PAIDAGOGIA:
Jurnal Inovasi Penelitian dan Pembelajaran
https://paidagogia.lombokinstitute.com/index.php/JIPP

Vol.2, No.2 (December – 2025)
E-ISSN: 3063-8704
pp.51-61

Analysis of the Pedagogical Competence of Prospective Primary School Teachers in Terms of Developing Learning Process Assessment Plans

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Abstract: The development of pedagogical competence among prospective primary school teachers faces various challenges stemming from the educational environment and the complexity of teaching. To respond to these challenges, studies that examine pedagogical competence from multiple perspectives are needed. However, research from the evaluation aspect is still very limited. This study aimed to analyze the pedagogical competence of prospective primary school teachers in preparing learning process assessment plans. The sample consisted of 62 second-year students. The data collection instrument was student work documents, which were evaluated using an assessment rubric. The scores obtained from this process were converted into quantitative values ranging from 0 to 100. These quantitative values were then analyzed descriptively to obtain the mean, standard deviation, percentiles, and proportion. The analysis showed that the students' pedagogical competence had a mean score of 80.82 ± 5.75. When converted, this quantitative score is equivalent to a B+ grade, which is interpreted as Good. Individually, the lowest score was 65.50, which is comparable to a C grade and is interpreted as Fair. The highest score was 88.50, equivalent to an A grade with an Excellent interpretation. The 25th percentile was 77, comparable to a B grade and interpreted as Good. In terms of proportion, A grades (Excellent) predominated. However, when viewed from the interpretation categories, the highest proportion was the Good interpretation (49.99%). Based on these findings, it can be concluded that student teachers are ready to assess learning outcomes in the classroom. Nonetheless, further improvement is needed to reach the Excellent category.

Article History:
Received: June, 2025
Revised: November, 2025
Published: December, 2025

Key Words:
Students, Pedagogical Competence, Grade, Interpretation, Learning Process Assessment.

How to Cite: Syazali, M., & Wahdah, N.F. (2025). Analysis of the Pedagogical Competence of Prospective Primary School Teachers in Terms of Developing Learning Process Assessment Plans. *PAIDAGOGIA: Jurnal Inovasi Penelitian dan Pembelajaran, 2*(2). 51-61.

Introduction

Professional teachers must possess four core competencies—pedagogical, professional, social, and personal—that collectively support their effectiveness in teaching and learning. Professional competence emphasizes mastery of subject matter and the ability to convey knowledge effectively, supported by continuous professional development to keep pace with developments in education (Sitepu et al., 2024; Khery et al., 2022). Social competence relates to communication skills and the ability to build positive relationships within the educational community, which are essential for productive interaction and adaptation to classroom dynamics (Vromen, 2022; Analis, 2023; Khery et al., 2022). Personal competence encompasses integrity, empathy, and resilience, enabling teachers to serve as role models for students and to manage classrooms effectively (Mulhayatiah et al., 2022; Fakhruddin et al., 2023). Meanwhile, pedagogical competence includes the ability to design, implement, and evaluate teaching strategies that align with students' needs (Hasan et al., 2024; Analis, 2023).

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Teachers must also be able to develop instructional programs, select appropriate learning materials, and create a conducive learning environment that enhances students' motivation (Vromen, 2022; Channa et al., 2024).

Pedagogical competence plays a crucial role in enhancing the learning experience in primary schools. It includes teachers' ability to plan, implement, and evaluate learning effectively. Teachers with strong pedagogical competence can understand students' characteristics through observation techniques that encompass physical, intellectual, socio-emotional, and sociocultural aspects, thereby enabling them to apply appropriate educational approaches (Prasetyo et al., 2022). In addition, pedagogical competence enables teachers to design comprehensive lesson plans, employ innovative teaching strategies, and conduct thorough evaluations of students' learning outcomes (Pricilia et al., 2024). Within the 2013 Curriculum, pedagogical skills are essential for implementing integrated thematic learning, scientific approaches, and authentic assessment, as well as for utilizing media and information technology (Daga et al., 2022). This competence also fosters higher-order thinking skills in students by integrating educational theories from Bruner, Vygotsky, and Piaget (Len, 2020). Therefore, continuous professional development is necessary to enable teachers to keep up with educational innovations through workshops and online courses (Surtini & Muhtar, 2024; Kongaityeva, 2022). Nevertheless, the development of pedagogical competence does not take place without challenges.

