Philosophical Foundations of Project Based Learning: Perspectives on Constructivism and Contextualism Theory

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Abstrak

Tujuan penelitian ini adalah untuk menganalisis peran teori konstruktivisme dan kontekstualisme sebagai landasan filosofis dalam penerapan Project Based Learning. Metode yang digunakan dalam penelitian ini adalah *literature review* yang mengkaji berbagai literatur terkini terkait dengan PBL, teori konstruktivisme, dan kontekstualisme, serta penerapannya dalam pendidikan abad ke-21. Hasil penelitian menunjukkan bahwa Project Based Learning yang berbasis pada kedua teori tersebut dapat meningkatkan keterlibatan siswa, memperdalam pemahaman mereka melalui pengalaman langsung, serta menghubungkan pembelajaran dengan konteks kehidupan nyata. Kesimpulan: Project Based Learning berbasis konstruktivisme dan kontekstualisme efektif meningkatkan keterlibatan dan pemahaman siswa, meski terkendala sumber daya dan resistensi, namun teknologi membuka peluang optimalisasi.

Kata Kunci: Pembelajaran Berbasis Proyek, Konstruktivisme, Kontekstualisme, Pendidikan Abad ke-21, Tantangan dan Peluang

Abstract

The purpose of this study is to analyze the role of constructivism and contextualism theory as a philosophical foundation in the application of Project Based Learning. The method used in this study is a literature review that examines various current literature related to PBL, constructivism theory, and contextualism, as well as its application in 21st century education. The results show that Project Based Learning based on both theories can increase student engagement, deepen their understanding through hands-on experience, and connect learning with real-life contexts. Conclusion: Project Based Learning based on constructivism and contextualism is effective in increasing student engagement and understanding, even though it is constrained by resources and resistance, but technology opens up optimization opportunities.

Keywords: Project-Based Learning, Constructivism, Contextualism, 21st Century Education, Challenges and Opportunities.

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INTRODUCTION

 In the 21st century, education faces increasingly complex demands to equip students with skills relevant to life and career in the global era. Critical thinking, collaboration, creativity, and problem-solving skills are now the main focus in modern education, replacing traditional approaches that focus on knowledge mastery alone (Dole et al., 2015; Voogt & Roblin, 2019; Siska et al., 2021; Siska et al., 2023) . However, there are still many educational institutions that use conventional learning methods that tend to be one-way and do not involve students in an in-depth learning experience (Bender, 2021; Annisa et al., 2024; Zahra et al., 2024). This traditional learning often does not support students to develop the complex skills necessary to adapt in a dynamic environment.

Project-Based Learning (PBL) has emerged as an alternative that offers a more active and participatory approach. In PBL, students are invited to learn the material through real-life projects that require the application of high-level thinking skills and a deep understanding of the context (Kokotsaki et al., 2016; Shafaa & Daulay, 2024). This approach is based on the philosophy of constructivism, which considers that knowledge is built by individuals through their interaction with the environment, as well as contextualism, which emphasizes the importance of connecting learning with real contexts (Capraro et al., 2019; (Siska et al., 2023; Siska et al., 2021). Constructivism plays a role in building students' understanding independently through the process of exploration, while contextualism helps students relate learning to real-life situations, making it more meaningful and relevant (Ciptro Handrianto, 2018; Halim & Hashim, 2019).

Previous studies have examined the application of project-based learning (PBL) and its role in developing important skills for students in the 21st century. Research by Kokotsaki, Menzies, and Wiggins (2016) shows that PBL is effective in improving students' critical thinking and collaboration skills, as this approach allows them to be directly involved in relevant problem-solving. Their findings reveal that PBL provides space for students to build understanding independently, in line with the principle of constructivism that emphasizes active learning experiences.

