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Improving The Practice of Teacher Learning Reflection through Digital Technology-Based Lesson Study

Iman Subasman [1]

[1] Universitas Islam Bunga Bangsa Cirebon, Indonesia; imansubasman@bungabangsacirebon.ac.id

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ABSTRACT

This research explores the development of a lesson study model integrated with digital strategies, aiming to enhance collaborative learning among teachers. Using qualitative methodology, the study involved teachers from different disciplines in secondary schools. Data collection included surveys, interviews, and analyses of teaching practices. The main focus was on the implementation of digital tools such as online learning platforms, discussion forums, and collaborative learning among teachers. Data analysis uses Interpretive Phenomenological Analysis (IPA) which aims to determine the phenomenon that is the focus of the research. The results showed significant improvements in engagement, reflection, and exchange of teaching practices. Further analysis revealed that the integration of digital technologies enriched the lesson study experience by providing wider access to resources and learning communities while facilitating more efficient data collection and analysis. However, challenges related to technology training and the integration of digital resources in the curriculum were also identified. This research provides new insights into the potential of digital technology in enhancing lesson study and suggests the need for a structured approach to technology integration in teacher professional development. The findings have the potential to make significant contributions to teacher professional development literature and educational practice, particularly in adapting digital technologies for effective collaborative learning.

Corresponding Author:
Iman Subasman
Universitas Islam Bunga Bangsa Cirebon, imansubasman@bungabangsacirebon.ac.id

1. INTRODUCTION

The use of study lessons in various countries shows its adaptability and effectiveness in the context of global education. Lesson study is a collaborative form of teacher professional development, which is used to improve the learning process in the classroom (Huang &; Shimizu, 2016). For the first time, Lesson study was introduced in Japan as a professional development model (Fauziah, Putri, Zulkardi, & Somakim, 2020). Lesson study involves teachers in a collaborative cycle of planning, observing, and reflecting on learning (Siritheeratharadol, Tuntivivat & Intarakamhang, 2023). Collaborative learning,

as the core of lesson study, allows teachers to learn together and from each other (Mahmud, Usman, Sari, & Dahlan, 2023). Through a collaborative process, they can share knowledge, experience, and best practices (Hayes, Preminger, & Bae, 2023), and are proven to encourage teacher innovation and creativity Nikoçeviq, K. E., 2022). Thus, lesson study not only enhances classroom learning but also contributes positively to teachers' professional development globally.

Lesson study is important in teacher professional development (Hart, Alston, &; Murata, 2011; Nursyahidah, Albab, &; Mulyaningrum, 2023). Recent studies have shown that lesson study can improve teaching practices and strengthen teacher cooperation (Adler, Mwadzaangati, & Takker, 2023). Lesson study also allows teachers to deepen content knowledge (Robinson &; Leikin, 2012; Yoshida, 2012), improving overall teaching practice (Widjaja, Vale, Groves, &; Doig, 2017), and developing communities of practice (Saito, Khong, & Tsukui, 2012). In addition, after the teacher practices the lesson study provides a change in confidence (Samaranayake, Premadasa, Amarasinghe, & Paneru, 2018). Including attitudes toward reflection practices (Gero, 2015). Reflective practice significantly influences the development of teacher teaching practice (Bubnys &; Zavadskienė, 2017). Reflective practice allows teachers to reflect on their teaching experiences and question their teaching experiences with a critical approach (Amobi, 2005; Murray, 2010). Through lessons, study provides a means for teachers to reflect critically on their teaching experience.

Reflective practice allows teachers to investigate and critique their teaching approaches, forming a solid basis for continuous improvement in teaching quality (Holmqvist, 2017). The practice of deliberate and more detailed reflection empowers teachers to question their teaching practices more systematically (Brown, 2002). Reflective practice can be defined as techniques that help improve the performance of teachers, be they pre-service teachers or those already in service (Canning, 2011). The reflective practice serves as a guide that allows teachers to pause, reflect, and identify their current position and thus decide on the direction they want to pursue professionally in the future (Farrell, 2012). Reflective practice has a central role in the development of teacher teaching practice, both pre-service and in-service (Korucu-Kis &; Demir, 2019). Reflective practice carried out systematically, can contribute significantly to teachers' awareness of their teaching practice as well as conducting self-analysis (Houde, 2019; Rahman, 2014). Lesson study and reflection practice complement each other, forming a solid foundation for continuous professional development among teachers.