The development of pedagogical competence among prospective primary school teachers faces a variety of challenges arising from the educational environment and the complexity of teaching. One major challenge is pre-existing beliefs about learning that may hinder the adoption of new pedagogical methods, particularly when prospective teachers lack deep experience with concept- and inquiry-based learning (Rusznyak, 2009). In addition, gaps in understanding psychological and pedagogical aspects create obstacles for student teachers in adapting to the ever-changing educational landscape (Shcherban & Schcherban, 2021). In practice, they often find it difficult to translate theoretical knowledge into real classroom situations, especially when confronted with changes in the learning environment and the demand for independent decision-making (Hajdeu, 2022). Limited resources and inadequate facilities further exacerbate these challenges, reducing the effectiveness of teaching practicum programs (Bibi & Aziz, 2024). The integration of innovative technology also remains problematic due to the lack of support and training for the use of modern pedagogical technologies (Kichuk, 2022). To overcome these challenges, studies that examine pedagogical competence from multiple perspectives are needed. This need has stimulated many studies worldwide.

Over the past few years, research has highlighted multifaceted approaches to understanding and developing the skills required for effective teaching. These competencies include pedagogical content knowledge (PCK), diagnostic ability, and innovative and sustainable teaching practices (Brunner et al., 2023). The integration of technology in mathematics education has also been shown to enhance prospective teachers' information competence, strengthening the application of theory in practice (Abdualiyeva & Seitova, 2023). Diagnostic competence has emerged as a crucial aspect of teacher education, enabling teachers to assess and respond effectively to students' needs; however, variability in diagnostic processes remains a focus for further development (Wildgans-Lang et al., 2020). In innovative teaching practice, integrating the Sustainable Development Goals (SDGs) has been found to enhance pedagogical competence and support education for sustainable development (Guo et al., 2024). Other studies have pointed to a persistent gap between theory and practice that hinders the effectiveness of teacher education, highlighting the need for approaches that more closely integrate the two (Sánchez et al., 2024).

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Based on the preceding studies, no research has specifically examined prospective teachers' pedagogical competence from an evaluation perspective. Therefore, this study aims to analyze the pedagogical competence of prospective primary school teachers in developing learning process assessment plans (PPP). This includes knowledge of PPP concepts and students' skills in creating various forms of PPP assessment tools or instruments. The contributions of this study are as follows: theoretically, it enriches the understanding of pedagogical competence, particularly in the design of learning assessments. In practice, the findings can be used to improve the quality of prospective teachers through training and self-reflection, and to serve as a reference for teacher education institutions in designing more effective curricula. This study also supports improved learning quality in primary schools by ensuring that prospective teachers can create accurate and constructive assessments, thereby contributing to students' success.

Research Method

This study employed a descriptive quantitative approach to analyze the pedagogical competence of prospective primary school teachers, particularly in the aspect of developing learning process assessment plans. The qualitative orientation of the data enabled an in-depth understanding of the phenomenon under study through detailed, contextual descriptions (Creswell, 2014). The focus of the research was to describe how students design assessments of the learning process, which includes their knowledge and skills in developing assessment instruments. The study was exploratory and aimed to identify the strengths and weaknesses of prospective teachers in preparing assessment plans. This approach is appropriate for revealing the complexity of the assessment design process, which involves cognitive, practical, and reflective aspects (Black & Wiliam, 2018). The sample consisted of 62 second-year students in the 2022/2023 academic year, selected purposively.

The primary research instruments were documents used as qualitative data collection tools. The first document comprised individually written summaries to assess students' knowledge of the basic concepts of the learning process. The second document was a group report on an investigation into the implementation of learning-process assessment in primary schools. The third document consisted of literature review reports prepared by student groups. The reviewed sources were relevant articles published in journals or conference proceedings. The fourth document was a set of assessment instruments developed individually by each student. These instruments included quizzes, projects, assignments, and performance tests. All documents were assessed using an assessment rubric. The rubric was validated through expert judgment by two lecturers specializing in education, ensuring alignment between the assessed aspects and the indicators of pedagogical competence under investigation (Cohen, Manion, & Morrison, 2018).

The data collection procedure consisted of three main stages. First, a document observation was conducted on the assessment plans prepared by students to evaluate their knowledge and skills in developing learning-process assessment instruments. Second, the documents were collected and evaluated to serve as indicators of students' pedagogical competence. Third, the scores obtained were converted into quantitative values ranging from 0 to 100. These quantitative values were then converted into qualitative grades from E to A and interpreted as Very Low (grade E), Low (grades D and D+), Fair (grades C and C+), Good (grades B and B+), and Very Good (grade A). The collected data were analyzed using descriptive statistics to obtain measures of central tendency and dispersion. The results of the analysis were then narratively described to provide a comprehensive picture of students' competence levels and were visualized graphically.