In addition, a study conducted by Capraro, Capraro, and Morgan (2019) explored the application of PBL in the context of STEM education and found that constructivism-based PBL is highly effective in integrating various disciplines through collaborative projects. They highlight the importance of the linkage between constructivist theory and practical skills development in PBL, which can help students understand academic concepts in a real context.

Halim & Hashim, (2019) examine how digital technology can be utilized in PBL to improve contextual learning. Their research linked the application of PBL to the theory of contextualism, with results showing that the integration of technology helps students to more easily relate abstract concepts to real situations. This approach emphasizes the importance of contextualism in PBL, allowing students to see the relevance between learning in the classroom and the world outside of school.

Research by Condliffe & et, (2017) also reveals challenges in the implementation of PBL, especially in environments that still adopt traditional teaching methods. This study

highlights constraints such as limited time, resources, and institutional support that can hinder PBL effectiveness. However, they found that PBL is able to create more meaningful learning for students when supported by an approach that combines constructivism and contextualism.

Overall, previous studies have shown that the philosophical foundations of constructivism and contextualism have an important role in the application of PBL. However, a more in-depth study of how these two theories can support each other in creating more effective and relevant project-based learning for students in the modern era is still needed.

Although PBL provides many benefits, its application in the classroom still faces various challenges, especially in an education system that is still predominantly oriented towards traditional tests and assessments (Kelly, 2008; Yang et al., 2021). Lack of flexibility and limited resources are also often obstacles in the effective implementation of PBL based on the philosophy of constructivism and contextualism (Ciptro Handrianto, 2018; Condliffe & et, 2017). In this context, the study of the philosophical foundations of constructivism and contextualism in PBL is important to provide insight into how this approach can be optimally implemented to support meaningful and relevant learning in the 21st century.

Based on the explanation of the above problems, the problems and objectives of this research are formulated as 1). Analyze the role of constructivism and contextualism as a philosophical foundation in project-based learning to support meaningful learning, and 2). Identify challenges and opportunities in the application of project-based learning based on the principles of constructivism and contextualism in the traditional education system.

RESEARCH METHODS

This study uses the literature review method. The literature review method is a series of research by collecting data related to the object being researched through documents, journals, books, magazines (Zed, 2004; Siska et al., 2022). This literature review method aims to collect, analyze, and synthesize various literatures related to project-based learning (PBL) from the perspective of constructivism and contextualism theory. This literature review method was chosen because it allows authors to identify trends, concepts, and findings that are relevant to the topic discussed, as well as provide a comprehensive overview of the application of PBL in the context of these theories (Snyder, 2019). The following are the research steps carried out to obtain the data in question:

Research Steps:

1. Source Identification: The first process in this literature review is to identify and collect relevant literature on project-based learning (PBL), constructivism, and contextualism. The literature used comes from international scientific journals and books published in the last five years to ensure the relevance and up-to-date of the information obtained(Snyder, 2019). Searches are conducted through academic databases such as Google Scholar, JSTOR, ProQuest, ERIC and other online databases.

2. Source Selection and Classification: After gathering a large amount of literature, the next step is to sift through and select the most relevant and high-quality sources. Selection criteria include the sustainability of research with the main theme, focus on the application of constructivism theory and contextualism in project-based learning, and the relevance of research to the context of 21st century education (Samovar, L. A., Porter, R. E., & McDaniel, 2009; MacDonald, 2014).

3. Analysis and Synthesis: In this stage, the author analyzes the findings from various sources that have been selected. The analysis includes the identification of the main theories underlying PBL, as well as the challenges and opportunities in its application. Furthermore, the synthesis is carried out by combining results from various sources to provide deeper insights into the relationship between constructivism, contextualism, and project-based learning (Snyder, 2019; MacDonald, 2014).

4. Interpretation of Findings: The final process in this literature review is the interpretation of the synthesis results, where the author will draw conclusions about the role of constructivism and contextualism in supporting the implementation of PBL. In addition, this study will also discuss the challenges faced in the application of PBL based on the two theories in the traditional educational environment (Snyder, 2019).

