical courses, so as to provide opportunities for them to use and practice this approach.

Furthermore, in light of the findings of this study, it is also possible to give suggestions for the direction of future research, and to assist educators using PBL. Detailed studies are needed about the content and teaching-learning process of pedagogical courses to establish reasons for their shortcomings. This current study was limited only to teacher candidates' perceptions. In the future, a pedagogical course could be designed following the PBL approach and its impact on teacher candidates. Teacher candidates' perceptions could be investigated regarding other teaching approaches and methods, and their self-perceptions of their skills in implementing these. Another research topic could concern to what extent teacher candidates use PBL in their lessons after graduation; the results of this could then be compared to their perceptions before graduation. In this way, reasons for teacher candidates using or not using PBL may be revealed. Lastly, there are a limited number of studies on teacher educators and the models of education they follow, despite the importance of this information for teacher education; for example, the number of teacher educators in the Faculty of Education using and teaching PBL effectively could be further studied. Such studies would fill gaps in the related literature.

#### *Limitations of the Study*

This study was limited to a group of teacher candidates taking a course in a university and it was a context-bound study; therefore, the results cannot be generalized. In this study, data were collected only by open-ended questions. Other data sources such as observation, field notes, documents and interviews were not used because this study aimed to reveal the perceptions of teacher candidates about PBL in order to highlight the needs related to PBL, to shed light on the development of pedagogical courses in this respect, and to provide a basis for designing further studies on the implementation of PBL.

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### Appendix 1.

*The Themes, Categories and Codes That Were Obtained by Content Analysis*

Themes	Categories	Codes
Learning PBL	<i>Not being learned</i> <i>Being learned</i>	Not learning Stuck with the theory Having opportunities to practice
Definiton of PBL	<i>Product-emphasized</i>  <i>Project as a tool</i> <i>Learning by experiencing</i>  <i>Teacher-student roles</i>	Product as a goal Importance of process Long period of time Group work Learning by project Learning by him/herself Conducting research Applying what is learned Active student Guide teacher
Use of PBL in the future usage cases	<i>The reasons for using</i>          <i>The reasons for not using</i>	Permanent learning Active learning Learning by him/herself Productivity Reinforcing learning Making lesson more efficient Making students have responsibility skill Not knowing the method Time-consuming Work load
Contributions of PBL	<i>Social</i>          <i>Academic</i>          <i>Personal</i>	Collaboration Socializing Group work Systematic study Self-regulation Producing a product Conducting research Active learning Problem solving Sense of responsibility Self-confidence Presentation skills

**Appendix 1 Continue**

Themes	Categories	Codes
Difficulties in the implementation of PBL	<i>Related to student</i>	Uninterested student
		Individual differences
		Inadequate readiness level
		Inequity in distribution of roles in
		Use of inappropriate sources
	<i>Related to teacher</i>	Not knowing how to do research
		Not being able to study in group
		Managing classroom
	<i>Related to learning</i>	Finding different project topics
		Assessment of projects
Suggestions for the application of PBL	<i>Related to teaching-learning process</i>	Lack of material
		Crowded class
		Limited time
		Good planning
		Considering individual differences
	<i>Related to project</i>	Considering learning styles
		Presenting theories before project
		Informing students about objectives
		Giving enough time
		Ensuring active participation
Process evaluation		
Arranging appropriate environment		

**Öğretmen Adaylarının Proje Tabanlı Öğrenmeye İlişkin Algıları****Atıf:**

Baysura, O.D., Altun, S. & Yucel-Toy, B. (2015). Perceptions of teacher candidates regarding project-based learning. *Eurasian Journal of Educational Research*, 62, 15-36 <http://dx.doi.org/10.14689/ejer.2016.62.3>

**Özet**

*Problem Durumu:* Türkiye’de 2005-2006 eğitim-öğretim yılında uygulanmaya başlanan yeni öğretim programları yapılandırmacı öğrenme yaklaşımı doğrultusunda geliştirilmiştir. Yeni sisteme geçiş eğitimin tüm bileşenlerine yeni bir bakış açısı kazandırmıştır. Bunlar; günlük hayatla ilişkilendirilen problemlerin çözümünde önemli olan problem çözme becerisi anlayışı, yeni öğretim stratejilerinin programa dahil olması, konu kapsamlarının değişimi, sınıf içi etkinliklerde ve diğer