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Result and Discussion

The pedagogical competence of prospective primary school teachers in developing learning process assessment plans (PPPs) had a mean score of 80.82 ± 5.75. When converted, this quantitative score is equivalent to a B+ grade, interpreted as Good. At the individual level, the lowest score was 65.50, which is comparable to a C grade and interpreted as Fair. The highest score was 88.50, corresponding to an A grade with an Excellent interpretation. The 25th percentile was 77, equivalent to a B grade and interpreted as Good. This means that 75% of students already possess pedagogical competence ranging from Good to Very Good, with only a small proportion still falling within the Fair category. The 75th percentile was 85.88, equivalent to an A grade with a Very Good interpretation. This indicates that at least one quarter of the students have pedagogical competence rated Very Good, reflecting a high level of readiness among this group. Descriptive statistical data on students' pedagogical competence are presented in Figure 1.

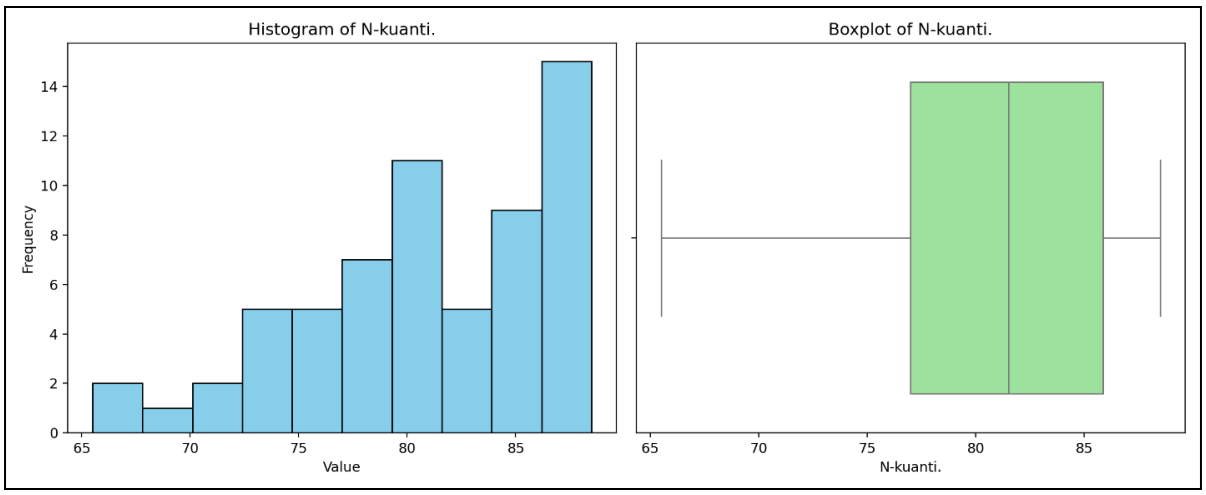

Figure1. Distribution of scores indicating students' pedagogical competence

The findings presented in Figure 1, which show that the pedagogical competence of prospective teachers in planning learning process assessment falls within the Good category, can be interpreted from several theoretical and conceptual perspectives. According to Shulman's theory of pedagogical competence (Moreira et al., 2023), it encompasses teachers' ability to design, implement, and evaluate instruction, including assessment. The Good level of competence observed in this study indicates that students have mastered the basic principles of assessment, including formulating assessment objectives, selecting appropriate methods, and developing assessment instruments. This aligns with Shulman's emphasis on the integration of content knowledge and pedagogical knowledge in teaching practice. Thus, students have been able to translate assessment theory into the practical task of preparing assessment plans, although there remains room for improvement in the design of more innovative instruments.

From the perspective of Wiggins' authentic assessment theory (McArthur, 2023), assessment should be relevant to real-life contexts and able to measure students' abilities holistically. The finding that students' competence is in the Good category suggests that prospective teachers have understood and applied principles of authentic assessment in their assessment designs. They can create tasks that stimulate critical and creative thinking and measure students' understanding in depth. This indicates that students are not only focused on summative assessment but are also capable of designing assessments that encompass cognitive,

affective, and psychomotor domains. Nevertheless, it should be noted that authentic assessment requires a deep understanding of learning contexts and students' needs; therefore, students must continue to be trained to design more contextual and meaningful assessments.

Drawing on Schön's reflective practitioner perspective (Tan & Burry, 2023), reflection plays a key role in enhancing pedagogical competence. The Good level of competence found in this study suggests that prospective teachers have engaged in reflection on their assessment planning processes. Such reflection helps them identify weaknesses and strengths in their assessment designs and devise strategies for improvement. The reflective approach has contributed significantly to developing students' pedagogical competence, particularly in designing effective assessments. However, to achieve a higher level of competence, students must be continuously encouraged to cultivate more systematic and in-depth reflective habits so that they can design assessments that are not only good but also innovative and responsive to students' learning needs.

