

Lecturers' Strategies to Enhance PGMI Students' Pedagogical Competence Through Digital Learning at Nurul Jadid University

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ABSTRACT

This study aims to analyze the implementation of technology-based learning strategies in enhancing the pedagogical competence of PGMI students at Nurul Jadid University. A descriptive qualitative approach was employed, involving respondents consisting of course instructors and 25 final-semester students. Data were collected through classroom observations, structured interviews, document reviews, and field notes. Thematic analysis was conducted to identify patterns in technology use and its impact on students' pedagogical skills. The findings indicate that the application of blended learning provides high flexibility while maintaining the quality of academic interaction between lecturers and students. The use of interactive media, such as instructional videos, infographics, and digital quizzes, was found to improve content comprehension, stimulate active participation, and reduce learning fatigue. Furthermore, technology-based projects contributed to strengthening practical skills, creativity, teamwork, and students' adaptability to advancements in educational technology. These results affirm that technology-based strategies are effective in preparing PGMI teacher candidates to meet the demands of modern education, while simultaneously enhancing their independent learning, self-confidence, and collaborative skills.

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1. INTRODUCTION

The development of information and communication technology in the digital era has changed almost all aspects of human life, including education, which has been significantly influenced by digital transformation. This shift has driven changes in interaction patterns, learning methods, and instructional strategies used in higher education. Universities are now challenged to prepare educators who are not only academically competent but also capable of adapting to technology and global dynamics. The use of digital media, online platforms, and hybrid learning methods has become an integral part of modern education. This transformation indicates that learning is no longer confined to traditional classrooms but has expanded into more flexible, creative, and interactive learning spaces (Rahma Puteri, Nur Nasution, & Irwan Padli Nasution, 2025).

The Primary School Teacher Education program (Pendidikan Guru Madrasah Ibtidaiyah, PGMI), as part of teacher training institutions, carries a strategic responsibility in preparing prospective elementary school teachers within the madrasa context. These future educators must master pedagogical competencies, which include understanding student characteristics, designing and implementing effective lessons, and conducting thorough learning evaluations. In the digital era, these requirements have become increasingly complex, as prospective teachers are also expected to integrate technology into the learning process in creative and innovative ways. Digital learning not only demands mastery of pedagogical concepts but also technical skills and an adaptive attitude toward technological changes. Lecturers, as instructors and mentors, play a crucial role in shaping these competencies through relevant and effective teaching strategies (Syifaurrehman, Fiqriani, Karoma, & Idi, 2025).

In Indonesia, integrating technology into education remains a significant challenge. Many universities face limitations in technological infrastructure, such as uneven internet access, inadequate hardware facilities, and insufficient technical support (Khairul Firdaus, 2024). Low levels of digital literacy among students and lecturers are also common obstacles (Yurianto, Nadiroh, Yusuf, & Hidayat, 2024). Some prospective teachers still struggle to fully utilize online learning platforms and digital media. Furthermore, training for lecturers to develop technology-based pedagogical skills has not been implemented consistently. This situation reveals a gap between the expectations for adaptive, professional educators and the realities observed in practice.

The concept of pedagogical competence originates from constructivist educational theory, which emphasizes active, student-centered learning processes (Anita Puspa Meilina, 2025). From this perspective, teachers are not merely transmitters of knowledge but facilitators who guide learners in constructing their own understanding (Batubara, Sinaga, & Haidir, 2024). Pedagogical competence includes the ability to recognize students' potential and needs, design instructional plans, implement appropriate teaching methods, and conduct comprehensive learning assessments. In the digital era, constructivist theory is enriched by the principles of connectivism, which highlights networks of information and the integration of technology as essential components of the learning process. Lecturers, as agents of change, must combine traditional pedagogical principles with digital approaches to create meaningful learning experiences (Purwoko & Rosyanafi, 2025).

Several previous studies have provided important insights into the effectiveness of digital learning strategies. The first study highlighted innovations in digital literacy-based blended learning for PGMI students, showing that student participation increased and their pedagogical competence improved through the use of technology (Litrianti et al., 2024). Another study found that digital literacy and the selection of instructional media had a significant influence on teachers' pedagogical competence, although it primarily focused on in-service teachers (Yadi, Kusen, & Anshori, 2024). A third study emphasizes the importance of microteaching as an effective practice method for developing students' pedagogical skills. Collectively, these studies generally agree that the use of technology and hands-on practice methods positively impacts pedagogical competence. However, there remains limited research that examines individual lecturers' strategies in depth, particularly in the context of digital learning for prospective madrasah ibtidaiyah teachers.

Preliminary observations of PGMI students' learning processes revealed lecturers' efforts to utilize digital media such as interactive videos, Google Classroom, and hybrid learning models to support instructional activities. Students responded positively to the use of interactive media, which enhanced their motivation and comprehension of the material. Nevertheless, several challenges were observed, including limited internet access in certain areas, students' insufficient readiness in using educational technologies, and varying lecturers' abilities to design digital materials. These preliminary findings suggest that, although positive steps toward digital learning have been taken, more systematic and adaptive strategies are still needed to optimize the development of pedagogical competence.