süreçlerde teknoloji kullanımının artışı, ölçme değerlendirme mekanizmasındaki değişim ve öğretmen-öğrenci rollerindeki değişimdir. Sistemdeki bu değişimlerin en önemlilerinden biri şüphesiz ki bir programın en önemli iki girdisi olan öğrenci ve öğretmen rolleridir. Öğrenciden öğrenme sürecinde aktif rol alması, çevre ve günlük hayatla ilişki kurması, araştırma yapması ve bilgiyi yapılandırması beklenirken, öğretmenden de bu sürece rehberlik etmesi, yönlendirici ve destekleyici olması beklenir. Bu rol değişimlerinin düzgün bir yapıda gerçekleşmesine imkân veren, hem öğrenci hem öğretmen açısından farklı becerilerin ortaya çıkmasını, var olan becerilerin gelişmesini sağlayan öğrenme yaklaşımlarından biri de proje tabanlı öğrenme (PTÖ) yaklaşımıdır. PTÖ yaklaşımı ile ilgili yapılan araştırmalar incelendiğinde ilköğretim ve ortaöğretim düzeyinde pek çok araştırmaya rastlanmaktadır. Bu çalışmalarda, proje tabanlı öğrenme süreci açıklanmış, PTÖ yaklaşımına yönelik öğrencilerin ve öğretmenlerin tutum ve görüşleri, PTÖ'nün akademik başarıya etkisi ve PTÖ'nün başarısını etkileyen çevresel faktörler ilköğretim ve ortaöğretim boyutunda incelenmiştir. Bu çalışmalara ek olarak PTÖ yaklaşımında öğretmenlerin karşılaştığı güçlükler de araştırılmıştır. Ancak incelenen çalışmalar sonucunda Türkiye'de yükseköğretim kademesinde PTÖ yaklaşımına yönelik öğretmen adayları ile yapılan çalışmaların sınırlı sayıda olduğu ortaya çıkmıştır. Yapılan araştırmalarda, PTÖ konusunda öğretmenlerin yeterli bilgiye sahip olmadıkları ve öğrencileri bu süreçte doğru yönlendiremedikleri görülmüştür. Öğretmenlerin proje tabanlı öğrenme yaklaşımını uygularken zorluk yaşamalarının nedenleri arasında bu konuda uygulamalı bir eğitim almamış olmaları büyük bir paya sahiptir. Bu çalışmaların sonuçları Türkiye'de öğretmenlerin okullarda proje uygulamaları ile ilgili zorluklar yaşandığını göstermektedir. Bu bağlamda öğretmen adaylarının meslek hayatlarında uygulayacakları proje sürecini doğru yönetebilmeleri için, öncelikle kendilerinin proje yapım ve yönetim süreçlerinden başarı ile geçmeleri gerekmektedir. Öğretmen adayları üniversite öğrenimleri boyunca zaman zaman proje uygulamaları yapma şansına sahip olsalar da, meslek hayatları başladığında derse girecekleri düzeylerdeki öğrencilerle proje yaptırma-yönetme olanağına sahip değillerdir.

*Araştırmanın Amacı:* Yukarıdaki açıklamalar doğrultusunda öğretmen adaylarının lisans süresi boyunca aldıkları derslerde PTÖ yaklaşımının gerektirdiği bilgiyle donanmış olmaları ve beceri düzeyinde hayata geçirmeleri mesleğe atıldıklarında kullanmaları açısından büyük bir öneme sahiptir. Eldeki çalışmada öğretmen adaylarının çeşitli değişkenler açısından PTÖ yaklaşımına ilişkin algılarını belirlemek amaçlanmıştır. Elde edilen sonuçlarla öğretmen adaylarının konuyla ilgili farkındalıkları, görüş ve tutumlarının belirlenmesi, varsa sorunların nedenlerinin ortaya çıkarılması ve alternatif çözüm yollarının önerilmesi araştırmanın temel gerekçelerini oluşturmuştur. Bu doğrultuda araştırma sorusu 'Öğretmen adaylarının PTÖ'e ilişkin algıları nelerdir?' olarak belirlenmiştir.

*Araştırmanın Yöntemi:* Araştırma nitel araştırma yöntemi ile yürütülmüştür. Çalışmada öğretmen adaylarının PTÖ yaklaşımına ilişkin algılarını belirlemek

amaçlanmıştır. Bu amaçla, çalışma olgubilim deseninde gerçekleştirilmiştir. Bu desende u desende, belli bir olguya ilişkin bireysel algıların ya da bakış açılarının ortaya çıkarılması ve yorumlanması amaçlanır (Yıldırım ve Şimşek, 2013). Araştırmanın çalışma grubunu, 2014-2015 eğitim öğretim yılında İstanbul'da bir devlet üniversitesinin Eğitim Fakültesi'ndeki 3. ve 4. sınıflarında öğrenim görmekte olan 58 öğrenci oluşturmaktadır. Çalışmada veri toplama amacıyla, PTÖ yöntemine ilişkin öğretmen adaylarının algılarını belirlemek üzere hazırlanan altı açık uçlu soru sorulmuştur. Çalışmada elde edilen veriler, içerik analizi yöntemiyle çözümlenmiş ve sonuçlar raporlaştırılmıştır. İçerik analizi, nitel veri analiz türleri arasında en sık kullanılan yöntemlerden biri olup bu yöntemde tümdengelimci bir yol takip edilmektedir.

