LET: Linguistics, Literature and English Teaching Journal
||Volume|| 8 ||Issue|| 2 ||Pages|| 110-129 || 2018 ||
|P-ISSN: 20869606 ; E-ISSN: 25492454|
Available online at: http://jurnal.uin-antasari.ac.id/index.php

PROJECT BASED LEARNING: A REVIEW OF LITERATURE ON ITS OUTCOMES AND IMPLEMENTATION ISSUES

Ciptro Handrianto
handriantociptro@gmail.com

M. Arinal Rahman
arinalrahman@gmail.com

Faculty of Education & Human Development,
Sultan Idris Education University,
Tanjung Malim, Perak, Malaysia

Article History:

Received: 2nd July 2018

Accepted: 1st August 2018

Corresponding Author:

Tel.: .....

Abstract Project-Based Learning is gaining popularity in development projects and pedagogic development. The objective of the use the PBL in a classroom is to give students a meaningful experience in learning. This paper will discuss the PBL based on constructivism theory and experiential theory were discussed to give the idea constraint to the use of the PBL. Furthermore, the study will also discuss the implementation of PBL. It is found that some studies have showed positive effect and also it may develop students' critical thinking and learning attitudes. However, there are several issues regarding the implementation like students acknowledge that the knowledge of today's limited technology changes has prevented them from producing good design ideas.

Keywords

Project Based Learning,

teaching strategies,

learning strategies

INTRODUCTION

One of the teaching methods practiced by educators especially in the technical field is the project method. This method was developed by William

Kilpatrick in 1918 and this method emphasizes hands-on learning or experiential education as suggested by Dewey (1938). Beginning from Dewey's recommendation (1938), Education and Democracy and the slogan of Kilpatrick's Hearty Purposeful Activity has resulted in the formulation of education reformers, which is an activity that can be classified as a project if it meets the self-determination and self-satisfying need criteria (Knoll, 1997). Therefore, project-based approaches in the process of learning and teaching that give real experience to students are one of the branches in experiential learning.

Project Based Learning (PBL) is a learning approach that was introduced around 1990 when Bransford and Stein (1993), Blummenfeld (1991) and Buck Institute For Education (1998), an education-based non-governmental organization issued the definition and guidance of the implementation of PBL (Shot, 2011). Basically, the project and PBL methods are derived from constructivism theory, especially social constructivism that encourages collaboration among students and learning within the community (Kozlowski, 2009). Based on the above information, it can be concluded that the PBL is derived from the project method, adapted to an experience-based approach and is therefore linked to social constructivism theory.

Project Based Learning is a student-centered learning approach, in the form of an investigation, involving decision-making process based on data analysis, collaboration, product-oriented and involving document preparation. PBL is a teaching approach because it can be used by teachers to deliver syllabus based on predetermined learning outcomes. PBL is said to be a learning approach because it is based on theories of learning such as constitutionalism and also learning through experience.

The purposes of Project-Based Learning (PBL) are to give students a meaningful experience. PBL is one of the experience-based learning as suggested by Dewey (1938), Lewin (1946) and Piaget (1964). The idea was then popularized by Kolb through Experienced Learning Kolb Model (Kolb & Fry, 1975). PBL has similarities with Inquiry-discovery or experiential learning approach (Buck Institute for Education, 2005). According to Blumenfeld et al. (1991), students

prefer to retain knowledge through PBL more easily than text-centered approaches. The researcher believes that PBL is one of the teaching and learning approaches that may be appropriate in order to improve the quality of teaching and learning in the classroom.

In general, PBL involves active learning, systematic teaching, product-oriented teaching, product-oriented, authentic and skill-based assessments. Among the basic skills involved are the skills of information resources, interpersonal, systems, technology, listening, thinking and personal quality skills (Division of Education Technology, 2006). According to Hussain et al. (2009) there are 13 soft skills that can be built and formed through PBL approaches that are social, teamwork, problem solving, soul management, ethics and morals, communication, continuous learning, leadership, crisis handling, creative thinking and critical thinking, managing information and entrepreneurship.

PBL can also apply creativity, thinking skills, improve communication skills, enhance collaborative skills, build self-directed inquiries and lifelong learning skills (Condliffe, 2017). Furthermore, PBL is said to support social learning because it is considered a training for students to make them competent to suit the 21st century skills such as communication, collaboration and teamwork (Kokotsaki, Menzies, & Wiggins, 2016). According to Quint and Condliffe (2018) PBL is a complex task, based on challenging questions or problems, students will be involved in designing, problem solving, decision-making and research activities.