The fact that the mean competence score falls in the Good category, while some students still fall below this level, adds further nuance to the profile of prospective teachers in Indonesia. In the context of primary teacher education, other studies have shown that prospective teachers' pedagogical competence is generally in the Good category, though there is still room for improvement. For instance, 57.6% of teachers have been classified as possessing Good pedagogical competence, while 42.3% are categorized as Fairly Good (Sunariati et al., 2024). These data indicate that although most teachers have a solid understanding of pedagogical principles, there is still a need to implement more effective teaching strategies. Similarly, students in the Madrasah Ibtidaiyah Teacher Education (PGMI) program have demonstrated strong pedagogical competence during their professional placements. At PGMI UIN Yogyakarta, 66% of students obtained an A grade, while at PGMI IAIN Salatiga, the figure reached 90% (Royani & Maknun, 2018). These findings suggest that the education systems in those institutions have successfully equipped students with adequate teaching skills before they enter the professional field.

Nonetheless, challenges remain in developing prospective teachers' pedagogical competence, particularly in Preservice Teacher Professional Education (PPG-Prajabatan) programs. Only 6% of students have achieved the Very Good category in their pedagogical competence, indicating the need for more intensive teaching practice (Maydiantoro et al., 2024). In response to these challenges, various training programs have been designed to strengthen teacher competence. One such effort is the implementation of the School Field Introduction Program (PLP) in Central Java and Yogyakarta, which integrates technical and non-technical skills, including ethics, communication, lesson design, and evaluation, into its curriculum (Muflihin et al., 2024). Furthermore, the mentoring and evaluation methods in this program help prospective teachers develop their skills more systematically. In the realm of instructional innovation, the development of the VINESA online learning platform in East Java has also significantly enhanced pedagogical competence. This platform has received positive evaluations from instructional design experts and students, demonstrating that technology can serve as an effective alternative for improving pedagogical competence (Susarno & Setiawan, 2024).

Beyond technology-based approaches, the pedagogical competence of prospective teachers is also influenced by geographical and institutional factors. At State Islamic Universities in Central Sumatra, for example, prospective mathematics teachers have demonstrated good pedagogical and social competence, particularly in lesson planning and communication (Eliza et al., 2023). This indicates that the teacher education programs in these regions have been successful in developing the necessary competencies through targeted approaches. However, challenges remain in integrating technology with pedagogy and content. Prospective biology teachers in Jakarta, for instance, have shown only moderate levels of technological pedagogical

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content knowledge (TPCK), indicating the need to further strengthen this aspect in line with technological developments in education (Irdalisa, 2022). In addition, students at Universitas Pasir Pengaraian have experienced difficulties in translating pedagogical theories into practice during their teaching practicum (Antoni & Mustafa, 2023). These difficulties highlight the need for greater support from teacher education institutions and partner schools to help prospective teachers connect theory with classroom application more effectively.

In the present study, instructional facilities were combined to support prospective teachers' learning. Specifically, three instructional models were used throughout one semester: discovery learning and problem-based learning to strengthen the knowledge domain, and project-based learning to develop the skills domain. In line with this study's findings, these three learning models, along with the facilities above, were effective in enhancing the pedagogical competence of prospective teachers. The positive outcomes are further supported by students' individual achievements. In terms of grades, all students passed, with the lowest grade being C, in accordance with the grading guidelines of Tim Penyusun (2022). Moreover, this was the least frequent grade, obtained by only two students, whereas the A grade had the highest frequency, achieved by 21 students. The remaining grades were B+ (17 students), B (14 students), and C+ (8 students). A more detailed depiction, particularly of the interpretation associated with each grade, is presented in Figure 2.

