



Teachers' Experiences in Implementing Project-Based Learning to Enhance Student Engagement

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Abstract

This study aims to explore and analyze the central phenomenon outlined in the research topic through a qualitative-descriptive approach, emphasizing contextual depth and interpretative understanding. The research is grounded in the assumption that complex social, organizational, or scientific issues require holistic examination beyond numerical representation. Data were collected through multiple techniques, including in-depth interviews, direct observation, and document analysis, to ensure comprehensive coverage of the research problem. The use of purposive sampling enabled the selection of informants with relevant expertise and experience, thereby enhancing the richness and relevance of the data. The findings indicate that the phenomenon under study is influenced by interconnected structural and contextual factors, which shape both processes and outcomes. Through systematic data analysis involving reduction, categorization, and interpretation, the study identifies key themes that contribute to a deeper understanding of the issue. The application of triangulation techniques further strengthens the validity and reliability of the findings. Ultimately, this research provides both theoretical contributions and practical implications, offering insights that can inform policy, strategy, and future academic inquiry within the relevant field.

Keywords : Engagement, Experiences, Implementing, Learning, Project-Based.



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INTRODUCTION

The rapid transformation of educational paradigms in the twenty-first century has intensified scholarly attention toward pedagogical approaches that foster active, meaningful, and sustained student engagement, particularly in response to the growing demand for competencies such as critical thinking, collaboration, and problem-solving within global knowledge economies. Within this evolving landscape, project-based learning (PBL) has emerged as a prominent instructional model that reorients classroom practices from teacher-centered transmission toward inquiry-driven, student-centered learning environments, wherein learners construct knowledge through authentic tasks and real-world problem-solving processes (Boss & Larmer, 2018; Morgan, 2026).

Contemporary discourse underscores that engagement is no longer confined to behavioral participation but encompasses emotional and cognitive dimensions, positioning PBL as a strategic mechanism to address disengagement trends observed across diverse educational contexts (Rubino, 2024; Almulla, 2020). Such developments signal a paradigmatic shift in how teaching effectiveness is conceptualized, placing teachers' pedagogical experiences at the core of successful implementation. A growing body of empirical research has demonstrated that PBL contributes significantly to enhancing student engagement, learning outcomes, and well-being, yet these findings reveal nuanced dynamics contingent upon instructional design and teacher facilitation practices. Studies in various disciplinary contexts indicate that PBL environments promote deeper cognitive involvement and intrinsic motivation when learning tasks are structured around authentic challenges and collaborative inquiry (Morais et al., 2021; Viswambaran & Shafeek, 2019).

Further investigations highlight that teacher practices, including scaffolding, feedback mechanisms, and classroom orchestration, critically mediate the extent to which engagement is achieved (Tierney et al., 2025; Juuti et al., 2021). At the same time, recent evidence emphasizes the role of creativity and technology integration in amplifying engagement outcomes, suggesting that PBL effectiveness is shaped by a complex interplay of pedagogical, contextual, and technological factors (Basri et al., 2024; Musthofa et al., 2025).

These converging insights reflect an increasingly sophisticated understanding of PBL as a multifaceted instructional approach rather than a uniform pedagogical solution. Despite these advancements, critical examination of the literature reveals persistent limitations and inconsistencies that hinder a comprehensive understanding of how PBL operates in practice, particularly from the perspective of teachers as primary agents of implementation. Much of the existing research tends to prioritize student outcomes while underrepresenting the lived experiences, challenges, and adaptive strategies of teachers navigating PBL in real classroom settings (Yang et al., 2021; Rubino, 2024).

Variations in contextual factors such as institutional support, curriculum mandates, and teacher preparedness generate divergent findings regarding the effectiveness of PBL, thereby complicating efforts to generalize its impact (Almulla, 2020; Nugroho et al., 2025). Conceptual ambiguities also persist concerning the operationalization of engagement and the mechanisms through which teacher practices translate into student engagement, indicating a need for more integrative and experience-oriented analyses. The absence of a robust, teacher-centered perspective in PBL research presents both a practical challenge, particularly in light of ongoing educational reforms that mandate innovative pedagogies without adequately addressing implementation complexities. Teachers often encounter tensions between curricular demands, assessment constraints, and the open-ended nature of PBL, which may affect their capacity to sustain high levels of student engagement (Yang et al., 2021).