Teachers have used Classroom Action Research (CAR) as a means to practice learning reflection (Ilfiandra, Suherman, Akhmad, Budiamin, &; Setiawati, 2016). CAR has become a means of teacher reflection in Indonesia today. CAR allows teachers to assess interactions in the learning process (Chairunnisa, Istaryatiningtias, &; Khuluqo, 2020). CARCAR has also been proven to improve the quality of learning, improve teacher professionalism, and improve teacher competence (Fitria, Kristiawan, &; Rahmat, 2019). However, other research results state that CAR has not been able to improve teachers' content knowledge skills (Nasirun, Indrawati, &; Suprapti, 2021). The implementation of CAR also still has shortcomings related to theoretical studies that are still lacking references and there has been no in-depth study of the theories written (Palobo &; Tembang, 2019). In addition, the validity of CAR is still often doubted (Muzdalipah, Wahyuni, &; Hidayat, 2024). The role of teachers is also in the implementation of CAR acting 'one-man show' as teachers and researchers at the same time so that the level of subjectivity is high (Susilowati, 2018). Therefore, efforts are needed to strengthen these aspects so that CAR can be more effective and consistent in improving the quality of learning in Indonesia.

Collaborative learning, as the core of lesson study, allows teachers to learn together and from each other (Mahmud, Usman, Sari, & Dahlan, 2023). Through collaborative processes, they can share knowledge, experience, and best practices (Hayes, Preminger, &; Bae, 2024). This collaborative practice enriches teachers' learning experiences by providing new insights and diverse perspectives. Collaborative practices can enhance teaching skills as well as promote sustainable professional growth. Collaborative learning has been proven to encourage innovation and creativity in educational practices, and teacher professional development is very important in the process of improving the quality of

learning (Damrongpanit, 2022). The findings of this study related to the Lesson Study showed an improvement in their competence in preparing learning plans (Vitantri & Asriningsih, 2016). The teacher then demonstrated how lesson study practice improves reflective thinking skills (Hidajat, 2020; Subanji, 2015). The results of this study provide further understanding of the positive impact of Lesson Study in improving the quality of learning and teacher professional development.

The development of digital technology has significantly changed the state of education (Montero-Mesa, Fraga-Varela, Vila-Couñago, & Rodríguez-Groba, 2023). The application of this technology in educational environments has evolved from basic uses such as word processing and presentation, to more complex tools such as online learning platforms and learning management systems. These advances reflect a paradigm shift in educational approaches, from traditional models to more interactive and student-centric models. Digital technologies enable access to a wide and varied range of educational resources and facilitate more flexible and individualized learning (Bozkurt &; Aydin, 2023; Nikoçeviq, K. E., 2022). Recent research has shown that the use of technology in education increases student motivation and engagement and plays a role in supporting competency-based and differentiation learning approaches (Channa, Dindar, Nguyen, &; Mishra, 2023).

However, the integration of digital technology in education also poses challenges. Issues such as inequality of access to technology, teachers' digital readiness, and data security are important considerations. Adequate training and resource support are key factors in the effective application of technology in schools. A structured approach in technology integration needs to be implemented to ensure that the benefits can be enjoyed by all students and teachers. This step is important in ensuring that education remains inclusive and sustainable in the digital age. One of the gaps in the literature is a lack of understanding of how to best integrate technology in lesson study sessions (Adler et al., 2023). The question of how technology can be used to support planning, observation, and reflection in lesson study still needs to be answered. The use of digital tools can facilitate documentation and analysis of teaching practices. The lack of specific guidance on the applications of this technology suggests the need for more focused research.