It can be concluded that the key elements in the PBL implementation criteria include active learning, involving students in full, curriculum-based tasks, challenging questions or problems, involving critical thinking and creative skills, communicating and collaborating, teamwork, information management , solve problems, make decisions, self-assess and product oriented. PBL is suitable for both groups and individuals in the process of teaching and learning.

DISCUSSION

1. Theory of Constructivism Learning

Constructivism's Learning Theory has existed for so long and is derived from philosophy and applied to sociology, psychology, cognition and education. Constructivism learning is rooted in PBL during a student learning process. Among the constructivist members, activities involving students are very successful. According to Kearsley (2010), project-based learning and teaching methods are based on cognitive flows from theoretical pioneers such as Dewey (1938), Piaget (1964) and Vygotsky (1978). The theory of constructivism states that individuals construct the meaning of the world by synthesizing new experiences into what they had previously understood. They form rules through reflection on their interactions with objects and ideas. When they encounter objects that are meaningless to them, they will either interpret what they see to match the rules they have shaped, or they will adjust their rules to better explain this new information (Brooks & Brooks, 1993).

According to Rodwell (1999), constructivism is nothing more than a commitment to the view that humans build their own knowledge. Knowledge can not be transferred from the mind of an individual to another's thinking. On the contrary, each person forms his or her own knowledge using his or her chosen experience. Generally it can be concluded that constructivism is an understanding that individuals actively build their knowledge or concept actively based on existing knowledge and experience. In this process, they will adapt the knowledge received with existing knowledge to build new knowledge. Theory of Constructivism Learning Theory can be divided into two major branches of constructivism theory namely cognitive and social.

The theory of cognitive constructivism was pioneered by a well-known Swiss psychologist Piaget (1964). The main idea of cognitive cognitivism is mental representation. All ideas and images in the minds of individuals are represented through a mental structure known as a scheme. The scheme will determine how the data and information received will be understood by the human mind. If this information corresponds to the existing scheme, the individual will absorb the information into this scheme. If it does not fit the existing scheme, this information may be rejected or modified or the scheme will be modified.

While the theory of social constructivism pioneered by another Russian psychologist, Vygotsky (1978). According to Vygotsky, the development of the concept of children develops systematically, logically and rationally with the help and guidance of others. Therefore, this theory of social constructivism plays a role in the process of learning which is in the context of socio-cultural context. In the social context, individuals share and build new knowledge. engagement with others provides an opportunity for individuals to evaluate and enhance their knowledge (Parker, 2014). In relation to the learning process, Vygotsky (1978) presents four principles, namely (1) social leaning. Vygotsky states that individuals learn through interaction with more mature people or more efficient peers; (2) Proximal Development Zone (zone of proximal development). Individuals will be able to learn the concepts well if they are in the Proximal Development Zone. If they can not solve the problem themselves, they will get help from older people or peers; This aid is intended to enable them to solve more complicated problems than their level of thinking ability. (3) cognitive training as cognitive apprenticeship. A process that will make a person According to Vygotsky theory, human cognitive function comes from the social interactions of each individual in a cultural context. Vygotsky also believes that learning takes place when individuals work to complete new tasks they have not yet learned, but those tasks are still in their abilities or those tasks are in their Proximal Development Zones. Vygotsky argued that, language is a key tool for promoting thought, constructing reasoning, and supporting cultural activities such as reading and writing. He also noted that, children solve problems with conversation, just as with their eyes and hands. Therefore, according to Vygotsky, children are encouraged to speak a lot in their learning process or propagate discussion.

The application of the theory of social constructivism learning in the learning process has had a profound effect on the students. Among the learning activities that are most suited to this theory are learning through Problem-Based Learning, Project-Based Learning in groups and also methods of discussion or brainstorming. Many studies have been done and researchers agree that active discussion activities will increase the ability to test ideas, synthesize ideas among themselves and build deeper understanding of what they are learning (Kizkapan &

Bektas, 2017). Discussions in large or small groups also provide opportunities for students to train self-control, determine their own needs and desire to do the tasks more diligently (Peters, 2008).