Although research on blended learning, digital literacy, and microteaching exists, studies that specifically explore lecturers' strategies for improving PGMI students' pedagogical competence in the digital era remain scarce. Many earlier studies have focused on the effectiveness of particular media or learning models rather than providing an in-depth analysis of how lecturers plan, implement, and evaluate their strategies in digital contexts. Addressing this gap is crucial, as lecturers, as the primary facilitators of learning, have a significant influence on the quality of prospective teachers' pedagogical competence.

This study offers novelty by focusing on the specific strategies lecturers employ in utilizing digital learning to enhance PGMI students' pedagogical competence. The research does not solely assess the effectiveness of media but also investigates the creative, innovative, and adaptive approaches lecturers apply in their teaching practices. Accordingly, the findings are expected to contribute new insights to the development of digital learning practices, particularly within the context of *madrasah ibtidaiyah* teacher education. Furthermore, the study is relevant to supporting curriculum development and academic policies that encourage the sustainable integration of technology.

The aim of this research is to identify how lecturers at Nurul Jadid University employ strategies to enhance PGMI students' pedagogical competence in the digital era. Its focus is on identifying the approaches used by lecturers, the challenges they face, and the impact of these strategies on strengthening students' pedagogical competence as future teachers

2. METHODS

This study employed a qualitative case study approach to gain an in-depth understanding of lecturers' strategies for enhancing the pedagogical competence of PGMI students in the digital era. This approach was chosen because it allows the researcher to explore experiences, practices, and meanings that naturally emerge within the learning context. The research was conducted from March to June 2025, involving pedagogical course lecturers as the primary informants and final-semester PGMI students as supporting informants. Secondary data were obtained from supporting documents such as Semester Learning Plans (RPS), teaching materials, and archived evaluation results. Data collection was carried out through in-depth interviews, participatory observations of both online and offline learning processes, and document analysis. Data were analyzed using thematic analysis, which included data reduction, presentation, and conclusion drawing. The validity of the data was ensured through source triangulation and member checking with the informants. All these stages produced valid and contextual findings, which were then formulated into the final report along with strategic recommendations for the development of digitally based pedagogical learning.

3. FINDINGS AND DISCUSSION

This study identified three key findings regarding the implementation of technology-based learning in strengthening the pedagogical competence of PGMI students at Nurul Jadid University. These findings were derived from the analysis of classroom observation data, Semester Learning Plan (RPS) documentation, and interpretations of information gathered from both lecturers and students.

First, blended learning emerged as the dominant strategy. Lecturers combined online and face-to-face sessions to provide students with flexible schedules and access to learning materials. The use of platforms such as Google Classroom, Zoom Meeting, and instructional videos enabled students to

review content as needed. Field observations indicated increased student attendance during face-to-face sessions supported by digital materials, whereas in online sessions, students' use of cameras and responsiveness varied, suggesting that technical assistance is still required.

Second, the use of interactive media proved effective in enhancing the understanding of pedagogical concepts. Lecturers provided digital infographics, microteaching illustration videos, and application-based quizzes such as Kahoot to motivate students. Students reported that the visualization of content made it easier for them to design lesson plans (RPP), particularly when dealing with abstract topics. Observations revealed that students were more active in discussions and asked more questions when material was presented through visual media rather than traditional lectures.

Third, technology-based projects were utilized to connect pedagogical theory with practical applications. Students were tasked with designing digital learning media, creating interactive presentations, and developing application-based lesson plans. Some projects were even presented using innovative multimedia tools, demonstrating improved creativity. Challenges included varying levels of digital literacy and internet connectivity issues, but most students successfully completed their projects with lecturer guidance and group collaboration. As shown in the table below:

No	Main Finding	Brief Description	Impact on Students
1	Blended Learning	Combination of online and face-to-face learning using digital platforms	Provides learning flexibility, repeated access to materials, and varied interaction
2	Interactive Media	Use of videos, infographics, and app-based quizzes	Enhances conceptual understanding and encourages active participation
3	Technology-Based Projects	Assignments to create digital learning media and interactive lesson plans	Develops creativity and practical pedagogical competence

The discussion of these findings indicates that technology-based learning is increasingly becoming an essential component of higher education, particularly within religious-based institutions (Zulfikhar et al., 2024). The implementation of blended learning has proven to be an effective approach for addressing limitations in students' physical attendance while simultaneously leveraging the potential of digital technologies (Hajar, Risalahwati, & Muttaqin, 2024). By combining online and face-to-face sessions, students from diverse conditions and backgrounds can continue to participate in lectures despite challenges related to distance, scheduling conflicts, or other off-campus activities. This strategy expands access to learning materials, as lecturers can provide resources that students may revisit at any time. In practice, this was evident in students' ability to utilize Google Classroom, Zoom Meetings, and instructional videos to review key concepts and deepen their understanding independently.

