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THE EFFECTIVENESS OF PROJECT BASED LEARNING IN INCREASING STUDENT CREATIVITY IN HIGH SCHOOLS

Rossa Ramadhona *
Kementrian Agama Kota Palembang, Indonesia
E-mail: rossa.ramadhona99@gmail.com

Sidik E. Lahagu
SMKN 1 Mandrehe Utara Nias Barat, SUMUT, Indonesia
E-mail: sidikelilahagu07@admin.smk.belajar.id

Abstract

This research aims to examine the effectiveness of project-based learning (PBL) in increasing student creativity in senior high schools. The method used is a literature review, where data is obtained through reviewing scientific articles, textbooks and other reliable sources relevant to the topic. In this research, the concept of student creativity is discussed as the ability to produce original and valuable ideas, which is an important indicator in assessing creativity in a learning context. Project-based learning is analyzed as a learning approach that puts students at the center of learning, allowing them to explore, collaborate, and implement ideas in real projects to solve complex problems. The effectiveness of PBL in increasing student creativity is measured through achievements in problem solving, collaborative abilities, and the development of critical and creative thinking abilities. The results of the literature review show that PBL plays a significant role in increasing students' creativity, as a result of their exposure to learning situations that require the application of knowledge in real contexts and active collaboration between students. The conclusions of this study emphasize the importance of integrating project-based learning in school curricula to support the development of students' creativity and problem-solving abilities, which can better prepare them for real-world challenges.

Keywords: Project Based Learning, Creativity, High School

INTRODUCTION

In the 21st century, creativity has become one of the core skills that is considered important in education because the rapidly changing world requires individuals who can think outside conventional boundaries and provide innovative solutions to complex problems (Widodo, 2024). Education that emphasizes creativity allows students to see problems from different points of view, innovate, and not be afraid to take risks in the name of

experimentation and new discoveries (Sari & Wulandari, 2023). This is very relevant today, where a global economy based on knowledge and technology is always looking for individuals who not only have information, but are also able to think of new ways to apply that knowledge effectively.

Integrating creativity into the educational curriculum not only prepares students to become innovative leaders, entrepreneurs, and professionals, but also helps them in their personal development. Creativity teaches students to handle uncertainty and flexibility, important aspects of personal life and careers that are often unpredictable. By nurturing creativity, education also supports character building, such as self-confidence and resilience, which are needed to face and adapt to new challenges (Erliana et al., 2024). Therefore, education that supports and fosters creativity is an important investment in a bright future for individuals and society at large, ensuring that future generations are equipped with the skills needed to succeed in a world that continues to innovate.

Project-based learning is a teaching method that provides students with the opportunity to explore complex real or hypothetical problems and challenges through carefully designed projects (Wulansari & Irdawati, 2023). In this approach, students are required to carry out in-depth investigations, collaboration, design solutions, and present the results of their work. This method encourages the application of knowledge and skills that students have learned from various disciplines, thereby not only deepening conceptual understanding but also developing important skills such as problem solving, critical thinking, time management, communication, and teamwork.

The essence of project-based learning is an active learning process where students become the main actors in achieving learning goals, while teachers act as facilitators and mentors. This learning aims to make students fully involved in a project that has a significant context and is relevant to the real world, supporting the growth of creativity and innovation (Sevani & Ramadan, 2023). Through project-based learning, students are given the opportunity to explore their personal interests and make connections between the subject matter and their life experiences, which in turn can increase motivation and desire to learn more deeply (Irawati & Fahyuni, 2022).

In the context of traditional learning in high schools, the approach that is often adopted is a teacher-centered teaching model, where students tend to be passive recipients of information. In the classroom, the teacher acts as the main source of knowledge, conveying information through lectures or presentations that students listen to and take notes on. Interaction in class is

often limited to direct questions and answers between teachers and students, with learning activities dominated by memorization and practice questions whose aim is to prepare students for exams (Sukayasa et al., 2022). The assessment system in traditional education generally focuses on the results of written exams which measure individual students' ability to remember and apply the information they have learned, often without providing a real application context or developing critical thinking and problem solving skills (Rahmawati & Kamaludin, 2024).

As a result, these traditional learning conditions can produce a gap between what students learn in school and the skills they need to succeed in the real world. While this method can be effective in ensuring that large amounts of information are delivered to students in a limited time period, this teacher-centered and results-oriented approach often hinders students' potential to become independent and creative learners. Creativity, teamwork and effective communication skills, which are increasingly valued in modern society and the job market, are not always well established in traditional education systems. Thus, although students may achieve academic success according to standardized tests, they may be less prepared to face challenges and opportunities outside the academic environment (Ummah & Azmi, 2024).

RESEARCH METHOD

The study in this research is qualitative with literature. The literature study research method is a research approach that involves the analysis and synthesis of information from various literature sources that are relevant to a particular research topic. Documents taken from literature research are journals, books and references related to the discussion you want to research (Earley, M.A. 2014; Snyder, H. 2019).