Discussions with fellow partners can also enhance motivation, collaborative skills and attempt to solve problems (Pereira et al. , 2017). The literature review finds that social constructivism learning theory is very suitable as a basis for the implementation of group-based project-based learning, where students will discuss, share information and ideas to complete project assignments with guidance and guidance from teachers or lecturers.

2. Experience Based Learning Theory

Experience based learning is a learning theory focusing on the role of experience in the learning process, namely the active involvement of students in the learning process and the effect of interactions between students and the environment. Dewey (1938) is one of the educational psychologists who pioneered learning experiences and supports project-based learning. Dewey expects students to have an authentic learning experience. Through real and practical experience, he believes students will master new knowledge and skills, through active learning, knowledge and skills will become more meaningful. According to Kolb et al., experiential learning provides a comprehensive model of the learning process, how individuals learn, develop and develop.

The most influential theoretical learning experience developed by Kolb (1970) was an American educational theory producer born in 1939. He is known for his book published in 1984 entitled Experiential Learning: Experience as a source of learning and development. The experiential learning theory incorporates learning theory, assessment style and learning process development framework as expressed by scholars such as Dewey, James, Lewin and Piaget (Kolb & Kolb, 2005).

Kolb and Fry (1975) have designed learning models covering four main elements: concrete experience, observation and reflection, abstract conceptualization and experimentation and implementation in new situations

active conceptualization). He describes this model in the form of a cycle based on Lewin's theory as shown in Figure 2.1:

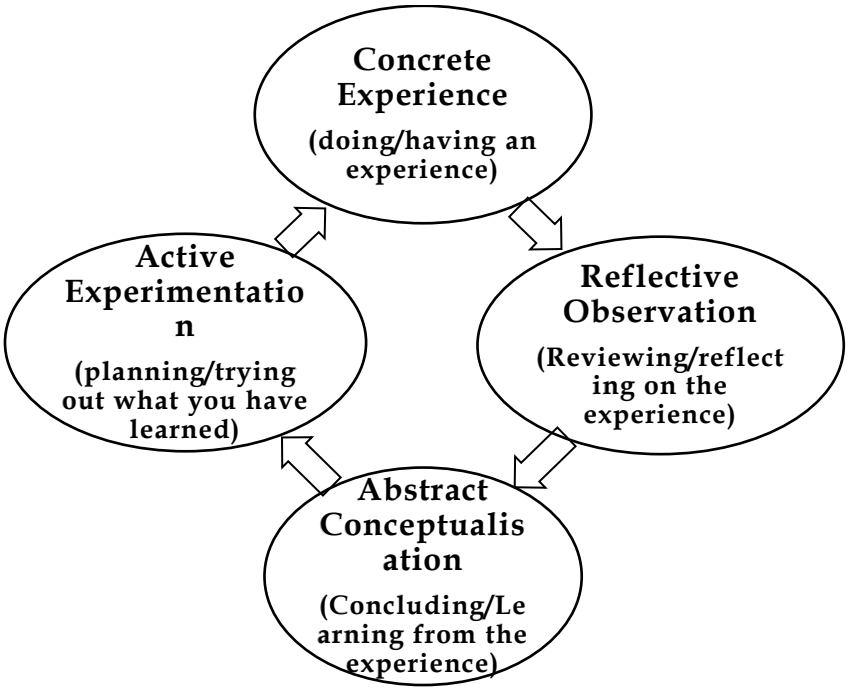

Figure 1. Experiential Learning Cycle

Source: Kolb and Fry (1975)

Kolb and Fry (1975) claim that the learning cycle can start anywhere from the four steps above and it will continue in the next cycle. First step ; Concrete experience, learning process usually begins when a student starts doing activities such as attending a workshop, projecting, reading materials from the internet and other learning activities. Therefore, they will gain experience. Second step; observation and reflection, This step is to understand the effects of the activities they have undertaken in the first step, they reflect with teachers, lecturers, partners or individually. What are the strengths and weaknesses of the activity that have been done and use that experience for future activities. The third step; abstract conceptualization, where students reflect on past experiences and gain additional information through reading or discussion, finally making conclusions or generalizations related to the activity. Fourth step; active experimentation, In this step, the results of generalization made on the experience of performing first-to-third step activities, students will set up an action plan to implement new activities.