The use of interactive media has also made a significant contribution to fostering active student engagement and improving conceptual understanding of pedagogical principles (Syah, 2025). Visual tools such as videos, infographics, digital quizzes, and multimedia presentations created a more stimulating learning environment and reduced learning fatigue. Classroom observations revealed that students were more enthusiastic about participating in discussions, asking questions, and providing feedback when lessons were presented visually rather than through traditional lectures. Interactive media accommodated students' diverse learning styles—visual, auditory, and kinesthetic and offered opportunities to explore concepts through more contextualized learning experiences. This exposure also helped them prepare instructional designs, such as lesson plans (RPP), with greater confidence by providing engaging, concrete examples.

Beyond blended learning and interactive media, technology-based projects had a clearly positive impact on strengthening the pedagogical competence of PGMI students. In these project assignments, students were tasked with creating digital learning media, developing interactive lesson plans, and presenting their work using multimedia tools. This approach required them not only to understand the theory of instructional planning but also to integrate technology creatively into teaching practice. Such activities encouraged collaboration, idea-sharing, and problem-solving hallmarks of social constructivist learning, which emphasizes authentic experiences and social interaction in building knowledge (Syauky, Jannah, Zulfatmi, & Zubaidah, 2025). Field observations highlighted increased student creativity in developing projects and their ability to adapt instructional strategies to diverse classroom contexts.

Nevertheless, the implementation of digital strategies was not without challenges. Not all students possessed adequate digital literacy; some required basic technical guidance to navigate online learning platforms. Unstable internet connections in certain regions also hindered smooth online learning experiences. Despite these obstacles, the findings show that they can be addressed through sustained support and technical training. Students who were initially unfamiliar with platforms such as Google Classroom or Zoom demonstrated improved proficiency after receiving guidance from lecturers and peer support. This underscores the importance of careful planning, institutional support, and lecturer preparedness in anticipating potential technical difficulties.

Overall, student responses to the adoption of digital strategies were overwhelmingly positive. They perceived these learning methods as more flexible and aligned with their learning preferences as digital natives. Several students noted that having learning materials available in video format made it easier for them to review lessons as needed. They also reported feeling more confident in expressing their opinions and actively participating in group discussions when preparing project tasks. These findings indicate that technology-based strategies not only enhance comprehension of course content but also foster the development of social and collaborative skills (Fajriati, Wisroni, & Handrianto, 2024).

From the lecturers' perspective, the implementation of technology-based learning requires continuous innovation and the ongoing refinement of teaching methods. Lecturers are not only expected to master the course content but must also understand how to integrate technology effectively so that learning becomes more meaningful. A sound understanding of the interplay between technology, pedagogy, and content is essential to ensure that the use of technology goes beyond following trends and truly adds value to the teaching and learning process. In this regard, lecturers at Universitas Nurul Jadid have demonstrated considerable creativity and understanding—for example, by selecting digital media relevant to the topics taught and designing contextually appropriate materials. Nevertheless, regular evaluations remain necessary to ensure that technological innovations stay aligned with educational goals and students' needs.

The practical implications of these findings include several key considerations. First, higher education institutions must ensure that curriculum development integrates digital literacy as part of students' core competencies, given the variation in students' technological skills. Second, institutions should strengthen infrastructure support, such as improving internet connectivity, providing learning spaces equipped with multimedia tools, and optimizing online learning platforms. Third, collaboration with external partners—such as educational technology training institutions—can serve as an effective strategy to enhance the capacity of both lecturers and students in utilizing various learning applications.

Compared with previous studies, these findings expand the understanding of the effectiveness of digital learning. Earlier research has shown that students tend to be more enthusiastic when learning is supported by visual media; this study adds that technology-based projects also play a crucial role in applying pedagogical concepts (Pratiwi, Herlambang, & Muhtar, 2025). Blended learning, interactive media, and project-based assignments not only enhance student engagement but also provide more practical learning experiences suited to contemporary educational demands.

(Kusuma & Muharom, 2024). Thus, these strategies can serve as relevant learning models for various higher education contexts, particularly those within religious-based institutions.

Overall, the integration of blended learning, interactive media, and technology-based projects has been shown to enrich the learning process and improve the pedagogical competence of PGMI students. However, the success of implementation is strongly influenced by lecturer preparedness, institutional support, and students' willingness to engage actively. Continuous evaluation and further research into emerging approaches and technologies are necessary to ensure that instructional innovations continue to evolve and adapt to the dynamic needs of modern education.

4. CONCLUSION

This study found that the enhancement of PGMI students' pedagogical competence in the digital era was primarily achieved through the implementation of blended learning, the use of interactive media, and the development of technology-based projects. The application of blended learning provided flexible learning opportunities and encouraged active student participation. The use of interactive media proved effective in helping students better understand the material while simultaneously increasing their learning motivation. Meanwhile, technology-based projects enabled students to directly practice pedagogical skills, sharpen their creativity, and build teamwork. Overall, these three strategies were effective in strengthening students' pedagogical competence and are highly relevant for implementation in teacher education programs in the digital era. These findings highlight the importance of ongoing efforts to leverage educational technology and innovative teaching methods to ensure that PGMI graduates are well-prepared to meet the demands of modern education.

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