



Navigating project-based learning: Challenges encountered and strategies employed by teachers

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Abstract

Project-Based Learning (PBL) is an instructional approach that engages students in meaningful learning experiences through the completion of authentic projects. This approach offers numerous educational advantages, including the development of critical thinking, collaboration, creativity, and problem-solving skills. However, the successful implementation of PBL is often accompanied by various challenges that teachers must address during the teaching and learning process. To overcome these obstacles, educators are required to employ appropriate strategies that support effective project implementation and student engagement. This study was carried out at Pelangi School Bali, an international school located in Gianyar, Bali. The research focused on first- and second-grade classrooms to explore the challenges encountered by teachers during the implementation of Project-Based Learning and the strategies they employed to address those challenges. Data were collected through classroom observations using an observation checklist designed to document instructional practices, challenges, and teacher responses during PBL activities. To enrich and validate the observational findings, semi-structured interviews were conducted with two teachers from each grade level. The combination of these data collection methods provided a comprehensive understanding of teachers' experiences in implementing Project-Based Learning in the selected classrooms.

Keywords: Project-based Learning; Challenges; Strategies; EFL

Introduction

The success of the teaching and learning process is influenced by numerous factors, including instructional methods, classroom management, learning resources, and student engagement. Among these factors, the selection of an appropriate teaching method plays a significant role in determining whether learning objectives can be effectively achieved. Consequently, teachers are expected to employ instructional approaches that not only facilitate knowledge acquisition but also actively engage students in meaningful learning experiences. One pedagogical approach that has received considerable attention in contemporary education is Project-Based Learning (PBL).

Project-Based Learning is a student-centered instructional approach that engages learners in investigating authentic problems and producing meaningful products or solutions as evidence of learning (Widiyati & Pangesti, 2022). Unlike traditional teacher-centered instruction, which often emphasizes the transmission of knowledge through lectures and routine assignments, PBL encourages students to become active participants in constructing knowledge through inquiry, exploration, and collaboration. Through project activities, students are required to identify problems, gather information, analyze findings, and present solutions that reflect their understanding of the subject matter. According to Kimsesiz (2017), Project-Based Learning positions students as active learners while the teacher assumes the role of facilitator, mentor, and evaluator. Rather than passively receiving information, students are encouraged to engage in hands-on activities, collaborate with peers, and apply knowledge in real-world contexts. This approach enables learners to develop not only academic competencies but also essential twenty-first-century skills, including critical thinking, creativity, communication, collaboration, and problem-solving abilities.

Recent studies have highlighted the positive impact of Project-Based Learning on student engagement and learning outcomes. Research conducted by Nugroho (2025) found that PBL significantly increases student engagement by encouraging active participation, inquiry, and collaboration throughout the learning process. Similarly, Saavedra and Rapaport (2024) reported that project-based instruction contributes positively to academic achievement while simultaneously fostering important soft skills such as teamwork, communication, and self-



management. Furthermore, PBL has been shown to enhance students' critical thinking, problem-solving abilities, and collaborative competencies by providing opportunities for learners to work together in addressing authentic challenges and producing meaningful outcomes.

Project-Based Learning possesses several distinctive characteristics that differentiate it from conventional instructional approaches. According to Hidayah et al. (2021), students are expected to function as active problem solvers who investigate issues and develop solutions independently. Learning activities are generally based on authentic situations that connect classroom concepts with real-life experiences. Furthermore, instruction is organized around driving questions or challenging problems that require students to apply relevant knowledge and skills. As a result, learning becomes student-centered, inquiry-driven, and focused on the development of independent learning skills. Despite its educational benefits, implementing Project-Based Learning presents a number of challenges for teachers. Effective project implementation requires careful planning, sufficient instructional time, appropriate learning resources, and continuous monitoring of student progress. Recent studies have identified several obstacles encountered by teachers, including limited time allocation, insufficient resources, difficulties in managing collaborative activities, varying student abilities, and challenges in assessing project outcomes. Additionally, teachers often face difficulties in maintaining student engagement and ensuring equal participation among group members throughout the project process.

