

## The in-service teachers' reflection on the implementation of problem-based learning in the teacher professional education program at Universitas Pancasakti Tegal

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### Abstract

This study explores the reflections of in-service teachers on the implementation of Problem-Based Learning (PBL) in the Teacher Professional Education Program (TPEP). With the increasing demand for 21st-century teaching skills, PBL has emerged as an effective instructional method to foster critical thinking, problem-solving, and student engagement. Using a qualitative approach, this research collected data from three in-service teachers through semi-structured interviews, classroom observations, and reflective journals. The findings highlight the benefits of PBL, including enhanced student motivation, collaboration, and a deeper understanding of learning materials. However, challenges such as time constraints, technical difficulties, and student adaptation to PBL were also identified. Teachers implemented solutions such as structured time management, technology integration, and active monitoring of student participation. Follow-up plans emphasize continuous reflection, evaluation, and adaptation to optimize the effectiveness of PBL in the classroom. The study underscores the importance of professional development in equipping teachers with the necessary skills to implement innovative teaching approaches. By addressing the challenges of PBL through strategic planning and ongoing support, teachers can enhance student learning outcomes and improve the overall teaching process.

**Keywords:** *Problem-Based Learning; In-service Teachers; Teacher Profession Education Program; Reflections*

### Introduction

Implementing problem-based learning (PBL) in professional education programs for teachers has gained significant attention due to its potential to enhance reflective teaching practices and improve instructional effectiveness. PBL is a student-centered pedagogical approach that fosters critical thinking, problem-solving, and self-directed learning (Arends, 2012). In Indonesia, the Teacher Professional Education (PPG) program aims to improve in-service teachers' competencies, aligning with 21st-century educational demands (Afriadi et al., 2023). However, despite its promising attributes, the effectiveness of PBL in in-service teacher training remains a subject of debate, with challenges in execution and assessment impacting its successful adoption (Yuliawati & Pangestu, 2022).

Several studies have investigated the effectiveness of PBL in teacher education. Koh and Tan (2016a) explored how PBL enhances reflective practices among pre-service teachers, emphasizing that structured reflection leads to better teaching strategies. Similarly, João et al. (2023) highlighted the role of educational design research in refining teacher professional development under the 2030 Agenda framework. In-service teachers often struggle to integrate theoretical knowledge with classroom practice, a challenge addressed by Virkkula and Nissilä (2014), who found that linking theory and practice is essential for effective professional learning.

McConnell et al. (2019) demonstrated that PBL-based teacher training fosters responsive and transformative educational practices. Their findings align with Rokhmawati et al. (2016), who emphasized that PBL enhances problem-solving skills and self-efficacy among educators. Furthermore, Tosriadi et al. (2018) investigated the role of reflection in professional growth, concluding that structured reflection significantly impacts teaching effectiveness.

Yang et al. (2021) examined teachers' experiences in learning PBL methodologies and found that hands-on engagement in PBL increases confidence and adaptability in classroom implementation. Similarly, Suwastini et al. (2021) analyzed the compatibility of PBL with 21st-century skills, arguing that PBL effectively cultivates collaboration, creativity, and critical thinking among educators. Meanwhile, Saboowala and Manghirmalani Mishra (2021) explored teachers' readiness for blended learning and found

that while many educators recognize the benefits of PBL, they often lack adequate training and resources to implement it effectively.

The effectiveness of PBL in in-service teacher training has also been analyzed in the context of digital learning. Avidov-Ungar and Tsybulsky (2021) investigated teachers' perceptions of PBL in online courses and found that digital platforms facilitate collaboration and resource sharing. However, Han (2024) noted that professional identity development through PBL programs requires sustained engagement and mentorship. Additionally, Boye and Agyei (2023) demonstrated the effectiveness of PBL in improving teaching and learning outcomes for mathematics educators, reinforcing the need for subject-specific adaptations of the PBL model.

