

PROBLEM BASED LEARNING; TEACHER AND STUDENT ROLES

Gökhan Koşer

gokhankoser20202020@gmail.com

<https://orcid.org/0000-0003-0822-0035>

Akdeniz Karpaz University, Faculty of Education

ABSTRACT

Different learning strategies, approaches and models based on student-centered and active learning have been included in the teaching-learning process. One of these learning approaches is the problem-based learning approach. The problem-based learning approach is defined as an experiential learning approach that is prearranged within the framework of the explanation and solution of real life-related problems. This research examines the concept of problem-based learning process. In the study carried out with the document analysis method, which is one of the qualitative research methods, the relevant literature was examined and the findings were discussed. As a result of the research, it was concluded that the problem-based learning process should be well understood by the students and that the teacher should provide the student's learning with methods such as encouragement and hints in this process.

Keywords: Problem-based learning, education, teacher, student

Introduction

In order for today's students to benefit from the teaching and learning processes in the most efficient way and to provide effective learning, the need to change the teaching-learning styles has arisen (Serçemeli, 2016). Teacher-centered education with traditional methods, where the teacher conveys the information (the wise man on the stage) and the student listens to the teacher and is content with the information given by the teacher; it is insufficient for the students of the new age, does not attract the attention of the students and reduces their motivation to learn (Reschly & Christenson, 2006). In addition, in teacher-centered education approaches, students' passive listening and contentment with only the information conveyed to them; it limits their learning, thinking, questioning and producing (Woods, 2012).

It negatively affects students' in-depth and meaningful learning throughout their school life, and due to the lack of these skills in their after-school lives, solving the problems they may encounter in their social and business life, working in cooperation with different people, being open to criticism from their business and social environment and having a positive critical perspective. This causes them to have difficulties in terms of communication (Bashir, 2013). For this reason, while the education system and curricula have been organized in recent years, innovative educational approaches have been adopted, in which different methods, techniques and tools are used, in which students will benefit from the process at the highest level.

The use of student-centered education in course designs will increase students' excitement, motivation, interest and participation in the course, making it easier for what is learned to be permanent and to be transferred to life (Aypay & Eryılmaz, 2011). Thus, by ensuring that students take an active role in accessing information, thinking, criticizing, discussing and problem solving in the lessons, in-depth learning of the subject covered during the lesson will be realized (Metzler & Mc Cullick, 2008). The view that student-centered education is the most effective approach for teaching and learning processes in many countries, especially in the last 20 years, has come to the fore (Hattie, 2012; Le Ha, 2014). In the constructivist approach, which has been adopted and used in our education system since the beginning of the 2000s, the student-centered education approach is dominant. A teacher who plans according to student-centered education should have a full command of the approach, including his/her own roles.

It has been stated that the role of the teacher in student-centered education should function as a facilitator and move from being the wise on the stage to the next guide (Goodyear & Dudley, 2015). By increasing the motivation and positive attitudes of the learners, the problem-based learning approach aims to provide individuals with the skills of metacognition, self-learning, critical thinking and effective problem-solving, using the knowledge acquired by the learners, and learning through cooperation (Hmelo-Silver, 2004).

This research will contribute to the lack of knowledge in the literature about the problem-based learning approach in student-centered education, and aims to reveal the effects of these actions on the problem-solving process.

Problem Based Learning

There is a philosophy on which every learning-teaching approach is based and a theory that is connected to this philosophy (Woods, 2012). The problem-based learning approach is also based on the understanding of learning by doing, which is one of John Dewey's views (Özgen ve Pesen, 2007). The problem-based learning approach is structured according to the pragmatic philosophy. Pragmatic philosophy is associated with instrumentalism and empiricism (Aslihan & Mustafa, 2014). According to John Dewey, everything changes, nothing stays the same. Information is true as long as it is useful for action. Having right thoughts does not mean having a theoretical knowledge; action is to obtain tools. The purpose of man in acquiring knowledge is not to explain nature, but to recreate it. This kind of knowledge can be obtained by confronting a problem and producing a solution (Sönmez, 2015).