Actions in accordance with the new plan will be initiated from the first step and will be followed by the steps to complement one another cycle.

The Kolb experience learning cycle above is based on the views of social psychologist Lewin (1946), he mobilized the theory of integration and practice, promoting integration between scientific inquiries and social problem solving, forming the basis for the development of social behavior change in the organization. He is known through the Dynamic Group, Action Review and T-groups or three-step model (unfreezing, moving, refreezing). Lewin's view (1946) on the action study as a process within the circle of every action level is in the form of planning cycle, action and fact finding outcome of action. This means that learning is a recurring process with which the study affects the action, the effect of the assessment and subsequent studies. The Kolb experience learning cycle was developed from the idea of a loop in the action study put forward by Lewin.

Apart from taking into consideration Lewin's view, the Kolb experience-based learning model design was built on the philosophical view of the famous pragmatism, John Dewey (1938). In producing philosophy of experience, Dewey stressed that learning was really related to experience, he suggested that learning was an experience and experience was a learning. For Dewey's learning is an activity, student-centered and involves sharing issues with teachers (Dewey, 1938; Kolb, 1984). At Kolb's experience is an organization-focused process of learning. The design of the Model Kolb model above has taken into account Dewey's views.

Based on the view of the three psychologist philosophers of education that relate to experiential learning theories and refer to the PBL definitions, it can be concluded that the implementation of PBL in the learning process is included within the scope of these theories. This is because each student who is implementing the project will have a learning experience from planning, implementing and preparing a report to complete their project assignment.

3. PBL is a branch of Learning Through Experience and Based on Constructivism Learning Theory

Project-based learning is a learning model based on the theory of social constructivism learning. This theory was developed by Vygotsky (1978). In the process of learning he was thinking of what the children learned and how they think they are derived directly from the culture around them. The communities around them are the source of all the concepts, ideas, facts, skills and attitudes. One of the famous constructions of Vygotsky is Proximal Development Zone (Guseva, 2017). According to Vygotsky (1978), the teacher can stimulate this zone by giving a lot of opportunity to the responding students to cover the skills and abilities that the students can do alone.

A prominent learning strategy in constructivism learning among them is the collaborative, student-centered learning strategies, project methods, field experiences, problem solving, discussions, developments and simulations (Fernando, 2017). Almost all of these strategies are also available in project-based learning strategies. This shows a close association between project-based learning and Constructivism Learning Theory.

According to most scholars of education, constructivism is a theory of learning based on the idea that students construct their own knowledge in the context of their experience (Asiksoy & Ozdamli, 2017). Constructivism learning focuses on the active activities of students in developing experience. Activity in project-based learning provides a learning experience and can help make reflection. It brings closer real-world relationships with a concept of science that is fundamental to being developed more broadly and deeply (Kokotsaki, Menzies, & Wiggins, 2016).

In principle, Project Based Learning is based on Constructivism Learning Theory. According to Quint and Condliffe (2018), constructivism learning should be done by encouraging students to build complex thinking skills. This activity involves complex thinking similar to the principle of constructivist learning. There are generally similarities between strategies, learning theories and principles in the Constructivism Learning Theory and Project Based Learning.

Another theory related to PBL is Experience Learning Theory (Dewey, 1938). Project-based problem-based learning is one of the branches of experiential learning and is one of the ways students can be exposed to real experience in life and work. Among the learning-related theories of PBL is the Experiential Learning Theory, the theory combines learning theories, the assessment style and the learning process development framework as expressed by scholars such as Dewey, Lewin and Piaget (Kolb & Kolb, 2005).

Generally there is a basic equation in Kolb Experience Learning Cycle steps with PBL where in the first step is the student doing the activity to gain experience, in the PBL criteria also students are directly involved in project activities. While the second step states that students understand the impact of activities through reflection sessions, in PBL there are also criteria in which students need to reflect. The third step in the Kolb Experience Learning Cycle is that students formulate and develop new knowledge, the same thing as the PBL criteria in which students acquire, present knowledge through presentation sessions. Although project-based learning existed before the outcome of the Kolb Experience Learning Cycle, but if viewed in the aspect of implementation in teaching and learning as a teaching approach they both demonstrate the suitability and compatibility and can be summarized that project-based learning is very compatible with Theory Experience Based Learning, especially Kolb Experience Learning Cycle.