RESULT AND DISCUSSION

The Effectiveness of Project Based Learning in Educational Contexts

Project-based learning (PBL) is a teaching method that places students in active roles as researchers and problem solvers. Through this approach, learning no longer only occurs in the classroom with students as passive recipients of information, but turns into an active process that involves students in in-depth investigation of real and relevant questions or problems (Saqr et al., 2023). With PBL, students work in groups to build a project that requires not only theoretical understanding, but also practical application of what they learn. This approach significantly increases students' motivation

and engagement because they feel that what they do has real meaning and purpose (Wati et al., 2024). Additionally, PBL encourages deeper learning because students must apply knowledge and skills in broader and often, multidisciplinary contexts.

PBL also has a substantial impact on the development of important 21st century skills, such as collaboration, critical thinking, and effective communication. In the process of completing projects, students must work together, often across class and discipline boundaries, which encourages the development of interpersonal skills and teamwork. Complex problem solving and critical thinking become integral parts of this process, as students must analyze information, make decisions based on evidence, and formulate innovative solutions. Communicating ideas effectively, both verbally and in writing, is also key, because students must present their findings and solutions to others (Kristianti & YP, 2023). In this way, PBL not only strengthens understanding of academic concepts, but also develops skills that are essential for success in advanced studies and future careers.

The effectiveness of PBL in an educational context is strengthened by its ability to prepare students to face the fast-paced and ever-changing real world. Through working on projects based on real-world problems, students learn to deal with uncertainty, work in conditions that are often unstructured, and adapt to change (Rifai, 2023). This equips them with the flexibility of thought and resilience needed to succeed outside the academic environment. Moreover, by encouraging self-reflection and critical assessment of their own work and that of peers, PBL helps build lifelong learning skills that will continue to benefit students in the future. Thus, PBL is not only relevant from an academic perspective, but is also important in preparing students with the abilities and attitudes to contribute to society and the global economy.

In addition to the benefits already discussed, it is also important to highlight how PBL supports differentiation and personalization of learning. In project-based learning, each student has the opportunity to explore the topics that interest them most, which allows learning to be more individually relevant and meaningful (Pei, 2023). PBL facilitates the adjustment of tasks and learning objectives to suit different learning capacities and speeds among students, allowing each individual to move forward according to their needs and potential. The teacher acts as a facilitator who directs student inquiry while providing the necessary support, enabling students with various abilities and learning styles to grow and develop (Samsi et al., 2023).

In the context of globalization and technological advances, the application of PBL in education is an important step in education that is responsive to changing times. The integration of technology in PBL, for example, offers opportunities to expand learning resources and enrich collaboration through digital tools (Fawaas et al., 2024). This creates a more inclusive and accessible learning environment, and provides students with experiences that relate directly to the technology skills they will need in the future.

The effectiveness of PBL in modern education is not only proven through improving academic results, but also through developing students' character and adaptive abilities. The skills to think critically, work collaboratively, and communicate effectively are part of the holistic learning outcomes emphasized in PBL (Giawa, 2022). Thus, this approach, when implemented with care and adequate support, not only produces students who are academically intelligent, but also who are ready to succeed in various aspects of their lives.

Effectiveness of Project Based Learning in Increasing Student Creativity

Project Based Learning (PBL) has long been recognized as an effective educational methodology in supporting the development of student creativity (Maziidah & Dewi, 2023). In PBL, students are given the opportunity to engage in projects that require creative application of the knowledge and skills they learn. Through the process of completing projects, they practice identifying problems, approaching complex questions, exploring and creating innovative solutions (Nkambule & Mbhiza, 2022). This approach encourages students to think beyond their usual academic capabilities, facilitating different ways of thinking and accepting challenges that give rise to new ideas. Thus, PBL plays an active role in promoting original thinking as well as allowing students to explore their own uniqueness in the learning process.

The effectiveness of PBL in increasing creativity is also supported by a collaborative learning environment. Students often work in groups to work on their projects, meaning they are exposed to the perspectives and ideas of their peers. This collaboration gives rise to dialogue, discussion, and the exchange of ideas, all of which are important components in enhancing creativity. Students not only learn to express their own opinions, but also to listen and expand their views through social interactions (Kondo & Hazeyama, 2022). In this continuous process, students develop the ability to integrate new knowledge and ideas, which is the essence of creative thinking.

In addition, PBL provides opportunities for students to engage in solving real-world problems, increasing the relevance and motivation of learning. The authenticity of the projects provides a real context for learning, allowing students to see the practical value of their creativity. This increases student engagement, which is directly linked to increased creativity; students tend to be more creative when they feel involved and motivated (Otwinowska et al., 2023). The application of creativity in such contexts not only increases students' competence in the classroom, but also equips them with important skills needed to innovate and adapt in their future professional and personal contexts.

Implementing Project Based Learning (PBL) is not without challenges, but the benefits obtained in increasing student creativity often outweigh these obstacles. To maximize the effectiveness of PBL in enhancing creativity, educators need to ensure that project designs support critical and innovative thinking (Knoblauch, 2024). This involves creating open-ended project questions, which do not have one correct answer, allowing students to explore a variety of solutions. Teacher leadership in facilitation is also important, where teachers act as mentors who guide learning rather than communicators of knowledge. With this approach, students can take charge of their own learning process, which encourages a sense of ownership and intrinsic motivation within their creative framework.