RESULTS AND DISCUSSION

1. The Role of Constructivism and Contextualism Theory in Project-Based Learning
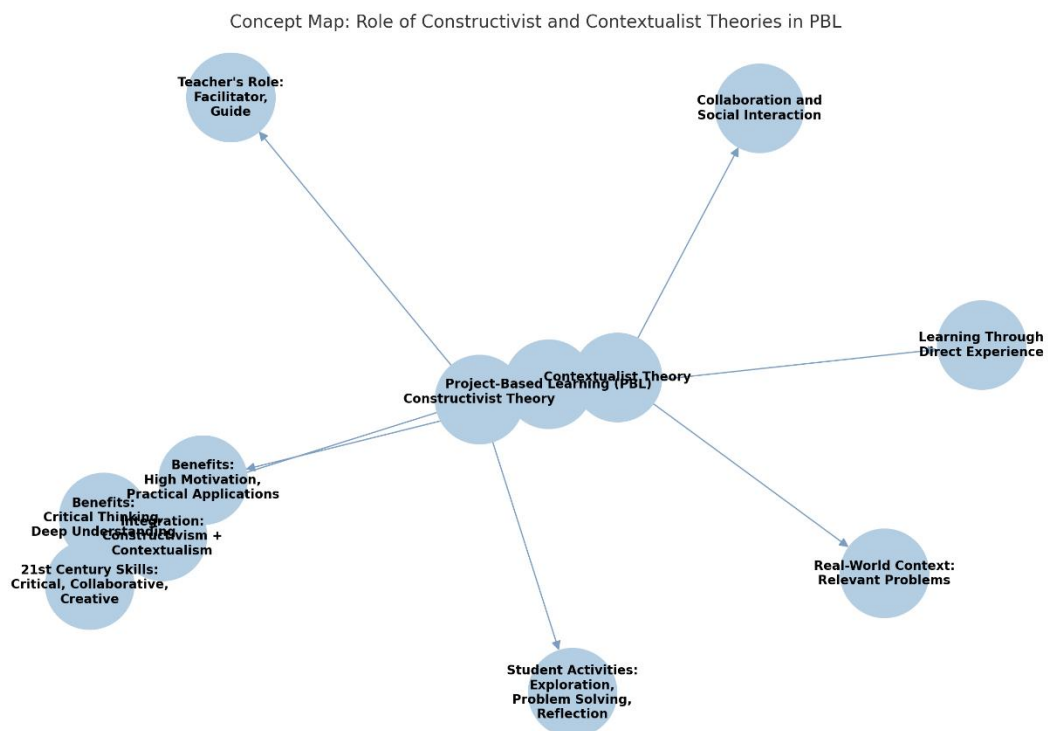
Project-based learning (PBL) is a method that encourages students to learn through hands-on experience working on real projects, which requires problem-solving and the application of the knowledge learned. PBL is also defined as a learning model model that refers to an inquiry-based teaching method that involves students in constructing knowledge, skills and attitudes through the completion of meaningful projects (Brundiers & Wiek, 2013; Guo et al., 2020; Markula & Aksela, 2022). Project-based learning makes projects or activities as a means of learning to achieve competency in attitudes, knowledge, and skills. PBL is firmly rooted in the theory of constructivism initiated by Piaget and Vygotsky, which states that knowledge is built by individuals through active interaction with their environment (Kara, 2018; Cheng, 2018; Irwan et al., 2022). In PBL, students do not only receive information passively, but are actively involved in the learning process, structuring their own understanding based on experience and reflection on the existing context (Doychinova, 2023).

Constructivism emphasizes the importance of students constructing knowledge through inter-influencing relationships from previous learning. Constructivism is also defined as a philosophy of knowledge that has the assumption that knowledge is the result of the construction of human beings themselves. Humans shape their own knowledge through their interactions with objects, phenomena, experiences, and the environment (Taber, 2018; Kusumaningpuri & Fauziati, 2021; Safitri et al., 2024). By learning from the experiences gained by students through projects or activities, they will develop students' problem-solving, collaboration, and critical thinking skills.