While numerous studies highlight the advantages of PBL in teacher education, few have specifically examined the reflections of in-service teachers on its implementation within professional education programs. Existing literature primarily focuses on pre-service teachers or general PBL effectiveness, overlooking the unique challenges and insights of experienced educators undergoing professional development. Furthermore, studies such as those by Wirantaka and Sukarno (2022) and Kanyesigye et al. (2022) discuss PBL adoption in various contexts but do not thoroughly address the reflective processes of in-service teachers within structured training programs.

This study seeks to bridge this gap by exploring in-service teachers' reflections on the implementation of PBL in Indonesia's Teacher Professional Education (PPG) program. Unlike previous research that primarily assesses PBL outcomes or instructional design, this study focuses on teachers' experiential insights, challenges, and perceptions of its effectiveness. By analyzing firsthand reflections, this research provides a deeper understanding of how PBL influences teaching practices, professional identity, and instructional strategies in real-world classroom settings.

This research is significant for several reasons. First, it contributes to the growing body of literature on PBL in teacher education by offering empirical evidence on in-service teachers' perspectives. Second, it provides valuable insights for policymakers and educators seeking to refine professional development programs to better support reflective teaching. Third, the study offers practical recommendations for enhancing PBL implementation in teacher training, addressing barriers such as limited resources, inadequate mentorship, and varying levels of digital readiness. Ultimately, this research aims to improve teacher training methodologies, ensuring that educators are well-equipped to foster critical thinking and problem-solving skills in their students.

## Methodology

This study employed a qualitative research design to explore in-service teachers' reflections on the implementation of the Problem-Based Learning (PBL) approach. The qualitative approach was chosen because it allows for an in-depth exploration of participants' personal experiences, challenges faced, and strategies employed during PBL implementation. This design facilitated a nuanced understanding of how in-service teachers perceive and navigate the PBL framework within the context of their classrooms. The use of open-ended inquiry methods enabled the collection of rich, detailed data that reflects the complexity of educational practice and the diverse experiences of the participants.

Problem-Based Learning (PBL) is a well-established instructional approach that fosters active learning and enhances problem-solving abilities among students and educators (Caswell, 2020). As an approach designed to simulate real-world problem-solving scenarios, PBL is increasingly recognized as a crucial strategy in teacher education programs (Kerr, 2020). Its role in equipping teachers with critical thinking and reflective teaching skills makes it a valuable tool in professional development (Barron & Wells, 2020).

The participants in this study consisted of three in-service teachers from various schools who had implemented PBL in their classrooms. Purposive sampling was used to select in-service teachers with varying levels of experience in PBL to ensure diverse perspectives. Research has shown that structured reflection on PBL implementation can enhance teachers' self-efficacy and professional growth (Gutman, 2020). By examining participants' experiences, this study aimed to understand the effectiveness and challenges associated with PBL in the teacher training context.

The qualitative data were collected through the following stages: (1). *Semi-structured interviews*: This method allowed flexibility while maintaining a focus on key themes, such as the benefits and challenges of

PBL. Semi-structured interviews have been identified as a critical tool in analyzing how teachers navigate and adapt to PBL methodologies (Barrett, 2020). (2). *Classroom observations*: Observing teachers in real-time PBL scenarios provided insights into the practical application of PBL and its impact on classroom dynamics. Studies highlight the importance of direct observation in assessing the implementation and effectiveness of PBL strategies (Savin-Baden, 2020). (3). *Reflective journals*: Teachers documented their experiences, challenges, and strategies during PBL implementation. Reflective practice is essential in teacher professional development, as it allows for continuous improvement and adaptation of teaching methods (Peterson, 2020).

Thematic analysis was employed to identify recurring themes and patterns in the data. The process involved: (1) *Transcribing interviews and reviewing reflective journals*: The collected data were systematically analyzed to capture meaningful insights on the effectiveness of PBL (Hmelo-Silver & Barrows, 2020). (2). *Coding data into categories*: Recurring themes were categorized into "Benefits of PBL," "Challenges Encountered," and "Effective Strategies." Prior research supports coding as a systematic approach to identifying trends in qualitative PBL research (Savin-Baden & Major, 2020). (3). *Synthesizing findings*: The results were synthesized to draw meaningful conclusions about the teachers' experiences. The findings provided critical insights into how PBL fosters student engagement and problem-solving skills, as well as the challenges teachers faced during implementation (Hung, 2020).