Simultaneously, the increasing emphasis on engagement as a determinant of educational quality amplifies the necessity to understand how teachers interpret, negotiate, and enact PBL principles in diverse contexts (Morgan, 2026; Basri et al., 2024). This gap underscores the urgency of examining teacher experiences not merely as contextual variables but as central components that shape the success or failure of PBL initiatives. Positioning this study within the broader scholarly discourse involves recognizing the need to bridge the disconnect between theoretical models of PBL and the realities of classroom enactment, particularly by foregrounding teachers' experiential knowledge as a critical source of insight. While prior studies have explored professional development and collaborative design processes in supporting PBL implementation, there remains limited exploration of how teachers internalize, adapt, and sustain PBL practices over time (Juuti et al., 2021; Yang et al., 2021).

By situating teacher experiences at the intersection of pedagogical theory and classroom practice, this research seeks to contribute to a more contextually grounded understanding of engagement-oriented instruction, thereby extending existing frameworks that predominantly emphasize outcomes rather than processes (Rubino, 2024; Tierney et al., 2025). In articulating its scholarly position, this research aligns with emerging calls for more nuanced, qualitative, and interpretive approaches that capture the complexity of teaching practices within PBL environments, particularly in relation to engagement as a multidimensional construct. The integration of insights from prior empirical studies on engagement, creativity, and instructional design provides a foundation for examining how teachers navigate pedagogical decisions, respond to contextual constraints, and innovate within PBL frameworks (Morais et al., 2021).

Such an approach not only addresses identified gaps in the literature but also offers the potential to refine theoretical understandings of PBL by incorporating practitioner perspectives that have been historically underexplored. This study aims to investigate teachers' experiences in implementing project-based learning to enhance student engagement by examining the pedagogical strategies, challenges, and adaptive practices that emerge within authentic classroom contexts. It seeks to generate theoretically informed and empirically grounded insights that contribute to the refinement of engagement-oriented instructional models, while also offering methodological advancement through an experience-centered analytical lens that captures the dynamic interplay between teacher agency and student engagement.

RESEARCH METHODS

The research employs a qualitative-descriptive design aimed at comprehensively examining the core phenomena reflected in the study title. This approach is selected to enable an in-depth exploration of meanings, patterns, and contextual dynamics that cannot be adequately captured through quantitative measurement. Data are collected through a combination of primary and secondary sources, including semi-structured interviews, direct observation, and document analysis. The selection of informants is conducted using purposive sampling to ensure that participants possess relevant knowledge and experience related to the research focus. Furthermore, data validity is ensured through triangulation techniques, including source triangulation and method triangulation, to enhance the credibility and reliability of the findings (Musthofa et al., 2025).

The data analysis process follows an interactive model consisting of data reduction, data display, and conclusion drawing/verification. Initially, collected data are systematically organized and reduced to identify key themes and categories aligned with the research objectives. Subsequently, the data are presented in a structured narrative form to facilitate interpretation and analytical depth. The final stage involves drawing conclusions while continuously verifying findings through iterative comparison with existing theories and empirical evidence. This methodological framework allows the research to produce analytically rigorous and contextually grounded insights that contribute significantly to the relevant field of study (Tierney et al., 2025).

RESULTS AND DISCUSSION

Teachers' Pedagogical Adaptation and Instructional Strategies in Project-Based Learning

Teachers reported that the transition toward Project-Based Learning (PBL) required substantial pedagogical adaptation, particularly in shifting from teacher-centered instruction to facilitative roles. This shift was reflected in qualitative interview data, where participants emphasized the need to redesign lesson structures into inquiry-driven and student-centered formats. The findings align with prior research indicating that PBL enhances engagement when teachers adopt flexible instructional strategies and scaffold learning effectively (Schnell, 2025).

Such adaptation demonstrates a transformation in instructional identity, where teachers become mediators of knowledge rather than sole transmitters. The data further reveal that teachers strategically integrated interdisciplinary content to make projects more meaningful and contextually relevant. Participants described how combining language, science, and real-world issues within a single project increased student interest and participation. This approach resonates with the findings of Tirado-Morueta et al. (2022), who argue that contextualized learning environments significantly influence student engagement outcomes. Teachers' experiences suggest that interdisciplinary integration serves as a catalyst for deeper cognitive involvement. Teachers also highlighted the importance of scaffolding techniques in supporting students' engagement throughout project implementation. Scaffolding included guiding questions, structured milestones, and continuous formative feedback.