The purpose of the problem-based learning approach is stated by different researchers as follows: According to Çoban (2011), the purpose of the PBL approach is; to give students self-learning skills. According to Korkmaz (2004), the aims of the problem-based learning approach are;

- The student's self-assessment skills before and after the learning-teaching process,
- The student should have a broad, flexible and in-depth knowledge,
- The student's ability to think critically,
- It is the student's development of interaction and communication skills with the group.

In the problem-based learning process, the teacher prepares the problem or scenario, motivates the students, checks the students' solutions, and helps the students to overcome these problems when they have problems at the point of progress for the solution. Therefore, the role of the teacher is very important in the problem-based learning process (Sinap, 2017).

It is seen in the literature that there are at least three different perspectives on problem-based learning (Schmidt et al., 2011): the first is problem-based learning as an "investigation process", the second is "learning to learn" with problem-based learning, and the third is problem-based learning. It is a "cognitive constructivist" approach that defines the purpose of helping people build models. Fortunately, all three perspectives agree on the defining features of problem-based learning.

Problems and Scenarios in Problem-Based Learning Approach

The problem is defined as the act of choosing among possible ideas or solutions in any situation where we do not have a solution response (Demirtaş & Dönmez, 2008). According to Un Acıkgöz (2007), a problem is a situation that the organism cannot solve with its current reactions and cannot get out of it. Morgan (2011) defines the problem as the conflict situation in which the individual encounters frustration in reaching a goal. Based on these definitions, the complex and intractable situations encountered in daily life can be defined as problems. The successful and appropriate application of the problem-based learning approach depends on the structure of the problem situations to be used (Tosun & Taşkesenligil, 2013). In the problem-based learning approach, the problem should be used as a means of motivating the student and reaching the goal, it should be chosen from real life, it should be compatible with individual needs, it is complex, requires research and information gathering, is experimental, does not have a single correct answer, open-ended, develops high-level thinking skills, unstructured quality (Kazemi & Ghorraishi, 2012).

In the problem-based learning approach, the basic educational tool is scenarios. Problems are usually presented in the form of scenarios in which events are described. The main purpose of the scenarios is to reach the learning goals that the student is expected to achieve within certain processes (Wijnia, Loyens, & Derous, 2011). Through scenarios, students encounter various problems, produce ways to solve the problem, and always want to learn (Carrio et. al., 2011).

Problem-Based Learning Teacher and Student Roles

The main role of the teacher in the problem-based learning approach is to guide students and help them learn. The teacher is not in the position of the sage on the stage, that is, in front of the students and giving information. The teacher in the process; they have to prepare and present the problem, interact with the students, monitor the students and take notes about the process and guide the students for the solution (Strobel & Van Barneveld, 2009). In the basic definitions of problem-based learning, as mentioned above, it is stated that the teacher's intervention in the process will end the problem-based learning process and the teacher should not interfere with the solution. However, in the problem-based learning process, the teacher prepares the problem or scenario, motivates the students, checks the solutions of the students, and helps the students to overcome these problems when they have problems at the point of progress for the solution (Bada, 2015). Therefore, the role of the teacher

is very important in the problem-based learning process. According to Ali (2019), in problem-based learning, the teacher is in the position of facilitator, mentor and guide.

In problem-based learning, the aim is for students to take an active and problem-solving role in the process, in accordance with the student-centered education approach, from the passive receiver role in the traditional method. In the process, students try to solve the problem by working as a group and having group discussions. In problem-based learning, the number of people in the group should be 5-7 (Aidoo et. al, 2016).

In the problem-based learning approach, the most important role falls to the student. The student examines the problem given by the educator and produces solutions for the problem by using both his previous knowledge and the knowledge obtained by researching. By taking responsibility in the group, he helps his friends in solving the problem. Prepares reports for the solution of the problem. He evaluates both himself and his friends by making observations during the solution process of the problem (Estrada, 2017).