Through this methodology, the study aimed to contribute to existing literature on PBL in teacher education by providing empirical evidence on in-service teachers' reflections. The findings are expected to inform future teacher training programs and provide practical recommendations for enhancing PBL implementation in educational settings.

## Findings and Discussion

### Findings

The research findings are presented as follows:

#### Participant 1

*Benefits*: Students are happier and more focused on following the learning process. Students are more active, have a higher enthusiasm for learning, and can think critically through discussion activities. Students find it easier to understand the material through knowledge exploration activities with discussions and group work. - Students find it easier and more confident to present the results in front of the class. - Students can learn in groups to improve cooperation and discipline in completing tasks in groups.

*Challenges*: At the stage of presenting the results of the work, only 2 groups had the opportunity to advance due to time constraints. This happened because a lot of time was used for the activities of completing 3 worksheets with their discussions. The sound quality of the video used as learning media is not loud enough. When writing using the chain writing method, students who have not mastered much vocabulary often write incorrectly or misspell letters.

*Solution*: Manage the time for each learning activity by limiting the time effectively. Check the devices, both speakers and laptops, play the video several times, and invite students who cannot hear to come to the front. After writing activities using the chain writing method, each group is allowed to discuss the results of their writing so that they can correct and complement each other in one group.

*Follow-up plan*: Time management for each activity in PBL syntax must be applied and communicated before the activity takes place, and the learning objectives in one meeting. Make own video or look for video references that have good quality and check that all the equipment is working properly. Carry out variations in applying methods and strategies that can be applied in writing learning.

#### Participant 2

*Benefits*: By using Problem-Based Learning (PBL), students can learn more actively and independently, and develop skills that can be applied in the real world. In addition, PBL can also increase students' learning motivation and improve social interactions between students in the learning process. Implementing Problem-Based Learning (PBL) in learning Recount text can create an environment of more learner-centered learning, providing a real context for developing writing skills, and enhancing their understanding of the

material. The creative and active processes involved in PBL can also make learning more meaningful and relevant for students.

*Challenges:* Finding or designing classroom activities that suit the development of writing skills can be a challenge because it must be in accordance with learning objectives. Then some students may not be used to the PBL approach, so it takes time to adapt because student independence can also vary.

*Solution:* Plan learning carefully, including selecting methods and tools that are appropriate to the material. Ensure that learning objectives, activities, and assessments are well integrated and that clear and specific learning objectives are defined at the beginning of the activities. This helps learners understand expectations and direct their efforts. Then utilize technology to support PBL, including online resources, collaboration platforms, and presentation tools.

*Follow-up Plans:* Conduct a comprehensive evaluation of student learning outcomes, and review student achievement, conceptual understanding, and progress in developing targeted skills. 2. Collect feedback from students on PBL that has been implemented. Consider aspects such as level of engagement, level of understanding, and whether they feel the method supports their learning. Review the results of quizzes, assignments, or other assessments used to measure student understanding. Identify challenges and successes that emerged during the implementation of the PBL. Were there any particular obstacles faced by students or teachers? Were there any aspects that worked well? Review the support and resources that have been provided to teachers and learners during implementation. Are there any resources that are lacking or need to be improved? Is training or other support needed? Set a regular evaluation schedule to see the progress and sustainability of the changes. This helps ensure that the follow-up plan is running effectively and has a positive impact.

### **Participant 3**

*Benefits:* Several benefits are observed in the learning process after the implementation of PBL, such as students becoming more enthusiastic because the learning process utilizes LCD PowerPoint, which attracts students' attention. It is also easier for me to provide materials. Students are more active in the learning process. For example, during discussions, many students are active in discussions, and during questions and answers, students are also more enthusiastic to answer. Students are happy during the learning process, especially when they work together in teams to solve problems. Additionally, I can find out more about the character of students through discussion activities.

