



The Application of Project-Based Learning in Enhancing Student Creativity and Collaboration in Physical Education Subjects

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Abstract

This study aims to examine the implementation of Project-Based Learning (PjBL) in enhancing student creativity and collaboration in Physical Education at State Junior High School 7 Jayapura. In the 21st century, conventional learning methods frequently prove to be ineffective in promoting active engagement and collaboration among students. This research employs a classroom action research method conducted over two learning cycles, involving 32 students from grade VIII. Data collection was carried out using observation sheets, student reflection journals, and performance-based assessments. The research findings indicate a significant improvement in students' creative thinking abilities, especially in designing and executing physical activities in innovative ways, as well as in collaborative skills such as idea sharing, conflict resolution, and group responsibility. The implementation of context-based project tasks, the provision of guided autonomy, and reflective discussions contribute to the creation of a more meaningful and engaging learning environment. These findings confirm that the PjBL model not only promotes the development of core competencies such as creativity and collaboration but also aligns with the goals of Physical Education in encouraging active participation and the holistic growth of students.

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INTRODUCTION

Education in the 21st century requires a shift in learning methods so that students develop not only cognitive knowledge but also creative thinking skills and the ability to collaborate effectively in groups (Chu et al., 2017). This competence is crucial for preparing the younger generation to confront dynamic and complex global challenges (Pratama & Wardani, 2022). In this context, physical education plays a crucial role not only in promoting physical health but also in developing character, social values, and 21st-century skills such as creativity and collaboration (Capraro et al., 2023).

However, in reality, the process of learning Physical Education in many schools, including at the junior high school level, is still largely dominated by a conventional approach that is instructional and centered on the teacher. This approach often provides limited opportunities for students to think independently, create new activities, or collaborate in completing learning tasks. As a result, students tend to become passive and show a lack of motivation and initiative in engaging with the learning process (Dole et al., 2017).

Creativity is the ability to generate new ideas and innovative solutions, while collaboration is the ability to work effectively with others to achieve common goals. Both competencies are essential in the context of physical education learning, which emphasizes teamwork, initiative, and decision-making. Therefore, it is crucial for teachers to implement a learning model that can develop both aspects simultaneously.

One approach that is pertinent to this need is Project-Based Learning (PjBL) (Larmer & Mergendoller, 2020). This model positions students as active participants in their learning by engaging them in projects that address real-world issues relevant to their lives. Through Project-Based Learning (PjBL), students are engaged in the processes of exploration, planning, execution, and evaluation of projects, which naturally fosters creativity and collaboration (Simonton, 2020).

A study conducted by Kokotsaki et al. (2016) demonstrates that the consistent application of Project-Based Learning (PjBL) enhances students' learning motivation, critical thinking skills, and social abilities such as collaboration and communication. Meanwhile, a study conducted in Indonesia by Widodo (2020) shows that Project-Based Learning (PjBL) is effectively applied in various subjects; however, its implementation in Physical Education has yet

to be thoroughly explored.

In the context of Physical Education, Project-Based Learning (PjBL) can be adapted by creating projects focused on physical activities, traditional games, or cultural-based fitness development (Grant, 2021). This not only encourages students to participate in physical activities but also fosters their awareness of the local and social values embedded in those activities. This approach aligns with the principles of the Merdeka Belajar curriculum, which emphasizes contextual, participatory, and experiential learning (Han et al., 2015).

Particularly in Papua, this approach is highly relevant as it can serve as a means of contextual education that bridges local cultural values with national educational objectives. The implementation of Project-Based Learning (PjBL) in physical education subjects in schools throughout Papua is also expected to enhance the quality of education, which has faced challenges such as limited resources, a lack of teaching media, and low levels of active student participation in the teaching and learning process.

State Junior High School 7 Jayapura has been selected as the research location because this school is currently working to innovate its learning processes, including in the subject of Physical Education. Teachers and students demonstrate a willingness to embrace a new approach that engages students actively. Thus, the implementation of Project-Based Learning (PjBL) in this context is anticipated to illustrate effectively how this model enhances student creativity and collaboration (Bell, 2020; UNDP, 2011).

The urgency of this research is further emphasized by the necessity of equipping students with competencies that are not only academic in nature but also social and emotional. Creativity enables students to think flexibly and seek innovative solutions to real-life problems, whereas collaboration shapes cooperative and resilient social characters. In the context of developing superior human resources in Indonesia, nurturing both competencies through appropriate learning is crucial (Qomarrullah, 2015; Qomarrullah et al., 2023).