The influence of digital technology on learning methods has been evident in recent years (Peramunugamage, Ratnayake & Karunanayaka, 2023). By understanding how best to integrate technology in lesson study, policymakers and education practitioners can be more effective in supporting teachers in facing today's educational challenges (Bondie, Zusho, Wiseman, Dede, & Rich, 2023). In the context of teacher collaboration, digital technology has opened up a new dimension. Digital collaborative platforms, such as online forums and educational social media, allow teachers to share resources, teaching strategies, and feedback more efficiently (Arruda, 2024), digital collaboration between teachers enhances their professional development and expands their professional networks. In addition, digital technologies facilitate the development of professional learning communities accessible to teachers from different geographical locations (Adler et al., 2023). This provides opportunities to contribute to the global exchange of knowledge and best practices, enhancing innovation in education.

The significance of investigating the use of digital technology in lesson study stems from the evolving role of technology in education. Digital technologies, including online learning platforms, social media, and collaborative tools, have been shown to enhance teaching and learning effectiveness (Bradley, Shanker, Murphy, Fenge, & Heward, 2023). However, their application in specific educational contexts (González, Villafañe-Cepeda, & Hernández-Rodríguez, 2023) remains underexplored. Integrating technology into lesson study models can create new opportunities for collaboration and learning among teachers. There is an urgent need to examine how digital technologies can enhance lesson study practices. This research aims to explore the use of digital media for reflective practice in lesson study.

2. METHODS

The method used in this study is qualitative research design using a phenomenological approach. The study of phenomenology is a narrative study that describes the experience of an individual or several individuals to various life experiences related to a concept or phenomenon (Creswell, 2009; Creswell, 2012). Phenomenology is the study of experience from an individual perspective (introspective human science) to interpret and understand those related to observing, measuring, explaining, and predicting (Manen, 2016). This additional complexity is Heidegger's attempt to provide more clarity about phenomena for philosophers or researchers. The focus is on understanding the meaning of experience by searching for themes, engaging with data interpretively, with less emphasis on essences that are important to descriptive phenomenology (Sloan &; Bowe, 2014). This research was carried out in the MGMP community for junior high school mathematics subjects in Kuningan Regency. Participants in this study were teachers who volunteered to do collaborative learning to carry out lesson study. Participant observation, interviews, and focus group discussions (Fraenkel, Wallen, & Hyun, 2011).

Participatory observation is a form of data collection that involves people participating and being observed over a period of time (Moser & Korstjens, 2018). Research data collection techniques in this study combine observation, interviews, and document studies. Observations were made to observe the process of implementing collaborative learning reflections using digital media-based lesson study. Implementing the reflection stages of learning interviews is carried out. The interview approach used is unstructured and informal, allowing for greater flexibility in interpreting the teacher's experience of reflecting on learning. Interpretive Phenomenological Analysis (IPA) is an increasingly popular technique for qualitative research aimed at understanding how people perceive and understand their experiences. The stages of interpretive phenomenology analysis are as follows: 1) reading and re-reading; Repetitive reading also allows analysts to build models of the overall structure of an interview and understand how narratives can connect different parts of an interview. 2) preliminary notes; Descriptive commentary focuses on describing the content of what the participant said, the subject of speech in the transcript (standard text), and linguistic commentary that focuses on exploring the use of a particular language by the participant. Validation is carried out through triangulation as a technique to check the validity of data by comparing the results of observations, document studies, and interviews with research objects.

3. FINDINGS AND DISCUSSION

3.1 Interpretation of Results in the Context of Lesson Study and Digital Technology

This research shows that the integration of digital technology has provided a new dimension to the lesson study model. Through the use of online learning platforms and collaborative tools, interactions between teachers become more dynamic and flexible (Hernández-Sellés, Muñoz-Carril, & González-Sanmamed, 2022; Solomon, Eriksen, & Bjerke, 2023). Digital technology allows teachers to share resources and teaching practices more efficiently. In addition, the use of discussion forums facilitates a wider exchange of ideas and learning strategies. This proves that digital technology can enrich the process of reflection and discussion in lesson study (Walsh, Witherspoon, Schunn, &; Matsumura, 2023). This research provides evidence on how technology can improve the quality of collaborative learning among teachers (Adler et al., 2023; Tanujaya, Prahmana, &; Mumu, 2023).