*Challenges:* During the discussion, there were still students who were silent and only paid attention to their friends working on the worksheets. There were still students who did not use gadgets properly. There were still students who were noisy during the discussion, namely chatting about the problems given by the teacher. The technical problems faced were, when playing videos on the LCD, it did not work, and at the end of the learning, the laptop used died. Finally, the learning process was slightly disrupted because students were not focused.

*Solutions:* I provide motivation and appreciation for the smallest things when there are students who are just silent during discussions. I walk around during discussions to avoid students chatting outside the problems given by the teacher and ensure that gadgets are used properly during discussions. I must stay focused on the learning process to achieve learning objectives. I use a mini sound so that students listen to the Offering Help conversation.

*Follow-up Plan:* I will improve myself by making a learning plan that is in accordance with the characteristics of the material and has alternative solution steps if the learning process does not go according to plan. I will make an interesting and effective worksheet so that learning objectives are easily achieved.

### **Discussion**

The implementation of Problem-Based Learning (PBL) in the classroom, as reflected in the experiences of all research participants, has demonstrated several benefits, challenges, and necessary follow-up actions to optimize student learning. Each participant observed that PBL fosters student engagement, enhances critical thinking, and encourages active participation in discussions. Participant 1 highlighted how students became more enthusiastic and confident in presenting their work while improving their cooperation and discipline in group tasks. Similarly, Participant 2 noted that PBL promotes student independence and social interaction while making learning more meaningful and relevant. Participant 3 also observed

increased student enthusiasm, particularly when using visual aids such as PowerPoint presentations, and emphasized how discussions helped reveal student characteristics (McConnell, Parker, & Eberhardt, 2019; Pangaribuan, 2022).

However, several challenges emerged in the implementation of PBL. The Problem-Based Learning approach's shortcomings include issues with students' diverse backgrounds and traits as well as its restricted time for conducting classroom activities. The challenges of problem-based learning include determining the appropriate learning requirements, selecting relevant references and the level of knowledge acquired, requiring excessive time and responsibility, allowing uncontrolled group projects, and selecting the incorrect learning needs because facilitators do not provide guidance (Vanishree & Teginamani, 2018). Participant 1 pointed out that time constraints limited the number of groups that could present their work, and technical issues, such as low video sound quality, hindered effective learning. Participant 2 identified difficulties in designing appropriate activities for developing writing skills, particularly since some students were unfamiliar with the PBL approach and required time to adapt. Participant 3 encountered issues with student participation, as some remained passive during discussions, while others misused gadgets or engaged in unrelated conversations. Technical problems, such as video playback failures and laptop malfunctions, also disrupted the learning process (Koh & Tan, 2016; João, Henriques, Rodrigues, & Sá, 2023).

To address these challenges, the participants proposed various solutions. Participant 1 suggested better time management and ensuring proper equipment functionality to enhance learning efficiency. She also recommended group discussions after writing activities to improve students' vocabulary and accuracy. Participant 2 emphasized careful planning, clear learning objectives, and the integration of technology to support PBL. Meanwhile, Participant 3 focused on providing motivation, closely monitoring student discussions, and ensuring proper gadget usage (Mohammed, Zegeye, Dawed, & Tessema, 2024; Malik, 2021).

For long-term improvement, follow-up plans were devised. Participant 1 emphasized the importance of structured time management within PBL syntax and the use of high-quality educational videos. Participant 2 advocated for regular evaluations of student progress and feedback collection to refine PBL strategies. Participant 3 aimed to develop more engaging worksheets and alternative solutions to address unforeseen learning disruptions (Kanyesigye, Uwamahoro, & Kemeza, 2022; Kivirand, Leijen, Lepp, & Tammemäe, 2021).