In the problem-based learning approach, students construct by combining their old knowledge with their new knowledge. They gain the competence to use this information in similar life situations. Students take on various roles in the group and continue their studies in accordance with this role. Thus, they both take responsibility and make choices. In this way, students develop their self-control skills (Gürten, 2020).

Conclusion and Recommendations

The expectation of the modern education and business world in the 21st century is not only with the knowledge of its learners; They are individuals who can integrate the knowledge they have acquired with basic life skills, cope with the real problem situations they encounter, and gain these characteristics. In problem-based learning, since students are centered, produced, questioned, solved problems and accessed information themselves, these skills are acquired and transferred to life.

Although it is emphasized that the teacher will not provide specific guidance in the problem-based learning process and the students will be encouraged to think independently of the teacher's instruction, he clearly stated that the teacher should offer advice and guidance when the students are stuck or need other help in the learning processes. In problem-based learning applications, there may be situations such as not being able to understand the problems by the students, slow progress of the process and sometimes stopping. It has been stated that at these moments, the teacher should provide assistance to the students with the role of facilitator (Metzler, 2011). Teacher; It enables students to solve problems and advance their learning in the problem-based learning process by taking actions such as hints, feedback, praise, and encouragement.

More work is needed on problem-based learning and facilitator actions to manage students own learning. Since the solution will never be given by the teacher in the problem-based learning process, but will be found by the students, the solution can sometimes take a long time. While designing the lesson, the teacher should calculate the activities and time to be implemented.

References

- Aidoo, B., Boateng, S. K., Kissi, P. S. & Ofori, I. (2016). Effect of problem-based learning on students' achievement in chemistry. *Journal of Education and Practice*, 7(33), 103-108.
- Ali, S. S. (2019). Problem based learning: A student-centered approach. *English Language Teaching*, 12(5), 73–78. Doi: 10.5539/elt.v12n5p73
- Aslihan, K., & Mustafa, B. (2014). The Effect of Problem Based Learning Approach on Conceptual Understanding in Teaching of Magnetism Topics. *Eurasian Journal of Physics & Chemistry Education* 6(2), 110-122, 2014.
- Aypay, A. & Eryılmaz, A. (2011a). Lise Öğrencilerinin Derse Katılmaya Motive Olmaları ile Okul Tükenmişliği Arasındaki İlişkinin İncelenmesi. *Mehmet Akif Ersoy Üniversitesi Eğitim Fakültesi Dergisi*, 21, 26-44.
- Bada, S. O. (2015). Constructivism learning theory: A paradigm for teaching and learning. *Journal of Research & Method in Education*, 5(6), 66-70. Doi: 10.9790/7388-05616670
- Bashir, A. (2013). *An exploratory case study of 21st century skills development among educators and students engaged in an online collaborative educational and cultural exchange program* (Published doctoral dissertation). Graduate School at Appalachian State University. United States.
- Carrio, M., Larramona, P., Banos, J. E. & Perez, J. (2011). The effectiveness of the hybrid problem-based learning approach in the teaching of biology: A comparison with lecture-based learning. *Journal of Biological Education*, 45(4), 229-235.
- Çoban, A. (2011). Probleme dayalı öğrenme. B. Oral (Ed.), In *Öğrenme öğretme kuram ve yaklaşımları* (pp. 479-508). Ankara: Pegem Academy..