To address these challenges, teachers employ various strategies, such as establishing clear project guidelines, developing structured timelines, facilitating collaboration, providing continuous feedback, and monitoring student participation throughout project activities. Research suggests that effective teacher facilitation plays a crucial role in ensuring the successful implementation of PBL and maximizing its educational benefits. Teachers who effectively scaffold learning experiences and support student collaboration are more likely to create productive learning environments that encourage meaningful engagement and successful project completion. Given the growing popularity of Project-Based Learning and the challenges associated with its implementation, it is important to examine teachers' experiences when applying this instructional approach in real classroom settings. Therefore, this study aims to investigate the challenges encountered by teachers and the strategies they employ during the implementation of Project-Based Learning. The findings are expected to provide insights for educators seeking to implement PBL more effectively and contribute to the growing body of research on student-centered learning approaches.

Method

Research Design

This study employed a qualitative descriptive case study design to explore the challenges encountered by teachers and the strategies they utilized during the implementation of Project-Based Learning (PBL). A qualitative approach was considered appropriate because it allows researchers to gain an in-depth understanding of participants' experiences, perspectives, and practices within their natural educational settings. Furthermore, a case study design enables a comprehensive examination of a specific phenomenon within its real-life context, providing rich and detailed insights into the implementation of Project-Based Learning in elementary classrooms.

Research Setting

The study was conducted at Pelangi School Bali, an international primary school located in Gianyar, Bali, Indonesia. The school was selected as the research site because it consistently implements Project-Based Learning as one of its primary instructional approaches. In addition, the school adopts the International Primary Curriculum (IPC), which emphasizes inquiry-based and project-oriented learning experiences. The IPC is integrated with the Indonesian Merdeka Curriculum, allowing teachers to design learning activities that encourage creativity, collaboration, critical thinking, and real-world problem-solving through project work.

The research focused on first-grade and second-grade classrooms at the elementary level. Several project topics implemented during the observation period were selected as the focus of the study. In Grade 1, the observed projects included *Earth Day: Creating Photo Hangers from Recycled Paper* and *Living and Non-Living Things*. In Grade 2, the projects examined were *Earth Day: Creating Pencil Holders from Recycled Bottles* and *Light*



Sources. These projects were chosen because they represented authentic examples of Project-Based Learning practices implemented within the school's curriculum.

The primary objective of this study was to investigate the challenges experienced by teachers during the implementation of Project-Based Learning and to identify the strategies they employed to overcome those challenges.

Participants

The participants of this study consisted of four classroom teachers, including two teachers from Grade 1 and two teachers from Grade 2. These teachers were selected because they were directly involved in planning, facilitating, and evaluating Project-Based Learning activities within their classrooms. Their experiences and perspectives provided valuable information regarding the practical challenges associated with PBL implementation and the strategies used to address them. In addition, the school principal contributed to the research by providing institutional information and granting permission for data collection. Information provided by the principal helped the researcher gain a better understanding of the school's educational philosophy, curriculum implementation, and student characteristics.

Data Collection Instruments

To obtain comprehensive and trustworthy data, the researcher utilized three primary instruments: classroom observations, observation checklists, and semi-structured interviews.

Observation served as the primary data collection technique in this study. Through direct observation, the researcher was able to examine classroom interactions, teaching practices, and Project-Based Learning activities as they naturally occurred. Observation enables researchers to gather information from actual situations and provides insights into participants' behaviors and actions within their authentic contexts (Ahmad et al., 2019). During the observation sessions, the researcher carefully documented teaching activities, student participation, classroom management practices, and challenges that emerged throughout project implementation. An observation checklist was employed to systematically record the implementation of Project-Based Learning in both grade levels. The checklist focused on identifying instructional practices, teacher facilitation techniques, student engagement, classroom interactions, challenges encountered during project activities, and strategies used by teachers to address those challenges. The use of an observation checklist enhanced the consistency and organization of data collection while also allowing the researcher to note additional practices that emerged beyond the predetermined categories.

To complement and validate the observational findings, semi-structured interviews were conducted with all participating teachers. An interview guide was developed to ensure consistency across interviews while allowing participants the flexibility to elaborate on their experiences. The interviews focused on teachers' perceptions of Project-Based Learning, the difficulties they encountered during implementation, and the specific strategies they employed to facilitate successful project completion. The interview data provided deeper insights into the reasoning behind teachers' actions and enriched the understanding of the observed classroom practices.