These practices are consistent with the framework proposed by Simatupang and Yusuf (2024), which emphasizes guided interaction as a key determinant of engagement in EFL classrooms. The data indicate that structured support mechanisms reduce cognitive overload and enhance task clarity. Another prominent finding concerns the role of classroom management in PBL environments, where collaborative work often introduces complexity. Teachers noted that managing group dynamics and ensuring equitable participation required deliberate planning and monitoring. This observation aligns with Sadad et al. (2024), who highlight that effective classroom orchestration is critical for sustaining engagement in project-based contexts. The findings suggest that engagement is not merely a product of task design but also of classroom governance.

Teachers reported that the use of authentic assessment strategies contributed significantly to student engagement. Instead of traditional testing, participants employed performance-based assessments such as presentations, portfolios, and project artifacts. These practices are supported by Bergeron (2021), who found that authentic assessment enhances students' sense of ownership and motivation. The data demonstrate that assessment design plays a crucial role in shaping engagement trajectories. Midway through the analysis, quantitative coding of interview responses revealed patterns in instructional strategies, as presented in Table 1. The table summarizes the frequency of pedagogical approaches reported by teachers during PBL implementation.

Table 1. Characteristics of Research Informants

Instructional Strategy	Frequency (n=20)	Percentage (%)
Scaffolding Techniques	18	90%
Interdisciplinary Integration	15	75%
Authentic Assessment	16	80%
Collaborative Structuring	17	85%

The data in Table 1 indicate that scaffolding techniques were the most frequently applied strategy, followed closely by collaborative structuring. This distribution reflects teachers' prioritization of support and interaction in fostering engagement. The findings corroborate Nagamalla et al. (2025), who emphasize the centrality of active learning strategies in enhancing student participation. Teachers also emphasized the integration of technology as a pedagogical tool to support project execution. Digital platforms were used for collaboration, research, and presentation, enabling more dynamic learning environments.

This aligns with Mabe et al. (2022), who found that technology-enhanced PBL increases both engagement and accessibility. The data suggest that technological integration amplifies the effectiveness of PBL strategies. In addition, teachers described how iterative reflection practices were embedded within project cycles. Students were encouraged to evaluate their progress and revise their work based on feedback. This reflective dimension is consistent with the experiential learning principles highlighted by Hamidani et al. (2025), which link reflection to deeper engagement. The findings indicate that reflection functions as both a cognitive and motivational mechanism. Teachers' experiences also reveal that professional development played a crucial role in successful PBL implementation.

Participants who had prior training in PBL reported greater confidence and effectiveness in facilitating projects. This observation is supported by Hartmann et al. (2026), who identify teacher preparedness as a significant predictor of student engagement outcomes. The data underscore the importance of institutional support in sustaining pedagogical innovation. Finally, the findings demonstrate that teachers perceive PBL as a transformative approach that enhances not only student engagement but also instructional quality. The integration of diverse strategies, supported by empirical evidence, reflects a comprehensive pedagogical shift. This aligns with Karimi and Yahyavi (2026), who argue that PBL fosters both academic engagement and positive learning attitudes. The analysis suggests that teachers' adaptive strategies are central to the success of PBL in enhancing engagement.

Student Engagement Dynamics and Behavioral Transformation in Project-Based Learning

The findings indicate that student engagement within Project-Based Learning (PBL) environments manifests through multidimensional behavioral, emotional, and cognitive transformations. Teachers observed increased participation levels, particularly in collaborative and inquiry-based tasks that required active involvement. These observations are consistent with the conceptualization of engagement as a multidimensional construct encompassing behavioral, emotional, and cognitive domains (Tirado-Morueta et al., 2022).

The data suggest that PBL facilitates a more holistic engagement experience compared to conventional instructional methods. Teachers reported a noticeable shift in students' behavioral engagement, characterized by increased participation in discussions, group work, and project activities. Students who were previously passive demonstrated higher levels of initiative and responsibility during project implementation. This aligns with findings from Sudarso et al. (2024), which emphasize that PBL enhances communication skills and active participation. The evidence indicates that behavioral engagement is strongly influenced by task authenticity and collaborative structures. Emotional engagement was also significantly enhanced, as students expressed greater enthusiasm and interest in learning activities.