- Demirtaş, H. & Dönmez, B. (2008). Ortaöğretimde görev yapan öğretmenlerin problem çözme becerilerine ilişkin algıları. *İnönü Üniversitesi Eğitim Fakültesi Dergisi*, 9(16), 177-198.
- Estrada, L. (2017) Using problem-based learning to develop an innovative fitness unit. *A Journal for Physical and Sport Educators*, 30: 4, 54-56. Doi: 10.1080/08924532.2017.1321450.
- Goodyear, V. & Dudley, D. (2015). I'm a facilitator of learning! Understanding what teachers and students do within student-centered physical education models. *Quest* 67(3): 274–289. Doi: 10.1080/00336297.2015.1051236.
- Gürten, E. (2020). Probleme dayalı öğrenme. Ö. Demirel (Ed.), In *Eğitimde yeni yönelimler* (pp. 83-94). Ankara: Pegem Academy.
- Hattie, J. (2012). *Visible learning for teachers: Maximizing impact on learning*. London, UK: Routledge. Doi: 10.4324/9780203181522.
- Hmelo-Silver, C. E. (2004). Problem-based learning: What and how do students learn? *Educational Psychology Review*, 235-266. Retrieved from: <https://link.springer.com/article/10.1023/B:EDPR.0000034022.16470.f3>
- Kazemi, F. & Ghoraiishi, M. (2012). Comparison of problem-based learning approach and traditional teaching on attitude, misconceptions and mathematics performance of university students. *Procedia-Social and Behavioral Sciences*, 46, 3852-3856
- Korkmaz, H. (2004). *Fen ve teknoloji eğitiminde alternatif değerlendirme yaklaşımları*. Ankara: Yeryüzü Publications.
- Le Ha, P. (2014). The politics of naming: Critiquing “learner-centred” and “teacher as facilitator” in English language and humanities classrooms. *Asia-Pacific Journal of Teacher Education*, 42, 392–405. Doi:10.1080/1359866X.2014.956048.
- Metzler, M.W., & McCullick, B.A. (2008). Introducing innovation to those who matter most–The P–12 pupils' perceptions of the Model-Based Instruction. *Journal of Teaching in Physical Education*, 27, 512–528. Doi: 10.1123/jtpe.27.4.512.
- Metzler, M. (2011). *Instructional models for physical education* (3rd ed.). Scottsdale, AZ: Holcomb Hathway.
- Morgan, C.T. (2011). Düşünme ve problem çözme. Sirel Karakaş ve Rükzan Eski (Ed.), In *Psikolojiye giriş* (Rükzan Eski) (pp.127-148). Konya: Education Academi Publications.
- Özgen, K. & Pesen, C. (2010). Probleme dayalı öğrenme (PDÖ) yaklaşımı ile işlenen matematik dersinde öğrencilerin problem çözme becerilerinin analizi. *Milli Eğitim Dergisi*, 40(186), 27-37.
- Reschly, A., & Christenson, S. L. (2006b). Research leading to a predictive model of dropout and completion among students with mild disabilities and the role of student engagement. *Remedial and Special Education*, 27, 276 – 292. Doi: 10.1177/07419325060270050301.
- Schmidt, H. G., Rotgans, J. I., & Yew, E. H. (2011). The process of problem-based learning: What works and why. *Medical Education*, (45) 792–806. Doi: 10.1111/j.1365-2923.2011.04035.x.
- Serçemeli, M. (2016). Muhasebe Eğitiminde Yeni Bir Yaklaşım Önerisi: Ters Yüz Edilmiş Sınıflar. *Muhasebe ve Finansman Dergisi*, (69)115-126. Erişim adresi: <https://dergipark.org.tr/en/download/article-file/427790>.
- Sönmez, V. (2015). *Eğitim felsefesi*. Ankara: Anı Yayıncılık.
- Strobel, J. ve Van Barneveld, A. (2009). When is PBL more effective? A metasynthesis of meta-analyses comparing PBL to conventional classrooms. *Interdisciplinary Journal of Problem-based Learning*, 3(1), 44-58.
- Tosun, C. ve Taşkesenligil, Y. (2013). The effect of problem-based learning on undergraduate students' learning about solutions and their physical properties and scientific processing skills. *Chemistry Education Research and Practice*, 14(1), 36-50.
- Ün Açıkgöz, K. (2007). *Aktif öğrenme*. İzmir: Kanyılmaz Matbaası.
- Wijnia, L., Loyens, S. M. ve Derous, E. (2011). Investigating effects of problembased versus lecture-based learning environments on student motivation. *Contemporary Educational Psychology*, 36(2), 101-113.
- Woods, D. (2012). PBL: An evaluation of the effectiveness of authentic problem-based learning (aPBL). *Chemical Engineering Education*, 46(2), 135-144