Data Collection Procedures

Several procedures were followed to ensure systematic data collection. First, the researcher obtained formal permission from the school principal to conduct the study. After receiving approval, the researcher contacted the participating teachers to explain the purpose of the study and arrange observation schedules. The next stage involved classroom observations in Grade 1 and Grade 2 during Project-Based Learning activities. Throughout the observation process, the researcher completed observation checklists and recorded field notes related to instructional practices, classroom interactions, challenges, and teacher strategies. Following the observation phase, semi-structured interviews were conducted with the participating teachers. The interviews provided opportunities for teachers to explain their experiences and clarify issues identified during classroom observations. Finally, all observation and interview data were organized, reviewed, and prepared for analysis to answer the research questions concerning the challenges and strategies associated with the implementation of Project-Based Learning.

Findings and Discussion

This study explored the challenges encountered by teachers and the strategies they employed during the implementation of Project-Based Learning (PBL) in Grades 1 and 2 at Pelangi School Bali. The findings were derived from classroom observations and semi-structured interviews with participating teachers.

Challenges Encountered in the Implementation of Project-Based Learning

Table 1 summarizes the challenges observed during the implementation of Project-Based Learning.

Table 1 Summary of Challenges Encountered in Project-Based Learning		
Challenge Category	Observation Findings	Grade Level
Project initiation	Difficulty in forming groups due to students' preference for specific classmates.	Grade 1
Mastering the PBL method	No significant difficulties were observed.	Grades 1 & 2
Time management	Project activities occasionally required additional instructional sessions.	Grades 1 & 2
Student attention during instruction	Some students required reminders to maintain focus.	Primarily Grade 1
Students' understanding affecting project outcomes	Students' comprehension influenced the quality of project products.	Grades 1 & 2
Project outcomes	Some students occasionally produced less optimal work because they rushed project tasks.	Grade 2
Group work management	Minor challenges in organizing groups and balancing participation.	Grades 1 & 2
Facilities and resources	No significant challenges observed.	Grades 1 & 2

Difficulty in Initiating Projects

The observations revealed that Grade 1 teachers occasionally experienced difficulties during the initial stage of project implementation, particularly when assigning students to groups. Some students were reluctant to work with classmates who were not their preferred peers. This finding was supported by the interview data. One Grade 1 teacher explained:

"Yes, definitely. The main difficulty is the random formation of groups. If children are assigned to a group that is not in accordance with their wishes, it greatly affects their performance. Their motivation becomes lower."

In contrast, Grade 2 teachers reported fewer challenges in initiating projects because they prepared detailed project plans and alternative scenarios before implementation. As one teacher stated:

"I rarely experience that because I always prepare the project from the beginning. If Plan A does not work, I already have a backup plan."

Time Management Challenges

Time management emerged as one of the most frequently reported challenges. Observations showed that project activities often required more time than initially allocated. Consequently, teachers sometimes extended projects across multiple learning sessions. A Grade 1 teacher explained:

"Usually, I modify the teaching module. One project often needs two meetings because one meeting is simply not enough to complete the project."

Similarly, a Grade 2 teacher acknowledged that project timelines often changed due to unexpected classroom situations:

“Sometimes my expectations are too high. The planning may change depending on the students’ condition and progress.”

Students’ Understanding and Project Outcomes

Observation data indicated that students’ understanding significantly influenced project quality. Students who clearly understood project instructions tended to produce better outcomes, whereas students who misunderstood instructions required additional support and often needed more time to complete their work. A Grade 1 teacher stated:

“If students do not understand what they are doing, they will experience problems. Usually, I explain again, use PowerPoint presentations, and guide them individually.”

Similarly, a Grade 2 teacher noted:

“When students do not understand, we accompany them and show them step by step what they should do. Gradually, they begin to understand.”

Regarding project outcomes, most students successfully completed their projects. However, teachers observed that some students occasionally rushed through project tasks. One Grade 2 teacher explained:

“Sometimes they just want to finish quickly so they can rest. If the work is not optimal, I return it to them and ask them to improve it before I accept it.”

Group Work Challenges

Although group activities were generally successful, teachers occasionally experienced challenges related to group organization. However, these challenges became easier to manage as teachers became more familiar with students’ personalities and learning characteristics. As one Grade 2 teacher explained:

“At the beginning, it was difficult because I did not know the students’ characters. After several months, I understood them better, and group formation became easier.”

Strategies Used by Teachers in Implementing Project-Based Learning

Table 2 presents the strategies used by teachers to address the challenges identified above.