4. Implementation of Individual and Group Based Learning Projects

Project-based learning can be done individually or in groups. According to Lee, Huh, and Reigeluth (2015), individual projects are often less challenging and complex compared to group projects. The social skills of a group is more important then social skills of individual. This means the the size of the problem and learning outcomes for group projects is much higher than individual projects. It is supported by Zhang et al. (2015) that collaborative learning is more effective to improve learning and student achievement than individually. Therefore, individual PBL can be implemented but less helpful in terms of the formation of social mobility among students.

In the implementation of PBL in groups, the process of social interaction through which a student passes a favor to themselves. In this case, studies show small group learning strategies are better than individual learning (Lou, Abrami, d'Apollonia, 2017). According to Condliffe, (2017), students learn from other students, motivate each other, respond to their peer assessment, help to understand something and share information, knowledge and skills in a team when preparing a project. Mussetand Topping (2017) found that group work has a positive impact on student self esteem. Based on some of the above researchers, it seems that they are more likely to agree on PBL in groups rather than individually.

5. Effect of Implementation of Project Based Learning on Ability, Intellectual Skill and Attitude

The implementation of PBL in the learning process has greatly helped to improve student performance in terms of increasing ability, intellectual skills and attitudes. Ability to refer to competencies in various fields, including communication and collaboration. Intellectual skills refer to thinking skills such as critical, analytical, synthesis and problem solving skills. While attitudes refer to one's behavior or deeds. In his study, Filippatou and Kaldi (2010) find a very significant outcome that, Project Based Learning has increased academic success, making learning more fun, meaningful and more endearing and building the skills most needed by the students. The findings from Yaman (2014) find that PBL is effective in developing a high-level thinking of students. The study by Petersen and Nassaji (2016) found that students involved in PBL have the potential to acquire knowledge and become more efficient in problem solving, self-directed learning and involvement engagement. They become active students, problem solvers, decision makers, researchers and documentation (Hixson et al., 2012). Generally from many PBL-related studies in the learning process, they find that this approach is very helpful in improving student intellectual skills, especially thinking skills.

In addition to affecting students' thinking skills, PBL is also said to be able to enhance collaborative skills among students. The study by Wurdingez and Qureshi (2015) found that through this approach the students are increasingly bold

to give ideas and views as well as actively involved in learning. According to Miller (2017), what is interesting is that they still recognize and agree with the effectiveness and the benefits of collaborative learning in shaping the social interaction, the student leadership qualities and the indispensable management of the students.

Teaching learning using PBL allows peer-to-peer collaboration in student-centered learning environments (Chinf-Wen, Pearman, & Farha, 2010). When implementing collaborative groups, students will acquire deep knowledge through activity materials and at the same time improve teamwork skills (Grierson et al., 2012). According to Kerr (2010), collaborative learning depicts situations where two or more subjects are built simultaneously and interactive to show a common solution to a problem.

Jo (2011) point out that, an important component in collaborative is the discussion that took place during the interaction of participants in the assignment. This lesson emphasizes the concept that "every student learns from another student" so it encourages students to contribute ideas and appreciate the ideas of others. According to Miller (2017), collaborative learning can help students build more meaningful knowledge when compared to individual learning. Students should also be able to think creatively, solve problems and make decisions in a team (Wurdinger & Rudelph, 2009).

According to Chamberlain and Mendoza (2017), the skills in PBL really mean that it can connect the skills with real learning and involve skills such as collaboration and reflection. According to them, students studying collaboratively and cooperatively can develop commitment and concern for each other, regardless of their attitude and initial responses to each other (Han, 2017). In general, collaborative learning is available in every group-based Project-Based Learning. It can be summarized from earlier studies that collaborative learning has become a major basis in PBL implemented in groups.

Another important aspect of the effect of the implementation of PBL in the learning process is on attitude. Attitude in this context, refers to a person's

behavior or character. Attitude is very much related to the practice of a person's value. Posner, Randolph and Schmidt (1987) state that the value is a general standard that affects the formation of a person's attitude and this attitude determines the individual's behavior. A person's attitude toward something is influenced by what he or she learned and from the environment (Risnani & Astina, 2017). In conclusion, that attitude formation is influenced by the value that one holds and is derived from experience in the learning process. Thus PBL's experience is able to influence the value held by someone because each student will go through a learning process that gives them experience when executing the project.