Technology, when used strategically, can increase the effectiveness of PBL in enhancing student creativity. Online tools and collaborative applications offer opportunities for enrichment of sources and communication methods, supporting students in their research, collaboration, and project presentations. Digital platforms also allow for the inclusion of external experts in the learning process, giving students access to diverse perspectives and feedback, further expanding their capacity to think creatively. Carefully integrating technology in PBL means that students not only improve their creativity but also their digital skills, which is important in the modern era (Pereira et al., 2023).

Recognition and validation from the school community and wider society of students' creative products is also critical in increasing the effectiveness of PBL. When students' work is showcased, whether through exhibitions, publications, or presentations to a wider audience, it increases their self-confidence and encourages students to try harder in their creative exploration (Thamrin et al., 2022). This not only reinforces the importance of creativity as a life competency but also puts students in a position where they

can make a real impact. Thus, PBL, when implemented with full community support, provides a strong foundation for developing student creativity who can adapt and innovate amidst ever-changing global challenges.

Factors that Influence the Success of Project Based Learning in High Schools

The success of Project Based Learning (PBL) in High School is greatly influenced by several key factors that must be carefully integrated and developed by educational institutions, teachers and students. One of the most important factors is thorough planning and preparation (Järvenoja et al., 2023). This includes the development of a well-structured curriculum that aligns the project with classroom learning objectives, student competency goals, and national or international educational standards. Planning also involves selecting material that is relevant and interesting to students, thereby increasing their motivation to learn. Additionally, teachers must be prepared through professional training in PBL methods to be effective in facilitating and directing students through the project learning process.

The second factor that is no less important is a supportive learning environment. This includes the availability of learning resources, such as access to technology, laboratory space, and libraries, that enable students to explore and apply their knowledge in concrete projects. A supportive environment also includes a school culture that values student innovation, collaboration and initiative. This involves a flexible and adaptive classroom approach, where teachers can respond to students' individual learning needs and support teamwork (Xu, 2024). Parental and community involvement and support also enriches the learning environment and provides students with broader perspectives and resources for their learning.

The third factor is meaningful and reflective assessment. Assessment in PBL must not only measure the final results of the project, but also the learning process, teamwork, problem solving, and critical thinking skills. This requires the development of diversified assessment tools, such as portfolios, peer assessment, and self-reflection, that can provide a comprehensive picture of student achievement (Platz, 2022). Through reflective assessment, students gain valuable feedback that allows them to improve and develop their skills further. Thus, effective assessment contributes not only to a deeper understanding of the subject by students but also to the development of important life skills.

In addition to the factors previously explained, effective collaboration between students also plays an important role in the success of Project Based

Learning. Good collaboration requires clear communication, fair division of tasks, and the ability to resolve conflicts within the team (May & Tseng, 2024). For this collaboration to be successful, students need to be given opportunities to develop interpersonal and group work skills through repeated practice. In teamwork, each member must feel responsible for a common goal, and systems must be put in place to evaluate individual contributions as well as the success of the team as a whole. The teacher acts as a mediator and facilitator in this process, ensuring that collaboration takes place in a positive and productive manner (Puryanto, 2023).

The role of teacher leadership is also essential in ensuring the success of PBL. A teacher who successfully implements PBL usually demonstrates flexibility in teaching and is open to the use of a variety of learning methods and technologies. Teachers must be instructional leaders who are able to motivate students, challenge them to think critically and creatively, and guide them through the process of discovery and innovation (Pan et al., 2024). This leadership also includes the ability to adapt to various learning styles and provide customized support to students who need it, thereby ensuring that project-based learning is accessible to all learners.

Continuous evaluation and reflection regarding project-based learning practices is an important factor in the continuous improvement and long-term success of PBL programs. Receiving input from students about their experiences, analyzing educational outcomes, and adapting approaches based on these findings are important elements of the evaluation process (Subiyantoro, 2024). This process ensures that PBL methods are continually refined and adapt to evolving educational needs and integrate new and innovative best practices. By having a constant cycle of evaluation and reflection, schools can continue to improve the quality and impact of project-based learning for their students.

CONCLUSION

In research conducted, students who engaged in PBL showed more significant improvements in creative abilities compared to students who followed traditional learning approaches. Through the projects they work on, students are given the freedom to explore various approaches and find innovative solutions to the problems they face. This process not only improves creative skills but also strengthens their understanding of the subject matter.

PBL facilitates a learning context that supports the development of original thinking and improvisational abilities. This is thanks to a learning

environment that promotes exploration, iteration, and testing of new ideas. Additionally, teamwork and collaboration in PBL supports the exchange of ideas, which further stimulates creative thinking among students. Project-based evaluation allows students to apply concepts in real-world contexts, which has the potential to increase engagement and motivation to think creatively.

The conclusion of this research confirms that the project-based learning approach can be considered an effective strategy to foster creativity and problem-solving abilities, making it a valuable asset in modern education.

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