Table 2 Summary of Strategies Used in Project-Based Learning

Strategy Category	Implementation
Project modification	Adapting project activities according to classroom conditions and resource availability.
Flexible time management	Extending projects across multiple sessions when necessary.
Heterogeneous grouping	Assigning students to mixed-ability groups to encourage peer support.
School resource utilization	Maximizing available classroom and school resources.
Continuous guidance and scaffolding	Providing ongoing assistance and clarification.
Classroom management techniques	Using reminders, routines, and attention-getting signals to maintain engagement.

Another strategy observed in both classrooms was project modification. Teachers demonstrated flexibility by adapting project activities when circumstances required changes. These modifications were usually made when planned materials were unavailable or when alternative ideas emerged during the learning process. A Grade 2 teacher described this flexibility as follows:

“There have been times when we could not obtain the materials we originally planned to use. When that happens, we adjust the project according to the available resources.”

Similarly, a Grade 1 teacher explained that students were often involved in the decision-making process and that their ideas could influence the final design of a project:

“Sometimes students provide suggestions that are better than our original plan. We discuss these ideas together and adjust the project.”

These responses suggest that project implementation was not rigidly predetermined but rather adapted to classroom realities and students’ contributions. Such flexibility enabled teachers to maintain project continuity

while creating opportunities for students to participate more actively in the learning process. Another strategy involved the use of heterogeneous grouping. Instead of placing students with similar abilities together, teachers intentionally formed mixed-ability groups to encourage collaboration and peer support. As one teacher explained:

“Students are mixed. Those who are more capable work together with those who need more support so they can help each other.”

Classroom observations showed that this approach facilitated interaction among students and encouraged them to support one another during project completion. Mixed-ability grouping also appeared to increase participation, as students were able to contribute according to their individual strengths while learning from their peers.

Continuous teacher guidance was also a prominent strategy throughout the implementation of Project-Based Learning. Rather than leaving students to work independently, teachers consistently monitored progress, provided clarification, and offered assistance whenever difficulties arose. A Grade 1 teacher explained:

“We always guide students. If they have difficulty finding information, we provide books from the library or help them search using classroom laptops.”

Likewise, a Grade 2 teacher emphasized the importance of ongoing support during project activities:

“Students still need support. When they encounter difficulties, we accompany them until they understand what they need to do.”

The observation data confirmed that teachers played an active facilitative role throughout the project process. They regularly checked students’ understanding, responded to questions, and provided individualized assistance when necessary. This continuous support helped students overcome difficulties and maintain progress toward project completion. Overall, the findings indicate that teachers relied on a combination of flexible project planning, mixed-ability grouping, and continuous guidance to address the challenges encountered during Project-Based Learning implementation. These strategies enabled teachers to respond effectively to classroom needs while supporting students’ participation, collaboration, and successful completion of project tasks.

The findings of this study demonstrate that the implementation of Project-Based Learning (PBL) in Grades 1 and 2 at Pelangi School Bali provided meaningful learning experiences while simultaneously presenting several challenges for teachers. The challenges identified in this study primarily involved project initiation, time management, students’ comprehension of project instructions, classroom management, and group collaboration. These findings support previous studies that have highlighted the complexity of implementing PBL, particularly in primary school settings where students are still developing their independence and collaborative skills (Hidayah et al., 2021; Syahlan et al., 2023).

One of the most significant challenges identified was initiating project activities, particularly during group formation. The findings revealed that Grade 1 students often preferred working with specific classmates, making random group assignment difficult. This challenge can be explained by the developmental characteristics of young learners, who tend to feel more comfortable interacting with familiar peers. Similar findings have been reported by Cintang et al. (2018), who found that social and emotional factors frequently influence students’ participation in project-based activities. However, this challenge was less evident in Grade 2 classrooms, where teachers demonstrated greater preparedness through detailed planning and contingency strategies. This finding reinforces the argument that effective planning is a critical factor in the successful implementation of Project-Based Learning (Thomas, 2000). Time management emerged as another major challenge. Both Grade 1 and Grade 2 teachers reported difficulties in completing projects within the allocated instructional time. This finding is consistent with previous research indicating that Project-Based Learning often requires more instructional time than traditional teaching methods because students must engage in investigation, discussion, product creation, and reflection activities (Condliffe et al., 2017). In the present study, teachers addressed this challenge by extending project activities across multiple sessions and adjusting project timelines according to students’ needs. Such flexibility is essential because project work rarely progresses exactly as planned, particularly when working with young learners who require additional guidance and support.