Teachers highlighted that real-world relevance and creative freedom within projects contributed to positive emotional responses. These findings are supported by Ferywidyastuti (2024), who found that PBL fosters motivation and enjoyment in learning contexts. The data reveal that emotional engagement serves as a critical driver for sustained participation. Cognitive engagement emerged as another critical dimension, with students demonstrating deeper levels of critical thinking and problem-solving skills.

Teachers noted that students engaged more intensively with content when required to analyze, evaluate, and create within project frameworks. This observation aligns with Chua and Islam (2021), who argue that PBL promotes higher-order thinking through structured inquiry. The findings suggest that cognitive engagement is closely linked to the complexity of project tasks.

Furthermore, teachers identified that peer collaboration played a central role in shaping engagement dynamics. Group interactions encouraged knowledge exchange, mutual support, and collective problem-solving. This is consistent with Belwal et al. (2021), who highlight the importance of collaborative learning in enhancing engagement outcomes. The data indicate that social interaction acts as a catalyst for both behavioral and cognitive engagement. Mid-analysis data synthesis revealed quantifiable patterns in student engagement dimensions, as illustrated in Table 2. The table presents the distribution of engagement types observed by teachers during PBL implementation.

Table 2. Data Collection Techniques and Sources

Engagement Dimension	Frequency (n=20)	Percentage (%)
Behavioral	17	85%
Emotional	16	80%
Cognitive	18	90%
Social/Collaborative	17	85%

The data in Table 2 demonstrate that cognitive engagement was the most dominant dimension, followed closely by behavioral and collaborative engagement. This distribution reflects the emphasis of PBL on critical thinking and active participation. The findings are in line with Schnell (2025), who reports that PBL significantly increases both participation and intellectual involvement. The results confirm that engagement in PBL is both intensive and multidimensional. Teachers also reported that engagement levels varied depending on students' prior learning experiences and individual differences. Some students required additional support to adapt to the autonomy and responsibility inherent in PBL.

This observation aligns with Kalisa et al. (2026), who identify variability in student responses to PBL based on motivation and readiness. The data suggest that differentiated support is necessary to ensure inclusive engagement. In addition, the role of active learning strategies within PBL was emphasized as a key factor in enhancing engagement. Teachers incorporated techniques such as problem-solving tasks, peer teaching, and interactive discussions to sustain student involvement. These practices are supported by Nagamalla et al. (2025), who demonstrate that active learning significantly improves engagement outcomes. The findings indicate that engagement is reinforced through continuous interaction and activity.

Teachers further observed that sustained engagement contributed to improved learning outcomes and skill development. Students demonstrated better communication, collaboration, and critical thinking abilities as a result of prolonged involvement in project activities. This is consistent with Karimi and Yahyavi (2026), who found that PBL enhances both academic engagement and achievement. The data highlight the reciprocal relationship between engagement and learning outcomes. Finally, the analysis reveals that student engagement in PBL is not static but evolves throughout the project cycle. Initial curiosity often develops into deeper cognitive and emotional investment as students progress through project stages. This dynamic process is supported by Khatarina Salsadilla and Sugesti (2025), who emphasize the evolving nature of engagement in PBL activities. The findings suggest that sustained engagement requires continuous stimulation and adaptive instructional support.

Challenges and Enabling Factors in Implementing Project-Based Learning

The findings indicate that the implementation of Project-Based Learning (PBL) presents a range of pedagogical and contextual challenges that influence its effectiveness. Teachers reported difficulties in managing time allocation, particularly in balancing curriculum demands with extended project activities. These constraints are consistent with findings from Kalisa et al. (2026), which highlight time management as a recurring issue in PBL environments. The data suggest that structural limitations within educational systems significantly affect implementation fidelity. Teachers also identified

variability in student readiness as a critical challenge in sustaining engagement. Some students struggled with autonomy, self-regulation, and collaborative responsibilities required in PBL settings.

This observation aligns with Safei and Salmah (2022), who emphasize that student preparedness influences engagement levels in EFL classrooms. The findings indicate that insufficient readiness can hinder the overall effectiveness of project-based instruction. Another challenge relates to assessment complexity, where teachers found it difficult to evaluate both process and product aspects of student learning. Traditional assessment frameworks were perceived as inadequate for capturing the multidimensional outcomes of PBL.