In the context of this study, the use of digital tools is proven to increase teacher involvement in the learning process. The survey conducted showed a significant increase in the frequency and quality of teacher interaction after the implementation of digital technology. Tools such as online learning platforms provide opportunities for teachers to access a wide variety of learning resources that were previously unavailable. This indicates that digital technologies facilitate access to a wider range of information and learning resources. Thus, digital technology not only enriches the lesson study

experience (Trybulkevych, Shchegoleva & Gruba, 2021) but also expands the scope of teacher learning. Digital technology contributes significantly to enriching the learning process and professional development of teachers.

Analysis of data from interviews with teachers showed that the use of digital technology encourages deeper reflection. Teachers state that digital platforms make it easier for them to reflect on their teaching practices more critically. This is due to the ease of recording and analyzing teaching practices through digital media. In addition, online discussion forums allow teachers to receive constructive feedback from their peers in real time. Thus, digital technology not only supports the exchange of teaching practices but also enriches the reflection process, which is a key component of lesson study (Bondie et al., 2023). This research underscores the importance of digital technology in supporting ongoing professional development for teachers.

The use of digital tools in lesson study also reveals some challenges. One of them is the need for technology training for teachers. Research shows that some teachers face difficulties in adapting to the use of new technologies. This shows that the integration of digital technologies in education requires a structured approach and adequate training. Therefore, researchers suggest the existence of training programs designed to help teachers master digital tools. With proper training, digital technology can be utilized optimally in supporting lesson study (Fauziah et al., 2020).

This research provides important insights into how digital technology can optimize lesson study models. Digital technology is proven to not only enrich collaborative learning but also open up new opportunities in teacher professional development (Walsh et al., 2023). However, the effectiveness of the integration of these technologies depends on adequate training and adaptation of digital resources. This research underscores the need for a holistic approach to integrating technology in education. Thus, this research contributes significantly to the teacher professional development literature and educational practice, particularly in the context of adapting digital technologies for effective collaborative learning (Tombak-İlhan, Alcı, &; Güven-Hastürk, 2023). This research paves the way for further research in this field, particularly related to the implementation and evaluation of digital technology in education.

Increased engagement, reflection, and exchange of observed teaching practices.