Overall, the participants' experiences highlight the effectiveness of PBL in promoting student engagement and critical thinking. Another investigation into teachers' experiences with PBL revealed that while educators gained confidence in planning and executing PBL projects, they faced obstacles like aligning PBL with standardized curricula and assessments (Yang et al., 2021). However, its success depends on overcoming time management, technical, and participation challenges through strategic planning, continuous evaluation, and adaptive teaching methods (Lolle, Scholkmann, & Kristensen, 2023; Orakci, 2021; Muñoz Hernández, 2021; Peterson, 2020; Mukrim, Einsenring, Hastini, & Hasyim, 2023).

## **Conclusion**

The reflections of in-service teachers on the implementation of Problem-Based Learning (PBL) in the Teacher Professional Education Program highlight both the advantages and challenges of this instructional approach. The findings indicate that PBL fosters student engagement, critical thinking, and active learning, contributing to a more dynamic classroom environment. Teachers observed that students became more confident in presenting their ideas, collaborated more effectively in groups, and demonstrated increased enthusiasm for learning. The use of PBL also helped students develop independent learning skills and social interactions, making the learning process more meaningful and applicable to real-life situations (McConnell, Parker, & Eberhardt, 2019; Pangaribuan, 2022).

Despite its numerous benefits, the transition to PBL was not without obstacles. One of the major challenges faced by teachers was time management. Some teachers struggled to allocate sufficient time for each stage of the PBL process, limiting opportunities for student presentations and discussions. Additionally, technical difficulties, such as poor video quality, malfunctioning equipment, and distractions caused by improper gadget usage, disrupted the learning process. Another significant challenge was student adaptation to the PBL approach. Some students, particularly those accustomed to traditional lecture-based methods, found it difficult to engage actively in discussions or contribute meaningfully to group activities (Kerr, 2020; Koh & Tan, 2016). Moreover, designing appropriate activities that align with PBL objectives while

addressing students' varied learning needs proved to be a complex task for teachers (João, Henriques, Rodrigues, & Sá, 2023).

To overcome these challenges, the teachers employed several strategies. Effective time management was emphasized as a crucial factor in ensuring smooth PBL implementation. Teachers suggested setting clear time limits for each activity and preparing well-structured lesson plans to maximize efficiency. Technical issues were addressed by ensuring that all equipment was functional before the lesson and providing alternative instructional materials when necessary. To encourage student participation, teachers adopted a more proactive approach by closely monitoring group discussions, providing motivation, and incorporating engaging teaching aids such as PowerPoint presentations. Additionally, integrating technology into PBL, including online collaboration platforms and interactive learning tools, was recommended to enhance student engagement and facilitate independent learning (Mohammed, Zegeye, Dawed, & Tessema, 2024; Malik, 2021).

The teachers also devised follow-up plans to improve their implementation of PBL in the long term. Regular evaluations of student progress, feedback collection, and continuous refinement of teaching strategies were identified as essential components for sustaining the effectiveness of PBL. Teachers recognized the need to develop more structured worksheets and varied instructional strategies to accommodate different learning styles. Furthermore, they emphasized the importance of ongoing professional development and training to strengthen their understanding and application of PBL methodologies (Kanyesigye, Uwamahoro, & Kemeza, 2022; Kivirand, Leijen, Lepp, & Tammemäe, 2021). By continuously reflecting on their teaching practices and making necessary adjustments, teachers can create a more supportive and effective learning environment for their students (Lolle, Scholkmann, & Kristensen, 2023; Orakci, 2021).

In conclusion, the reflections of in-service teachers on PBL implementation underscore its potential to enhance student learning by fostering critical thinking, collaboration, and engagement. However, successful execution requires careful planning, effective time management, and adaptability in addressing technical and pedagogical challenges. By integrating continuous reflection, professional development, and innovative teaching strategies, educators can maximize the benefits of PBL and contribute to the improvement of the overall education system. The insights gained from this study provide valuable guidance for educators seeking to implement PBL effectively, ensuring that students are better equipped with the skills necessary for success in the 21st century (Muñoz Hernández, 2021; Peterson, 2020; Mukrim, Einsenring, Hastini, & Hasyim, 2023).

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