This issue is supported by Bergeron (2021), who argues that assessment in PBL requires more nuanced and flexible approaches. The data reveal that assessment design remains a critical area for pedagogical development. Teachers further reported challenges in maintaining consistent student engagement throughout the project cycle. While initial enthusiasm was often high, sustaining motivation over time required continuous effort and innovation. This finding is consistent with Schnell (2025), who notes that engagement can fluctuate depending on task design and facilitation quality. The evidence suggests that engagement sustainability is a dynamic and complex process. Despite these challenges, several enabling factors were identified that significantly support successful PBL implementation.

Teachers highlighted the importance of institutional support, including access to resources, training, and collaborative planning opportunities. This aligns with Hartmann et al. (2026), who identify organizational support as a key determinant of PBL success. The findings indicate that supportive environments enhance both teacher performance and student engagement. Midway through the analysis, the synthesis of qualitative data was quantified to identify dominant challenges and enabling factors, as presented in Table 3. The table summarizes teachers' responses regarding barriers and supports in PBL implementation.

Table 3. Thematic Analysis Results and Key Findings

Factor Type	Category	Frequency (n=20)	Percentage (%)
Challenge	Time Constraints	17	85%
Challenge	Student Readiness	15	75%
Challenge	Assessment Complexity	16	80%
Enabling Factor	Institutional Support	18	90%
Enabling Factor	Teacher Training	17	85%
Enabling Factor	Technology Integration	16	80%

The data in Table 3 indicate that institutional support emerged as the most significant enabling factor, while time constraints were the most frequently reported challenge. This distribution highlights the interplay between systemic conditions and instructional practices. The findings are supported by Mabe et al. (2022), who emphasize the role of technological and institutional resources in facilitating effective PBL. The results suggest that addressing structural barriers is essential for optimizing engagement outcomes. Teachers also emphasized the role of professional collaboration as an enabling factor in overcoming implementation challenges.

Collaborative planning among teachers allowed for the exchange of ideas, strategies, and solutions to common problems. This observation aligns with Chua and Islam (2021), who highlight collaborative instructional design as a means to enhance learning and engagement. The data indicate that collegial support strengthens instructional capacity. In addition, the integration of real-world contexts within projects was identified as a factor that mitigates engagement decline.

Teachers reported that authentic and meaningful project themes helped sustain student interest over time. This finding is consistent with Belwal et al. (2021), who demonstrate that real-world applications enhance engagement and learning outcomes. The evidence suggests that relevance is a key driver of sustained participation. Teachers further noted that continuous feedback mechanisms contributed to maintaining student motivation and improving performance. Regular feedback allowed students to reflect on their progress and make necessary adjustments. This aligns with Karimi and

Yahyavi (2026), who emphasize the importance of feedback in fostering academic engagement. The data indicate that feedback serves as both a motivational and instructional tool.

Finally, the findings demonstrate that successful PBL implementation depends on the balance between addressing challenges and leveraging enabling factors. Teachers' experiences reveal that while obstacles are inherent, they can be mitigated through strategic planning and institutional support. This perspective is supported by Nagamalla et al. (2025), who argue that effective integration of active learning strategies enhances engagement despite constraints. The analysis suggests that sustainability in PBL requires adaptive and context-sensitive approaches.

CONCLUSION

This study demonstrates that the core issues examined in the research are shaped by complex interactions between contextual, structural, and behavioral factors. Through a qualitative-descriptive approach, the findings reveal that the phenomenon under investigation cannot be understood in isolation, but rather requires a holistic perspective that considers both empirical realities and theoretical frameworks. The integration of multiple data sources and triangulation techniques has strengthened the validity of the results, ensuring that the conclusions drawn are both credible and analytically robust. Furthermore, the study contributes to the existing body of knowledge by offering nuanced insights and practical implications relevant to the field. It highlights the importance of adaptive strategies, informed decision-making, and contextual sensitivity in addressing the identified challenges. Ultimately, this research provides a foundation for future studies to expand upon, particularly by incorporating broader data sets or mixed-method approaches to enrich understanding and enhance generalizability.

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