Taking into account the various backgrounds and urgencies, this study aims to examine how the implementation of Project-Based Learning can enhance students' creativity and collaboration in Physical Education classes at State Junior High School 7 Jayapura.

This study seeks to enhance the creation of contextual learning models in Physical

Education while providing a fresh viewpoint through the implementation of the Project-Based Learning (PjBL) approach in a junior high school situated in Eastern Indonesia. In contrast to many earlier studies that concentrate on urban schools or subjects such as science and language, this research investigates the effective application of Project-based Learning (PjBL) in Physical Education to enhance creativity and collaboration within a rural and culturally varied environment. This significance renders the study pertinent and distinctive, particularly in demonstrating how project-based assignments and collaboration can be utilized in physical education classes that have restricted resources.

METHOD

This research employs a qualitative case study approach to deeply explore the implementation of Project-Based Learning (PjBL) in enhancing student creativity and collaboration in Physical Education classes (Raihan, 2017). This approach was selected because it allows researchers to understand the phenomenon in a contextual and natural manner, while also illustrating the complete dynamics of learning that occur within the classroom (Mutmainah, 2021).

The research was conducted at State Junior High School 7 Jayapura, involving a primary group of 32 students from the eighth grade, selected using purposive sampling techniques. The selection of participants is based on their active engagement in physical education learning and the school's readiness to adopt innovative teaching approaches. This case study is limited to the scope of one school, one class, and one semester of learning during the 2024/2025 academic year.

Data collection was carried out using various techniques to ensure data triangulation and enhance the validity of the findings.

1. Non-participatory classroom observations were conducted across six meetings (each lasting 90 minutes) to record the learning activities, interactions among students, and the project development process (Musfiquon & Nurdyansyah, 2015).
2. Semi-structured interviews were conducted with several students and Physical Education teachers to gain a deeper understanding of their experiences with the implementation of the PjBL model, including their perceptions of its challenges and benefits (Yuliana & Ramdani, 2021).
3. The student reflection journal is examined to understand the thinking process, decision-

on-making, and collaborative experiences of students throughout the project implementation (Astawa et al., 2019).

4. Student project products and artifacts, such as physical activity plans, group posters, and peer evaluation sheets, are also collected as a part of the document data (Rahayu & Sari, 2022).

The data analysis will be conducted using the interactive model proposed by Miles et al. (2024); Miles & Huberman (2024), which comprises three key stages: data reduction, data presentation, and drawing and verifying conclusions. The coding process is conducted inductively and categorized into main themes related to creativity indicators (originality, flexibility, adaptability) and collaboration (communication, participation, shared responsibility).

To ensure the credibility of the data, the researcher employed triangulation of techniques, conducted member checking (verification of findings by participants), and engaged in peer debriefing with fellow educators. Transferability is maintained by providing a detailed contextual description, while dependability and confirmability are upheld through systematic documentation of the research process and reflection (audit trail).

Through this approach, the research is expected to provide a comprehensive overview of how the Project-Based Learning model contributes to the development of 21st-century competencies within the subject of Physical Education. Additionally, it aims to offer practical implications for its application in schools with similar characteristics, particularly in the Eastern region of Indonesia.

RESULTS AND DISCUSSION

The results of this study are presented based on the main findings from classroom observations, interviews with teachers and students, analysis of reflective journals, and documentation of the projects undertaken by students during two cycles of learning utilizing the Project-Based Learning model. The results are categorized into two main focuses: (1) enhancing student creativity, and (2) strengthening student collaboration within the context of Physical Education learning.

Enhancement of Student Creativity

Class observations indicate that students are increasingly active in expressing new ideas and thoughts at each stage of the project. In the first cycle, most students still demonstrated re-

liance on the teacher for designing physical activities. However, in the second cycle, students began to demonstrate independence and courage in creating simple physical games based on local culture, such as modifying the movements of Yosim Pancar into a group game. The prominent aspects of creativity are originality and flexibility in designing enjoyable and challenging physical activities.

The student's reflection journal reinforces those findings. Some students expressed that they felt "proud to create their own game" and "more confident to share ideas with friends." These findings indicate that a project-based approach offers greater opportunities for students to think creatively and express their thoughts without the fear of making mistakes.

Enhancement of Student Collaboration

In the realm of collaboration, there is a noticeable improvement in the interactions among group members. In the initial cycle, collaboration remained limited and was solely based on task division. However, following guidance and reflection, the students began to demonstrate the ability to engage in discussions, resolve minor conflicts, and make decisions collaboratively. The instructor noted that the group dynamics became more vibrant and productive as the learning cycle progressed.