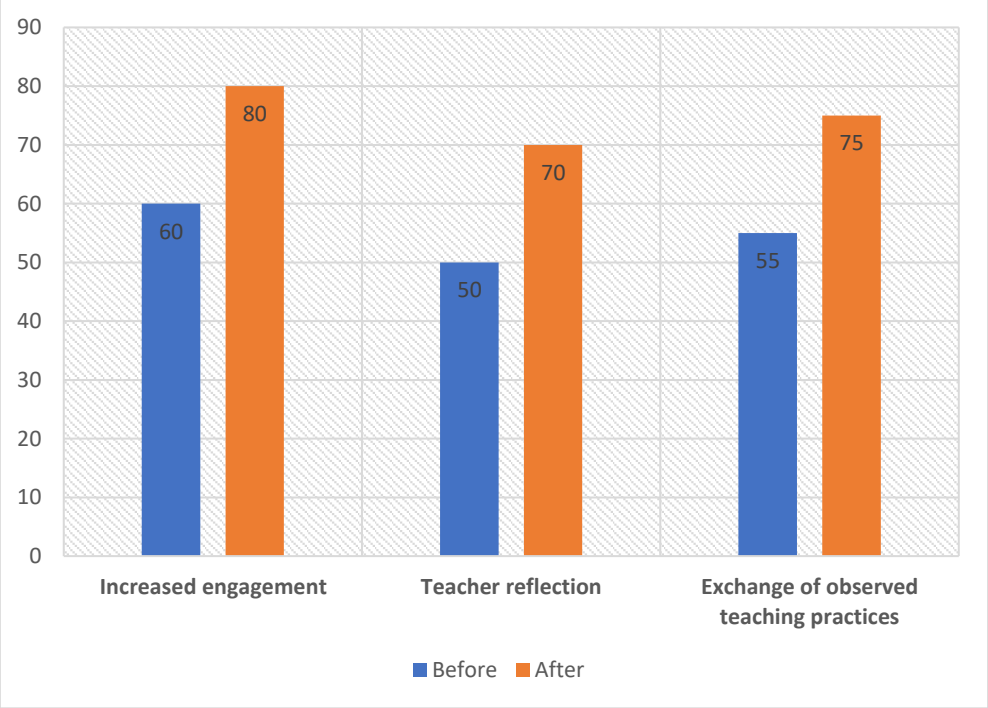

Figure 1. Value comparison before and after digital technology integration

From the results of the research conducted, there is significant evidence of increased teacher involvement in lesson study after the integration of digital technology. The survey data showed a consistent increase in the frequency and depth of discussions among teachers. The use of digital platforms has facilitated the exchange of ideas and teaching strategies, even outside of formal office hours. This indicates that digital technologies provide greater flexibility and accessibility in collaborative learning processes (Falbe & Seglem, 2023). This improvement is not only limited to the communication aspect but also to the qualitative aspect of teacher engagement. This research proves that digital technology can effectively increase teacher participation in professional learning.

In addition, the study also found that teachers' reflections on their teaching practices became more profound with the presence of digital technology. Through tools such as video recorders and online discussion platforms, teachers can analyze and reflect on their teaching practices in more detail. This enables the identification of aspects that can be improved and inspires innovation in teaching practice. This deeper reflection is important in teacher professional development, especially in the context of lesson study (Willems, 2019). Therefore, researchers emphasize the importance of digital technology in supporting a critical and constructive reflection process. The integration of this technology is a catalyst for improving the quality of learning and teaching.

The exchange of teaching practices between teachers has also increased significantly. Through online forums, teachers can share and discuss various teaching approaches from different disciplines. It enriches teachers' insights and knowledge, opening up opportunities for interdisciplinary learning. Analysis of forum data shows that discussions are becoming more diverse and richer with perspectives. Thus, digital technologies have expanded the scope and quality of the exchange of teaching practices. Research shows that digital technology can be an important tool in supporting collaborative cooperation and learning among teachers (Montero-Mesa et al., 2023).

In the context of lesson study, teacher involvement in using digital technology also contributes to the formation of a more dynamic learning community. This community is not only limited to the scope of the school but also includes a wider network of teachers. The results of surveys and interviews show that teachers feel more connected and supported through these communities. This digital learning community provides access to diverse resources and experiences, enriching the learning process and professional development. Therefore, researchers recommend utilizing these digital communities as an integral part of lesson study. This shows how digital technology can strengthen professional networks and support continuous learning (Awang-Hashim, Yusof, Benlahcene, Kaur & Shanmugam, 2023; Spear-İlhan et al., 2023).

This research reveals how the integration of digital technology in lesson study can increase engagement, reflection, and exchange of teaching practices. This research proves that digital technology not only enriches teachers' learning experiences (Adler et al., 2023), but also supports the formation of more effective and inclusive learning communities (Huachara-Martinez, Erazo-Moreno, Paz-Checa, Chomba-Sung, &; Nina-Cuchillo, 2023). This integration opens up new opportunities in teacher professional development and improves the quality of education. However, the study also underscores the importance of effective training and adaptation to digital technologies. Therefore, this research became an important contribution to the literature on teacher professional development and the use of technology in education. Researchers suggest that further research be conducted to optimize the integration of technology in the context of education and learning.

3.2 Evaluate the impact of digital strategies on teacher professional development

This research shows that the integration of digital strategies has a significant impact on teachers' professional development. Through the use of digital technology, teachers gain access to a variety of innovative and effective learning methods. The use of digital platforms makes it easier for teachers to interact and collaborate with colleagues from various disciplines. This broadens their horizons and knowledge in teaching practice. Digital technology is becoming an important tool in supporting

continuous learning and teacher competency development. This integration paved the way for improving the quality of education and teacher professionalism.

The utilization of online discussion forums and digital resources has encouraged teachers to participate in professional learning communities. In this community, teachers can share experiences and find solutions to challenges faced in teaching practice. This interaction shows an improvement in aspects of collaboration and communication between teachers. In addition, the ability to analyze and reflect on teaching practices is increasing thanks to access to digital analysis tools. Thus, digital strategies support teachers' professional growth through collaborative and reflective skills development (Diamond & Bulfin, 2023). This research confirms that digital collaboration can be a driving factor in teachers' professional development.