*Araştırmanın Bulguları:* Elde edilen verilerin içerik analizi sonucunda altı tema elde edilmiştir. Bu temalar, PTÖ yaklaşımını öğrenme durumu, PTÖ yaklaşımını tanımlama, PTÖ yaklaşımını gelecekte kullanma, PTÖ yaklaşımını katkıları, PTÖ yaklaşımını uygulamadaki zorlukları ve PTÖ yaklaşımını uygulanmasına ilişkin önerilerdir. *PTÖ yaklaşımını öğrenme* teması ile ilgili olarak, öğretmen adaylarının tamamının, aldıkları eğitim süresince PTÖ yaklaşımını öğrenme durumları ile ilgili bilgi verdikleri görülmüştür. *PTÖ yaklaşımını tanımlama* temasında, öğretmen adaylarının PTÖ yaklaşımına ilişkin tanımlarında genellikle belli bir süreç içerisinde ürün oluşturma boyutu üzerinde durulmuştur. Ancak bu noktada, ürün oluşturmak için sürecin de önemli olduğu, geniş zaman gerektiği ve PTÖ grup çalışması ile gerçekleştirildiği de ifade edilmiştir. Bir başka tema olan *PTÖ yaklaşımını gelecekte kullanma* içinse, öğretmen adaylarının mezun olduktan sonra PTÖ yaklaşımını uygulama durumlarına yönelik görüşleri incelenmiş ve adayların neredeyse tamamı proje tabanlı öğrenme yöntemini mezun olduktan sonra kullanacaklarını ifade etmişlerdir. Nedenlerine yönelik yapılan açıklamalarda PTÖ yaklaşımının kalıcı öğrenme, aktif öğrenme ve kendi kendine öğrenmeyi sağlaması, üretkenliğe teşvik etmesi, öğrenmeyi pekiştirmesi, dersi verimli hale getirmesi ve sorumluluk bilinci kazandırması gibi öğrenme üzerindeki olumlu katkıları üzerinde durulmuştur. *PTÖ yaklaşımının katkıları* temasında, öğretmen adaylarının PTÖ yaklaşımının öğrencilere kazandıracaklarını ifade ettikleri beceriler, sosyal beceriler, akademik beceriler ve kişisel beceriler olmak üzere üç grupta toplanırken *PTÖ yaklaşımını zorlukları* temasında, öğretmen adaylarının neredeyse tamamının PTÖ yaklaşımını uygularken zorluklarla karşılaşacaklarını düşündükleri ortaya çıkmıştır. Son olarak, *PTÖ yaklaşımını uygulanmasına ilişkin öneriler* temasında, öğretmen adaylarından elde edilen veriler incelendiğinde yaklaşık beşte birinin PTÖ yaklaşımının uygulanmasına yönelik öneri sunmadığı görülmüştür. Ancak bu konuda öneriler sunan öğretmen adaylarının ifadeleri analiz edildiğinde, PTÖ yaklaşımının daha iyi uygulanmasına yönelik yapılan önerilerin ders ve proje süreci olmak üzere iki başlık altında toplandığı görülmüştür.

*Araştırmanın Sonuçları ve Önerileri:* Araştırmadan elde edilen bulgulara göre, öğretmen adaylarının PTÖ yaklaşımına yabancı olmadıkları ancak PTÖ ile ilgili

uygulama ve bilgi eksikliklerinin olduğu ve uygulama sırasında zorluk yaşayacakları kanısında oldukları saptanmıştır. Bu bilgi ve uygulama eksikliklerine rağmen öğretmen adaylarının büyük çoğunluğu PTÖ yaklaşımını mezuniyet sonrası uygulayacaklarını söylemiştir. Ancak bunun öncesinde öğretmen adaylarının PTÖ yaklaşımını uygulama becerileri bu konudaki yetersizlikleri giderilmelidir. Bu bağlamda lisans düzeyinde verilen mesleki derslerde PTÖ uygulamalarına daha çok yer verilmeli, öğretmen adaylarına bu yaklaşımı kullanma ve uygulama fırsatı sunulmalıdır.

*Anahtar Kelimeler:* Proje-tabanlı öğrenme, öğretmen adayı, öğretmen eğitimi