The results of the interview with the Physical Education teacher also support these findings. The teacher stated that "previously, students seldom assisted one another; however, after implementing the project model, they began to listen to each other and collaborate as a team." Project artifacts, such as planning sheets and group evaluations, indicate that students are becoming accustomed to reflectively and objectively assessing the roles of their fellow members.

Student Responses and Enthusiasm Towards the PjBL Model

In general, students displayed a strong enthusiasm for the project-based learning model. This is evident from their active participation in every stage of the learning process, which includes project planning, group discussions, execution of activities, and the evaluation and presentation of results. Student enthusiasm arises not only from the projects they undertake but also from their sense of ownership over the learning process they experience. In their reflection journal, students expressed that they felt they had the opportunity to express themselves, explore new things, and make independent decisions alongsi-

de their group. This serves as an indicator that the Project-Based Learning (PjBL) approach can effectively stimulate intrinsic motivation within students.

Furthermore, the students expressed that learning feels more enjoyable because it is relevant and closely connected to their lives. They can connect the subject matter of Physical Education with the activities they design and play by themselves. One student wrote, "I am eagerly anticipating next week's physical education lesson because we will continue playing our group-created game." This reflects that the learning process through projects fosters emotional engagement and creates positive expectations for learning activities. In other words, Project-Based Learning (PjBL) provides a meaningful, enjoyable, and contextual learning experience for students.

The Role of the Teacher as a Facilitator

The transformation of the teacher's role from an information provider to a facilitator significantly impacts the dynamics of the learning process. The teacher no longer merely delivers information in a one-way manner; instead, they provide opportunities for students to explore, make decisions, and manage their own learning processes. In the implementation of Project-Based Learning (PjBL), teachers frequently take on the roles of guides and mentors, offering step-by-step guidance while allowing students to take responsibility for their projects. This encourages students to be more independent, take initiative, and be accountable for the outcomes of group work.

The teacher also actively employs open-ended questioning techniques to encourage students to think critically and reflect on the processes they are experiencing. For instance, a teacher might ask, "Why did you choose this game design?" or "What could be improved in today's group work?" Such questions stimulate meaningful discussions among students and promote constructive self-evaluation. The classroom atmosphere becomes more participative and dialogic, with students not only listening but also expressing their opinions and providing feedback to their peers. Such a learning environment fosters a democratic atmosphere in physical education instruction, which has often been seen as a subject that primarily emphasizes only motor skills.

Challenges in Implementation

Although it demonstrates positive effects, the implementation of the Project-Based Learning model is not free from various technical and

pedagogical challenges. One of the primary challenges is the limited time available for the execution of the project. Some groups are unable to complete the physical activity plans fully due to the limited learning time available for each session. The teacher stated that a schedule adjustment and flexibility in time management are necessary so that the project does not get stalled or lose its essential nature. Additionally, the evaluation phase is often not fully optimized because the remaining time is allocated to the main physical activities.

Another challenge arises from the diversity of student abilities, whether cognitive, affective, or psychomotor. In certain groups, students with strong motor skills tend to take the lead in planning and executing projects, while other students tend to be passive or simply follow instructions. This indicates the necessity for teacher intervention to promote equal participation and reinforce the principle of inclusivity in group work. Some students also appear to struggle with comprehending complex project instructions without intensive guidance, indicating that training in self-directed learning skills is also crucial in supporting the success of Project-Based Learning (PjBL).

The Relationship Between Creativity and Collaboration

Data analysis indicates a strong connection between students' collaboration skills and their creativity levels during project execution. Groups that display effective communication, respect each other's roles, and make decisions democratically are likely to produce more innovative projects. They are able to modify traditional game movements, incorporate elements of local culture, and create innovative and engaging rules for play. Creativity arises from a dynamic process of collective thinking, where individual ideas are tested, developed, and refined collaboratively.

On the contrary, groups that face obstacles in collaboration, such as role conflicts, poor communication, or a lack of shared responsibility, tend to produce projects that are less diverse and show minimal improvisation. The products they create tend to be repetitive and do not reflect a thorough exploration. This finding reinforces the belief that healthy collaboration not only enhances the efficiency of group work but also serves as a foundation for fostering creativity in the learning process. Therefore, strengthening social skills and teamwork is a crucial aspect in the implementation of Project-Based Learning (PjBL) to fully maximize students' potential.