Constructivism emphasizes the importance of student-centered learning, where they are given the opportunity to explore, ask questions, and build their understanding

independently. For example, research by Capraro, Capraro, and Morgan (2019) shows that PBL based on the principle of constructivism helps students develop critical and creative skills, as they must find solutions to problems that arise in their projects. Thus, learning is not only limited to mastery of the material, but also to the development of higher thinking skills.
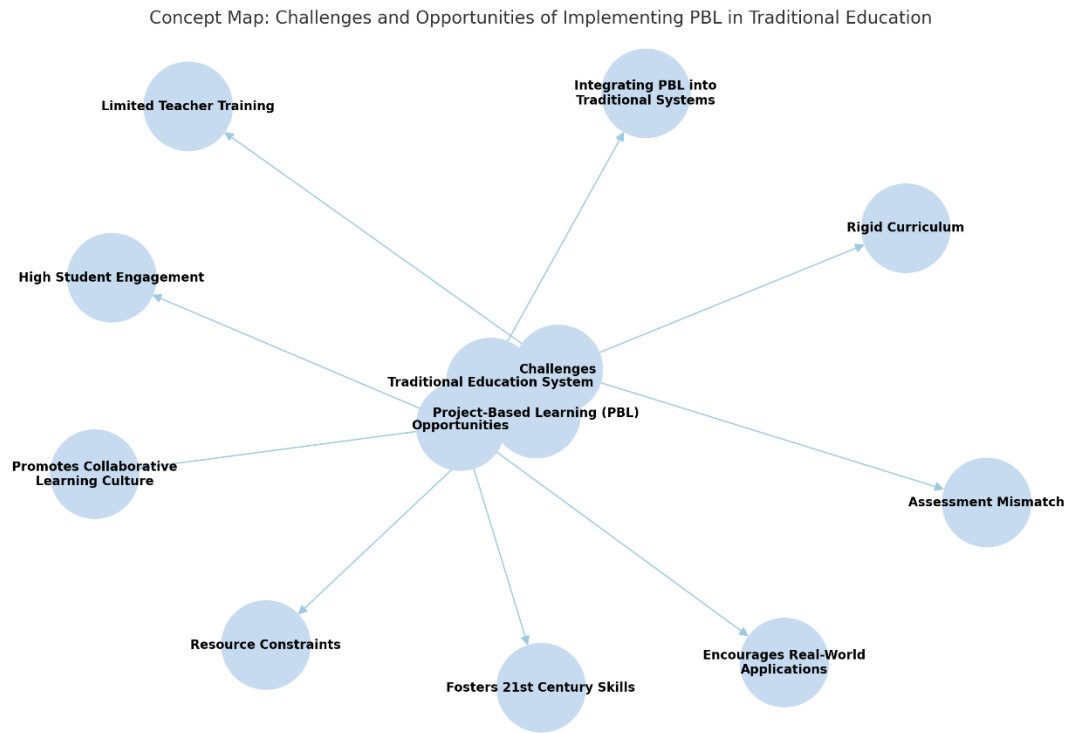
In addition, the theory of contextualism is also very important in supporting the implementation of PBL. Contextualism prioritizes the importance of connecting learning with real-world contexts so that students can understand the relevance of subject matter in their lives. In the context of PBL, this means that the projects students work on must reflect real-life situations encountered in their daily lives or professional worlds (Doychinova, 2023; Markula & Aksela, 2022). Research by Kim and Spector (2019) confirms that contextual learning increases student motivation because they feel more connected to what they are learning and can see practical benefits from the knowledge gained. The following is the relationship between the role of constructivism theory and contextualism theory in project-based learning which is illustrated in the concept map below:

Concept Map: Role of Constructivist and Contextualist Theories in PBL

Gambar 1. Keterkaitan Teori konstruktivisme dan Kontekstualisme dalam Pembelajaran Berbasis Proyek (PBL)

Based on the concept map above, the researcher analyzed that constructivism theory and constructivism theory play a very important role in project-based learning. Where project-based learning requires collaboration and interaction in groups that produce student learning experiences. In addition, students explore their abilities through project activities, students also hone their problem-solving and critical thinking skills.