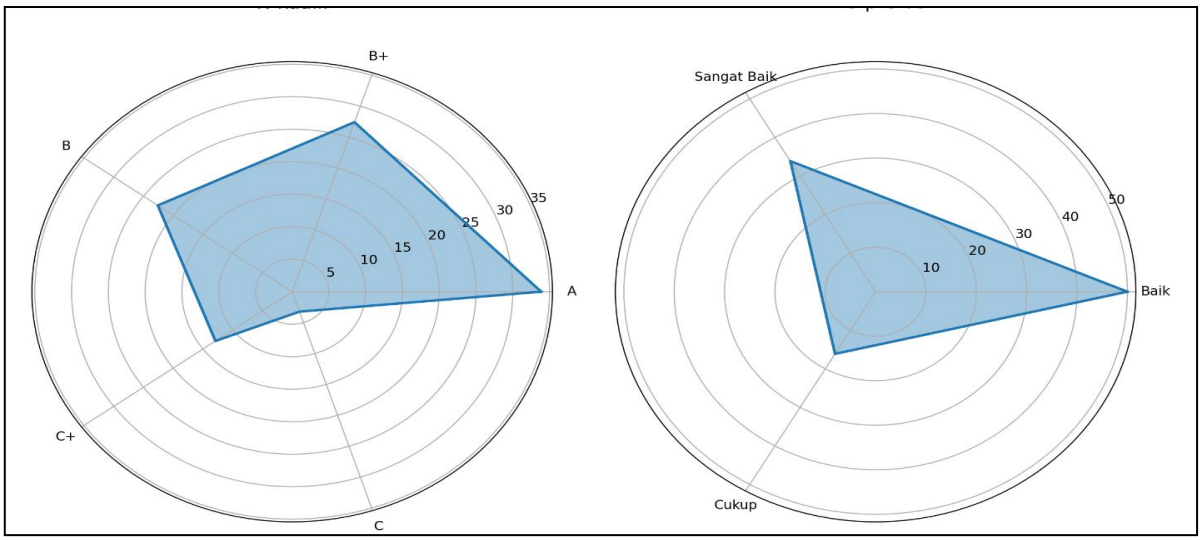

Figure 2. Distribution of students' pedagogical competencies based on grades and their interpretation

The findings illustrated in Figure 2 indicate the readiness of future educators to design effective assessments, an essential component of teaching. Such competence contributes to improved educational outcomes, as assessment serves as a key tool for understanding students' development and guiding instructional strategies. In the context of teacher training, this study's results indicate that existing programs have successfully equipped prospective educators with relevant pedagogical skills, particularly in assessment planning (Mustofa, 2024; Cansing, 2024). However, to maintain and further enhance this competence, ongoing professional development is needed through training programs that bridge theory and practice, as highlighted in vocational education research (Setiawan et al., 2024). Furthermore, strong pedagogical competence influences student engagement in learning activities, as evidenced by the correlation between teachers' teaching skills and students' motivation and classroom

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activity (Hasyim et al., 2024). Teachers' ability to design and implement effective assessments enables them to provide constructive feedback, which ultimately improves pedagogical practice and students' learning outcomes (Hikmah et al., 2024).

Prospective teachers' ability to develop sound assessments also reflects their skills in curriculum development and instructional design, which are crucial for creating engaging and effective learning experiences (Qadrianty et al., 2024). In the digital era, integrating technology into assessment and instruction has become an important aspect that demands strong pedagogical competence. Teachers who can optimally utilize technology are better able to enhance instructional effectiveness and address learners' diverse characteristics (Sauri & Sanusi, 2024). From a policy perspective, the findings of this study underscore the need to align teacher training programs with national educational standards and policies to ensure the quality of education (Sauri & Sanusi, 2024). Thus, policymakers should take these findings into account when designing educational reforms, particularly those related to teacher competence and qualifications (Kalkashev et al., 2024). Although this study's results show strong pedagogical competence, several aspects still need improvement. First, at the class level, the mean score has not yet reached the threshold of 85.00, which corresponds to an A grade and the Very Good interpretation. Second, a small number of students still fall below the Good category. These issues call for concrete efforts, such as improving the quality of instruction.

Conclusion

The pedagogical competence of prospective primary school teachers falls in the Good interpretation category, as indicated by the mean score. This is further supported by the qualitative grades, which are dominated by the Good category. These findings suggest that prospective teachers are ready to conduct learning evaluations, particularly during the teaching and learning process. Nevertheless, concrete efforts are needed to improve instruction quality so that prospective teachers can attain the Very Good level of pedagogical competence.

Recommendation

To improve the quality of the instructional process and ensure that the pedagogical competence of prospective primary school teachers reaches the Very Good category, several aspects need strengthening. First, practice-based instructional methods such as microteaching and lesson study should be optimized to enhance skills in classroom management and learning evaluation. Second, the integration of technology into lectures should be expanded so that students become accustomed to innovative teaching strategies. Third, continuous evaluation of curriculum effectiveness is necessary to ensure alignment with the demands of teacher professionalism. Through these steps, prospective primary school teachers will be better prepared to face the dynamics of learning in primary schools.

Acknowledgment

The authors would like to express their gratitude to the prospective primary school teachers who participated in this study, as well as to all parties who provided support and contributed to the successful completion of this research.

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