The findings also revealed that students’ understanding significantly influenced project outcomes. Teachers reported that students who clearly understood project instructions were more likely to produce



satisfactory products, whereas misunderstandings often resulted in lower-quality work and extended completion times. This finding aligns with constructivist learning theory, which emphasizes that meaningful learning occurs when learners successfully connect new information with existing knowledge structures (Vygotsky, 1978). Consequently, teachers frequently provided scaffolding, repeated explanations, and individualized support to ensure that students understood project expectations. These practices reflect the teacher's role as a facilitator, which is considered a fundamental principle of Project-Based Learning (Kimsesiz, 2017).

Another noteworthy finding concerns the role of group work in Project-Based Learning. Although collaborative learning can create challenges related to participation and responsibility, teachers at Pelangi School Bali intentionally formed heterogeneous groups consisting of students with different ability levels. This strategy encouraged peer learning and promoted cooperation among students. The findings support previous studies suggesting that mixed-ability grouping can enhance collaboration, communication skills, and academic performance because students have opportunities to learn from one another (Bagheri et al., 2013). Furthermore, the willingness of teachers to prioritize collaboration over homogeneous ability grouping reflects the student-centered philosophy underlying Project-Based Learning.

Unlike many studies that identify limited resources as a major obstacle to PBL implementation, this research found that facilities and financial support were generally adequate. The school provided sufficient materials, learning resources, and funding for project activities, allowing teachers to focus on facilitating learning rather than addressing logistical concerns. This finding suggests that institutional support plays a crucial role in the successful implementation of Project-Based Learning. Schools that provide adequate resources may enable teachers to implement projects more effectively and reduce barriers associated with material preparation and project management.

Regarding strategies used to address challenges, the findings revealed that teachers adopted a flexible and supportive approach. Strategies such as modifying project plans, providing continuous guidance, facilitating peer collaboration, utilizing available school resources, and offering individualized assistance were commonly employed. These findings are consistent with Almulla (2020), who argues that teacher facilitation is one of the most important factors influencing the success of Project-Based Learning. Through continuous support and guidance, teachers can help students navigate challenges while maintaining engagement and motivation throughout the project process. Overall, the findings suggest that the successful implementation of Project-Based Learning depends not only on the instructional method itself but also on teachers' preparedness, flexibility, classroom management skills, and the availability of institutional support. Although several challenges were encountered, the strategies employed by teachers effectively minimized these difficulties and enabled students to participate actively in meaningful learning experiences. Consequently, Project-Based Learning at Pelangi School Bali contributed not only to students' academic development but also to the enhancement of collaboration, communication, problem-solving, and independent learning skills, which are essential competencies for twenty-first-century education.

Conclusions

The findings revealed several challenges encountered by teachers during the implementation of Project-Based Learning. One of the most common challenges was managing students who frequently interrupted classroom instruction by speaking while the teacher was explaining the lesson. This behavior was often driven by students' enthusiasm and curiosity about the topic being discussed, leading them to share their ideas or ask questions before the teacher had finished providing instructions. Another challenge involved students who were highly sociable and tended to engage in conversations with their peers during project activities. As a result, these students sometimes devoted more attention to social interaction than to completing the assigned project tasks.

Group formation also emerged as a challenge during project implementation. Some students preferred working with particular classmates because they felt more comfortable and familiar with them. Consequently, when students were assigned to groups that did not match their preferences, resistance and reduced motivation



occasionally occurred. Nevertheless, teachers were able to manage these situations through a variety of classroom strategies that had been prepared in advance.

To address these challenges, teachers implemented several strategies aimed at maintaining student engagement and promoting productive collaboration. One commonly observed strategy was the use of specific classroom cues and attention-getting techniques to redirect students' focus when they became distracted or overly talkative. Both Grade 1 and Grade 2 teachers employed unique classroom routines and verbal signals that effectively encouraged students to pay attention and return to the learning activity. In addition, teachers consistently provided praise and positive reinforcement to acknowledge students' efforts and achievements. This practice helped foster students' confidence, motivation, and willingness to participate actively in project activities. Another strategy involved the use of random grouping techniques, such as drawing lots, when assigning students to project groups. This approach encouraged students to interact and collaborate with a wider range of classmates rather than remaining within their usual friendship circles. Furthermore, mixed grouping provided opportunities for peer learning and helped motivate less active students to participate more fully in project completion. Through these strategies, teachers were able to create a more inclusive and collaborative learning environment that supported the successful implementation of Project-Based Learning.

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