2. Tantangan dan Peluang Penerapan Pembelajaran Berbasis Proyek dalam Sistem Pendidikan Tradisional

Concept Map: Challenges and Opportunities of Implementing PBL in Traditional Education

Gambar 2. Tantangan dan Peluang Pembelajaran PBL pada Abad 21

The implementation of constructivism and contextualism-based PBL is inseparable from challenges, especially in an educational environment that is still dominated by traditional learning methods that are didactic and teacher-centered. This condition often hinders students from developing the skills necessary in PBL, such as collaborative problem-solving and critical thinking skills (Condliffe et al., 2017); . The main challenges in implementing PBL in the midst of traditional or conventional learning are a). In accordance with the traditional curriculum, where learning is still a lot focused on results rather than on the learning process. Even though the curriculum has been process-based. This is what makes PBL constraint to be implemented; b). Limited Resources, project-based learning requires tools and resource support, both human resources and equipment needed. This is still a challenge for some schools in the interior. Especially projects that require technological equipment, adequate internet networks, and teachers as facilitators who understand the project being worked on (Yusriani et al., 2020); c). Limited time, the weakness in implementing project-based learning is that it takes a long time. It requires assessment and revision of the project being carried out so that the duration of time is long. This is an obstacle in carrying out learning (Siska, 2024); d). Teacher Competence in Project-Based Learning, Not all teachers have adequate understanding or skills to implement PBL. The role of teachers in PBL is more as a facilitator, which requires specialized training to support students effectively.

However, despite the challenges, PBL also offers a variety of opportunities to improve the quality of learning. One of the biggest opportunities lies in its ability to

increase student engagement in learning. Research by Dole, Bloom, and Kowalske (2017) found that project-based learning increases student engagement and motivation because they feel more responsible for their own learning outcomes. By connecting the theories of constructivism and contextualism, PBL can create a more dynamic and meaningful learning experience, which can ultimately prepare students to face the global challenges of the 21st century.

In addition, the increasingly developing digital technology also opens up opportunities to optimize PBL. Technology integration can help students access a wider range of resources and collaborate more effectively, even if they are in different locations (Kim & Spector, 2019). This is an important opportunity to improve the implementation of PBL, especially in the context of distance learning or hybrid learning that is increasingly common in different parts of the world.

CONCLUSION

Based on the results of the literature review that has been conducted, it can be concluded that project-based learning (PBL) has a strong philosophical foundation in the theory of constructivism and contextualism, which serves to improve the quality of learning in the 21st century. The theory of constructivism supports the idea that students actively build their knowledge through direct experience and reflection, While contextualism emphasizes the importance of relating learning to real situations that are relevant to students' lives. Both of these theories, when applied in PBL, can create more meaningful, interactive, and relevant learning for students, allowing them to develop critical thinking, collaboration, and problem-solving skills. However, the application of constructivism and contextualism-based PBL in education systems that still rely on traditional teaching methods faces several challenges, such as limited time, resources, and resistance to change. However, the opportunities offered by PBL—especially in increasing student engagement and motivation—can be a solution to these challenges. Technology integration also opens up possibilities to expand and improve PBL deployment, enabling more effective collaboration and access to more diverse resources. Overall, the application of project-based learning based on the principles of constructivism and contextualism has great potential to improve learning effectiveness and prepare students with the necessary skills in an increasingly complex and connected world. This research provides important insights for the development of more innovative and relevant learning in the future.

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