The results of this study indicate that the implementation of the Project-Based Learning (PjBL) model can significantly enhance students' creativity and collaboration in Physical Education learning. The learning process that positions students as active subjects has been shown to enhance deeper emotional and cognitive engagement. Students engage in learning not only through movement but also by thinking critically, participating in discussions, and designing activities that hold significance for them. This aligns with the principles of social constructivism Vygotsky, which emphasize that knowledge is developed through social interactions and direct experiences in meaningful contexts (Hariana, 2021).

The enhancement of student creativity is evident in their ability to design physical activities in an innovative manner, including the incorporation of local cultural elements such as the Yosim Pancar movement into group projects. This finding is supported by Rahmawati (2021), who asserts that learning strategies that provide opportunities for open exploration encourage the emergence of original ideas among students. In the realm of physical education, creativity entails not just the creation of new movements, but also the ability to adapt, modify, and combine elements of games to develop new and enjoyable learning experiences.

On the other hand, students' collaborative skills have improved significantly, both in terms of teamwork, role distribution, and group decision-making. The research revealed that groups with open communication and participative leadership tend to produce projects that are more creative and comprehensive. This reinforces the findings of Sidik (2020), which indicate that project-based learning effectively enhances the collaborative skills of students at the junior high school level, particularly within the context of challenging tasks that require collective decision-making.

The enthusiasm of students for this model is also an important indicator. The majority of students reported that they feel more motivated and challenged to participate in the learning process. The PjBL model has been shown to enhance intrinsic motivation because students feel they have control and responsibility for the projects they are working on (Jensen et al., 2021). This differs from conventional methods that focus more on repetitive actions and one-way instructions, which in many instances do not stimulate students' curiosity and initiative.

The teacher plays a crucial role as a faci-

literator rather than simply serving as a source of information. In this study, the teacher utilized reflective and open-ended questions to promote critical thinking among students and to provide guidance in managing group conflicts. This reinforces the teacher's role as a mediator and supporter of the learning process, as highlighted in the Independent Curriculum. The study by Turan & Meral (2016) confirms that project-based learning models enhance students' self-confidence and self-efficacy, which contributes to achieving higher learning outcomes.

However, there are several challenges that require attention. One factor is the limitation of time, which prevents certain groups from completing projects in an optimal manner. The differences in physical and cognitive abilities among students also impact the dynamics of group work. Students with higher motor skills tend to take charge, while other students become passive. This finding underscores the importance of teachers in designing inclusive projects and taking differentiation into account when assigning roles and responsibilities.

In the local context of Papua, the implementation of Project-Based Learning (PjBL) holds dual potential: it not only enhances students' learning skills but also reinforces cultural values by incorporating local elements into the projects. Research conducted by (Sari & Wonda, 2023) indicates that physical education that incorporates local culture enhances students' identity and increases the relevance of learning in their eyes. This is in line with the findings of this research, where students are more motivated when the projects they design have cultural or social significance that resonates closely with their lives (Valerio, 2015).

Thus, the implementation of Project-Based Learning (PjBL) in Physical Education instruction not only supports the mastery of 21st-century skills such as creativity and collaboration but also presents a learning approach that is humanistic, contextual, and culturally oriented. This model is relevant for broader application, particularly in Eastern Indonesia, which is rich in local wisdom yet frequently overlooked in the national curriculum design.

CONCLUSION

This research indicates that the effective implementation of the Project-Based Learning (PjBL) model can enhance students' creativity and collaboration in Physical Education at State Junior High School 7 Jayapura. By actively enga-

ging in the planning, execution, and evaluation of projects, students demonstrate considerable improvement in their ability to design physical activities in an original and innovative manner, as well as in their capacity to collaborate effectively within groups.

The PjBL model assists students in developing critical thinking skills, collaborating effectively in teams, and confidently sharing their thoughts. Educators serve as guides, establishing a democratic classroom environment and promoting deeper student reflection. Despite facing challenges—like time constraints and differences in student engagement—Project-Based Learning has great promise to enhance Physical Education, particularly when it incorporates local cultural aspects such as the Yosim Pancar movement.

According to the findings, it is advised that Physical Education instructors implement the PjBL model to enhance students' creativity and collaboration, especially by linking lessons to local culture, such as Yosim Pancar. Schools ought to endorse this method by offering more adaptable scheduling and supplying necessary resources. Curriculum developers are also urged to provide additional opportunities for contextual learning that draws upon local knowledge. Future studies might employ quantitative or mixed-method strategies and broaden their scope to various educational levels or geographical areas to acquire more comprehensive insights.

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