Digital technology also plays an important role in improving teachers' access to the latest training and educational resources. Through webinars, online courses, and digital learning materials, teachers can stay up-to-date with the latest developments in education. This is especially important in an educational context that is constantly evolving and requires adaptation to new teaching methods. Therefore, the integration of digital technologies in teacher professional development contributes to the improvement of the quality of learning and teaching. This research proves that access to digital learning resources has an important role to play in supporting teachers' professional growth. Therefore, researchers suggest that educational institutions strengthen technological infrastructure to support teachers' professional development.

In addition, the study also found that the use of digital technology improves teachers' ability to manage and analyze data. With digital data analysis tools, teachers can be more effective in evaluating and improving their teaching practices. These data analysis skills are critical in an evidence-based learning approach. Thus, digital technologies enhance not only teaching skills but also analytical abilities, which are invaluable in teacher professional development. This research shows that the use of digital technology in data analysis can strengthen evidence-based learning practices among teachers. Therefore, the integration of data analysis technology in teacher learning is an important step in professional development.

In conclusion, the study underscores the importance of integrating digital strategies in teacher professional development. With the utilization of digital technology, teachers can improve their skills in various aspects, from collaboration to data analysis. In an era of ever-changing education, adaptation to digital technologies is key to sustainable professional growth. This research suggests that educational institutions and policymakers provide adequate support for the integration of digital technologies. As such, this research contributes significantly to the understanding of the role of digital technology in teacher professional development. This research also opens up opportunities for further research in this field, especially regarding the implementation and evaluation of digital strategies in teacher professional development.

3.3 Digital technologies provide wider access to educational resources

Digital technology has revolutionized the way educational resources are accessed. With the internet and digital platforms, teachers and students can now access a variety of learning materials from all over the world. The research suggests that digital technologies enable access to more diverse and inclusive resources, which previously might have been limited due to geographical or economic factors. This opens up opportunities for teachers to enrich their teaching materials with resources from different cultures and contexts. In addition, this easy access also makes it easier for teachers to keep abreast of the latest developments in the field of education. Thus, digital technologies play an important role in providing broad and egalitarian access to educational resources.

In addition, digital technology also facilitates access to various online learning platforms and courses (Hadyaoui & Cheniti-Belcadhi, 2023). These platforms often provide interactive learning materials, such as videos, quizzes, and simulations, which can increase student understanding and engagement. The research found that the use of these digital resources can significantly improve

student learning outcomes. Digital learning platforms also allow teachers to customize teaching materials according to the needs and learning speed of each student. Digital technologies expand access to resources and enrich teaching and learning methods.

The use of digital technology also strengthens the formation of professional learning communities. Through online forums, social media, and virtual conferences, teachers can collaborate, share experiences, and learn from each other without being limited by geographic location. This research shows that these online communities are invaluable in supporting teachers' professional development. The community also allows for the exchange of ideas and teaching practices between teachers from different backgrounds and specialties. Digital technologies enrich teachers' professional experiences by expanding their networks and collaborations.

Digital technology also provides access to specialized and specific educational resources, such as academic journals, conferences, and workshops. This is especially important for teachers who want to develop their knowledge and skills in a particular area. The study found that access to these specific resources improved teachers' ability to implement research-based teaching practices. This, in turn, improves the quality of classroom teaching. Therefore, digital technology plays an important role in supporting the continuous learning and professional development of teachers.

In conclusion, digital technology has changed the educational landscape by providing broader access to resources and learning communities. By providing access to diverse resources, interactive learning platforms, professional communities, and specific materials, digital technologies have improved the quality and effectiveness of education. This research shows that digital technology is not only important for expanding access but also for supporting teachers' professional growth and development. As such, this research makes a significant contribution to the understanding of how technology can be used to improve education in the digital age. Digital technology, with its vast potential, is key to driving innovation and progress in education (Rubtsova, Zheleznyakova, Anosova, &; Dashkina, 2023).