The application of values among students as a result of the practical learning activities they have had had a significant impact. In a study by Miller (2017) on the professional value of teachers, it is found that the level of teacher's practice in interpersonal and intrapersonal skills is at moderate level. Interpersonal skills involve the ability to communicate and understand others and intrapersonal skills, involving self-reflection skills and realizing self-weakness and continuing self-improvement (Chyung et al., 2017).

PBL provides education focus on students and gives something that is indirectly worthwhile such as encouragement, enthusiasm, creativity, empathy and competitiveness. (Vaidya, 2015). The group's PBL shows, group investigation promotes social skills, and friendships, they learn about teamwork and collaboration (Paschalis, 2017). Opportunities for selective students also allow them to share their strengths and skills with other partners and this enhances their inner motivation (Koutrouba & Karageorgou, 2013). Generally from the literature review finds that the implementation of PBL in learning process is capable of contributing to the development of knowledge, intellectual skills and the formation of students' attitudes.

6. Issues and Problems in Implementation of Project Based Learning

Implementation of PBL in the learning process often involves factors such as student self, teacher or lecturer, curriculum, task type, workshop needs,

equipment and materials as well as information and communication technology facilities. This factor is in line with Jenkins (2017) which says that the effectiveness of learning involves three factors, namely the nature of peer to peer interactions process. To implement the project to achieve the highest marks or quality products, there are certainly obstacles and challenges. Similarly, the impact on the students involved, sometimes there is a wide range of perceptions among educators on the effectiveness of the outcome of the learning process using PBL, this often raises issues.

One of the key components of the PBL is the student. During the implementation of the PBL, sometimes the attitude of the student becomes an issue that causes its effectiveness to raise the question. According to Han, Capraro, and Capraro (2015), in the project implementation study in the Design course, students fail to produce new ideas that can solve the problem being addressed. Students, the presence of classroom based students activities, and students' perceived level of rigor of assignment.

The implementation of PBL in the learning process is often associated with the assessment which means the outcome of the project will be evaluated and determined marks as part of the assessment acknowledge that the knowledge of today's limited technology changes has prevented them from producing good design ideas. Students are also faced with difficulty in drawing sketches, drawing drawings, building designs and getting materials to build models. Their process of creating a product is complex and sometimes a problem for some students. According to Quint and Condliffe (2018), he explained that the process of their creation is very complicated and not easy to communicate. the way they handle the process of creating such a way will only make solving a problem solely as a ritual without giving any effect to the thinking, creativity, confidence and effective work methods among students.

With regard to the same thing in the study on multimedia product development projects by Loizzo and Lillard (2015) found that student teams can act creatively to modify and create appropriate and engaging audio and video creative objects. While in the study of mathematics subjects by Jenkisn (2017)

also found that students' achievement improved, positive student attitudes and improved their understanding of transistor topics. A study by Kizkapan and Bektas (2017) also found that students have the opportunity to solve problems, think critically and decide, they think PBL gives time to talk, design and create in real world situations. The question is, in looking at the implementation of PBL learning in the same discipline, there is still a different perception among researchers. These are among the interesting issues pertaining to the implementation of PBL in the learning process, where there is a difference in views of the strengths, weaknesses and challenges that must be faced during the implementation.

Apart from the issue, there are also problems that exist during the implementation of PBL in the learning process from the aspect of the students, the curriculum, the learning and teaching strategies and the workshop needs. Among the problems in the teaching process related to PBL implementation is lack of time to interact. Yaman (2014) found that time interacting and discussions with peers and lecturers was not enough. This is due to the intense content of the curriculum of Basic Design and limited meeting time. Similarly, Petersen and Nassaji (2016) found that the teacher did not have enough time to complete the syllabus because the Living Skills measure was too broad and the number of pupils sometimes exceeded 30 people for a class making practical learning can not be done perfectly so the PBL is rarely applied. The time issue for performing PBL for high school includes students having an hour an hour and not in the timetable, the teacher focuses on specific topics, integrating between subjects is difficult, then teachers are just enough to equip students to face the exam (Quint & Condliffe, 2018).

Another problem encountered in previous studies on the implementation of PBL in the learning process is about materials and workshop needs. The findings of Basjaruddin and Rakhman (2016) found that the Engineering Drawing room facility is one of the problems faced by teachers and students involved in the implementation of the subject. Although laboratories and equipment are provided, equipment for teaching and learning is still inadequate. Studies on the

effectiveness of Life Skills subjects by Azizi and Atiqah (2008) suggest that school administrators be sensitive to the provision of adequate facilities or facilities to the Living Skills workshop, particularly in the completion of workshops with modern and up-to-date teaching aids for convenience teachers and students to improve the quality of teaching. Workshop equipment is one of the requirements for implementing PBL in technical and vocational subjects. These are among the issues and problems often encountered in studies related to the implementation of PBL especially in technical and vocational subjects.

CONCLUSIONS

A study using the PBL approach is the primary focus in which the learning process involves complex techniques. In the presege level will be involving the characteristics of the students to be informants and in the context of teaching involving the syllabus factors and the selection of project methods. At the process stage, it involves the informants studying the implementation of PBL. In the implementation of project-based assignments, students are working to find the meaning contained in the project's assignment, making the project work meaningful to their own experience and in real life. They will integrate the components or aspects of the assignment into a complete one and relate findings with past knowledge. They are also trying to build private theories and hypotheses from the assignment, such learning is an in-depth learning approach. Whereas in the product stage it involves the experience of the result of complex interaction within the network.

REFERENCES

Asiksoy, G., & Ozdamli, F. (2017). An Overview to Research on Education Technology Based on Constructivist Learning Approach. *Cypriot Journal of Educational Sciences, 12*(3), 133-147.

Basjaruddin, N. C., & Rakhman, E. (2016). Implementation of Project Based Learning in Mechatronic Lab Course at Bandung State Polytechnic. *International Journal of Evaluation and Research in Education, 5*(4), 284-291.

Chamberlain, L., & Mendoza, S. (2017). Design Thinking as Research Pedagogy for Undergraduates: Project-Based Learning with Impact. *Council on Undergraduate Research Quarterly*, *37*(4). 18-22.

Chang, C. W., Pearman, C. J., & Farha, N. W. (2010). P2P: Assessing a peer evaluation strategy. *Journal of Educational Technology Development and Exchange (JETDE)*, *3*(1), 69-84.

Chyung, S. Y., Winiecki, D. J., Hunt, G., & Sevier, C. M. (2017). Measuring Learners' Attitudes toward Team Projects: Scale Development Through Exploratory And Confirmatory Factor Analyses. *American Journal of Engineering Education*, *8*(2), 61-82.

Condliffe, B. (2017). Project-Based Learning: A Literature Review. Working Paper. *MDRC*. Available at: https://eric.ed.gov/contentdelivery/servlet/ERICServlet?accno=ED578933

Fernando, S. Y., & Marikar, F. M. (2017). Constructivist Teaching/Learning Theory and Participatory Teaching Methods. *Journal of Curriculum and Teaching*, *6*(1), 110-122.

Filippatou, D., & Kaldi, S. (2010). The Effectiveness of Project-Based Learning on Pupils with Learning Difficulties Regarding Academic Performance, Group Work and Motivation. *International Journal of Special Education*, *25*(1), 17-26.

Guseva, L. G., & Solomonovich, M. (2017). Implementing the zone of proximal development: From the pedagogical experiment to the developmental education system of Leonid Zankov. *International Electronic Journal of Elementary Education*, *9*(4), 775-786.

Han, S. (2017). Korean Students' Attitudes toward STEM Project-Based Learning and Major Selection. Educational Sciences: Theory And Practice, 17(2), 529-548.

Han, S., Capraro, R., & Capraro, M. M. (2015). How science, technology, engineering, and mathematics (STEM) project-based learning (PBL) affects high, middle, and low achievers differently: The impact of student factors on achievement. *International Journal of Science and Mathematics Education*, *13*(5), 1089-1113.

Hixson, N. K., Ravitz, J., & Whisman, A. (2012). Extended Professional Development in Project-Based Learning: Impacts on 21st Century Skills Teaching and Student Achievement. *West Virginia Department of Education*.