3.4 Resources and collaborative learning and learning communities.

Broader access to educational resources through digital technologies has important implications for collaborative learning (Bondie et al., 2023; Trybulkevych, K. Shchegoleva, T., & Gruba, 2021). This research shows that with the availability of various learning materials and online platforms, teachers and students can collaborate more easily, both inside and outside the classroom. This allows for the creation of a more dynamic and interactive learning environment, where students can learn from multiple sources and perspectives. This collaboration not only increases student engagement but also enriches the learning process with various views and ideas (Magnusson, 2023). Therefore, this wider access helps in creating a more holistic and inclusive learning experience.

Access to online learning platforms and digital resources also strengthens the formation of Professional Learning Communities. The study found that teachers can utilize online forums, webinars, and social media to share learning experiences, strategies, and resources. This enables the creation of a strong network of support and collaboration among teachers from different backgrounds and locations. These learning communities are critical in the context of continuing professional development, enabling teachers to learn from each other and stay current with best practices in education. This suggests that wider access to technology facilitates the exchange of valuable knowledge and experience among educators.

Furthermore, access to extensive digital resources allows for the development of more creative and innovative learning materials. Teachers can integrate various resources such as videos, animations, and interactive simulations into the curriculum, which increases student understanding and engagement. This research shows that the use of these various media and resources can enrich the learning process, allowing students to learn in a variety of ways that suit their learning style. This broader access to digital resources has positive implications for the quality and effectiveness of classroom learning.

This broader access also has implications for the learning of students in remote or underprivileged areas. Digital technologies enable students from these areas to access quality educational resources that may not have previously been available to them (Peramunugamage et al., 2023; Pischetola, Møller & Malmborg, 2023). This helps in reducing educational gaps and ensures that all students have equal opportunities to learn and develop. Thus, the study emphasizes the importance of digital technologies in promoting equity and inclusion in education (Hackett et al., 2023; Walsh et al., 2023). This research shows that broader access to resources and communities through digital technologies has far-reaching implications for collaborative learning and learning communities (Hatzigianni et al., 2023). This not only enriches the learning experience for students and teachers, but also strengthens professional support networks, inspires innovation in teaching, and supports efforts to achieve equity in education. This research makes a significant contribution to the understanding of how technology can be used to strengthen education systems and support effective and inclusive learning. This research emphasizes the importance of utilizing technology in education to ensure that every student has access to quality educational resources.

3.5 Research Boundaries and Directions for Future Research

This research faces methodological limitations that suggest the need for a mixed methodological approach in future research to gain a more holistic understanding of the use of technology in education. This approach will allow researchers to explore the nuances and dynamics that are missed by purely quantitative or qualitative methodologies, as well as understand in depth the reasons behind the phenomena that occur. Future research is also expected to involve a more diverse and representative sample of different types of schools, including in remote and underprivileged areas, to gain greater insight and ensure that findings can be generalized more effectively. Furthermore, the focus of future research should be on the development and evaluation of specific technology-based interventions, such as the creation of innovative digital learning tools, technology-integrated teacher training programs, and assessment strategies that utilize digital tools, to make a significant contribution to educational practice and shape the future of education in the digital age.

4. CONCLUSION

This research significantly contributes to understanding and advancing the use of digital technology in the context of lesson study. The results show that the integration of digital technologies enriches the lesson study experience by increasing teacher engagement, collaboration, and reflection, as well as facilitating more effective communication, access to broader resources, and more inclusive and diverse learning. This discovery is important because it provides concrete evidence of how technology can be used to support teacher learning and professional development. In addition, the study highlights the importance of preparing and supporting teachers in the use of digital technology, suggesting that adequate training and technical support are key to the effective application of technology in education. This emphasizes the need for investment in human resource development as well as technological infrastructure to address challenges in lesson study, such as time and resource constraints. This research provides valuable insights into how digital technologies can be integrated into Lesson Study to effectively enhance teacher learning and professional development. With the right support, digital technology can be a highly effective tool in collaborative learning approaches, not only increasing efficiency but also creating richer and more diverse learning opportunities. The results will contribute to the educational literature by providing a deeper understanding of the potential of digital technology in teacher education and learning and set the foundation for future research that can explore and expand innovative ways of using technology to support education and professional development, playing an important role in shaping the future of teacher education in the digital age. In the future, the integration of technology in teacher education must continue to be investigated and developed to meet the needs of education in the digital age.

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