Jenkins, J. (2017). The Effectiveness of Project-Based Learning on Mathematics Proficiency with African American Students. *ProQuest LLC*. available at http://gateway.proquest.com.ezpustaka2.upsi.edu.my/openurl?url_ver=Z39.88-2004&rft_val_fmt=info:ofi/fmt:kev:mtx:dissertation&res_dat=xri:pqm&rft_dat=xri:pqdiss:10601874

Jo, I. H. (2011). Effects of role division, interaction, and shared mental model on team performance in project-based learning environment. *Asia Pacific Education Review*, *12*(2), 301-310.

Kerr, S. (2011). High school online: Pedagogy, preferences, and practices of three online teachers. *Journal of Educational Technology Systems*, *39*(3), 221-244.

Kizkapan, O., & Bektas, O. (2017). The Effect of Project Based Learning on Seventh Grade Students' Academic Achievement. *International Journal of Instruction*, *10*(1), 37-54.

Kokotsaki, D., Menzies, V., & Wiggins, A. (2016). Project-based learning: A review of the literature. *Improving schools*, *19*(3), 267-277.

Koutrouba, K., & Karageorgou, E. (2013). Cognitive and socio-affective outcomes of project-based learning: Perceptions of Greek Second Chance School students. *Improving Schools*, *16*(3), 244-260.

Lee, D., Huh, Y., & Reigeluth, C. M. (2015). Collaboration, intragroup conflict, and social skills in project-based learning. *Instructional Science*, *43*(5), 561-590.

Loizzo, J., & Lillard, P. (2015). In the Field: Increasing Undergraduate Students' Awareness of Extension through a Blended Project-Based Multimedia Production Course. *Journal of Extension*, *53*(1), n1.

Miller, A. (2017). Process for discovery: project-based learning builds teachers' collaboration skills. *Learning Professional*, 38(5), 35-39.

O'Connor, M. K. (2015). *Social work constructivist research*(Vol. 1134). Routledge.

Parker, I. (2014). *Discourse dynamics (psychology revivals): Critical analysis for social and individual psychology*. Routledge.

Paschalis, G. (2017). A Compound LAMS-MOODLE Environment to Support Collaborative Project-Based Learning: A Case Study with The Group Investigation Method. *Turkish Online Journal of Distance Education*, *18*(2), 134-150.

Pereira, S., Santana Capelli, J. C., Abrahão, A. L., & Anastacio, A. (2017). The experience of using Project-Based Learning as an active methodology in the Educational Program through Work for Health in professional practice training. *Demetra: Food, Nutrition & Health/Alimentação, Nutrição & Saúde*, *12*(4). 881-898.

Peters, R. (2008). Facilitating Interaction to Promote Learning. *International Journal of Learning*, *15*(7). 159-166.

Petersen, C., & Nassaji, H. (2016). Project-based learning through the eyes of teachers and students in adult ESL classrooms. *Canadian Modern Language Review*, *72*(1), 13-39.

Poonpon, K. (2017). Enhancing English skills through project-based learning. *The English Teacher*, 10.

Quint, J., & Condliffe, B. (2018). Project-Based Learning: A Promising Approach to Improving Student Outcomes. Issue Focus. *MDRC*. available at https://eric.ed.gov/contentdelivery/servlet/ERICServlet?accno=ED580907

Quint, J., & Condliffe, B. (2018). Project-Based Learning: A Promising Approach to Improving Student Outcomes. Issue Focus. *MDRC*.

Risnani, Sumarmi, & Astina, I. K. (2017). Implementation of Project-Based Learning (PjBL) through One Man One Tree to Improve Students' Attitude and Behavior to Support "Sekolah Adiwiyata". International Education Studies, 10(3), 134-141.

Wurdinger, S., & Qureshi, M. (2015). Enhancing college students' life skills through project based learning. *Innovative Higher Education*, *40*(3), 279-286.

Wurdinger, S., & Rudolph, J. (2009). A Different Type of Success: Teaching Important Life Skills through Project Based Learning. Improving Schools, 12(2), 115-129.

Yaman, I. (2014). EFL Students' Attitudes towards the Development of Speaking Skills via Project-Based Learning: An Omnipresent Learning Perspective. *Online Submission*.

Zhang, L., Kalyuga, S., Lee, C. H., Lei, C., & Jiao, J. (2015, July). Effectiveness of Collaborative Learning with Complex Tasks Under Different Learning Group Formations: A Cognitive Load Perspective. In *International Conference on Hybrid Learning and Continuing Education* (pp. 149-159). Springer, Cham.