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A Scoping Literature Review about Impact of Lesson Study on Teacher Pedagogy: Effective Solutions in Learning Practices

Aryanti[1*], Eviana Hikamudin[2], Rusdiono Muryanto[3], Dian Peniasiania[4], Rina Heryani[5]
[1,2,3,4]Department of Pedagogy, Universitas Pendidikan Indonesia, Bandung, Indonesia
[5] Department of Primary School Teacher Education, Universitas Pendidikan Indonesia, Bandung, Indonesia
*Corresponding author: aryantiba@upi.edu

Abstrak

Lesson Study telah dikenal sebagai cara efektif dalam mengembangkan pedagogis guru, dengan fokus pada kolaborasi, refleksi, dan peningkatan berkelanjutan dalam praktik pengajaran. Sementara itu pedagogi guru merupakan elemen krusial dalam proses pembelajaran yang berdampak langsung pada prestasi atau hasil belajar siswa. Melalui tinjauan literatur pelingkupan dengan menerapkan pendekatan Preferred Reporting Items for Systematic Reviews and Meta-Analysis (PRISMA), tujuan penelitian ini menggali dampak Lesson Study terhadap pedagogi guru, mengidentifikasi dampaknya, tantangan yang dihadapi, dan peluang yang ada dalam dekade terakhir untuk penelitian dan praktik pendidikan masa depan. Data artikel diperoleh dari database scopus (n=117) dan eric (n=7), kemudian melalui proses screening dan eligibility diperoleh 16 artikel untuk dianalisis lebih lanjut. Fokus utama tinjauan literatur ini mencakup tren penelitian Lesson Study, faktor-faktor yang mempengaruhi pedagogi guru melalui Lesson Study, dan pengaruhnya terhadap pencapaian siswa. Hasil menunjukkan dominasi negara United Kingdom dalam penerapan Lesson Study, prevalensi jenjang SMA dalam penerapan, dan dominasi matematika sebagai bidang keilmuan utama. Lebih lanjut, ditemukan dua kategori utama faktor yang mempengaruhi pedagogi guru melalui Lesson Study: Strategi Kolaboratif dan Perencanaan Strategis. Temuan selanjutnya bahwa bahwa Lesson Study tidak hanya meningkatkan pemahaman konsep dan hasil belajar siswa tetapi juga meningkatkan kepercayaan diri dan kemampuan berpikir matematis mereka. Kesimpulan dari penelitian ini menegaskan peran kritis Lesson Study dalam pengembangan profesional guru, mendorong kolaborasi yang signifikan dan perencanaan strategis untuk meningkatkan kualitas pendidikan secara keseluruhan.

***Kata kunci*:** Lesson Study, *Pedagogi, Pembelajaran, Tinjauan Literatur Pelingkupan*

Abstract

Lesson Study has been recognized as an effective solution in teachers' pedagogical development, focusing on collaboration, reflection, and continuous improvement in teaching practices. Meanwhile, teacher pedagogy is a crucial element in the learning process that directly impacts student achievement or learning outcomes. Through a scoping literature review using the Preferred Reporting Items for Systematic Reviews and Meta-Analysis (PRISMA) approach, this research aims to explores the impact of Lesson Study on teacher pedagogy, identifying its impacts, challenges faced, and opportunities that exist in the last decade for future research and educational practice. Article data were obtained from the Scopus (n=117) and ERIC (n=7) databases, then through a screening and eligibility process, 16 articles were selected for further analysis. This Scoping Literature Review focuses on the trends in Lesson Study research, factors influencing teacher pedagogy through Lesson Study, and its effects on student achievement. The literature results show that the United Kingdom is dominant in applying Lesson Study, high school-level implementation is prevalent, and mathematics is the main subject area. Furthermore, two main categories of factors influencing teacher pedagogy through Lesson Study were identified: Collaborative Strategies and Strategic Planning. Further findings reveal that Lesson Study not only enhances students' conceptual understanding and learning outcomes but also boosts their confidence and mathematical thinking abilities. The conclusion of this research affirms the critical role of Lesson Study in the professional development of teachers, promoting significant collaboration and strategic planning to improve the overall quality of education.

Keywords: Lesson Study, Pedagogy, Learning, Scoping Literature Review

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1. INTRODUCTION

Improving the quality of education is a primary goal in advancing education systems worldwide. Amidst the dynamics of change and the demands for continuously evolving innovation, the professional development of teachers becomes key in ensuring student academic and social success (Kohli, 2018; Warren, 2021). In this context, Lesson Study

emerges as a promising approach to shaping and enhancing teacher instructional practices (Fernandez & Yoshida, 2004; Makinae, 2019). Rooted in the rich educational traditions of Japan, Lesson Study has attracted the attention of educators around the globe for its emphasis on collaboration, reflection, and ongoing improvement in teaching (Akiba & Wilkinson, 2016; Bayram & Bıkmaz, 2021; Nurwidodo et al., 2018; Rappleye & Komatsu, 2017). Previous study revealed that Lesson Study promotes a collaborative process where teachers design, implement, and reflect on a lesson together, aiming to deepen their understanding of the subject matter and refine their teaching strategies to be more effective and responsive to student needs (Chong & Kong, 2012). Thus, Lesson Study becomes an alternative solution for teachers to address learning cases to enhance their pedagogical skills.

Teacher pedagogy is a crucial element in the learning process that directly impacts student achievement or learning outcomes (Filgona et al., 2020; Kohli, 2018; Muhaimin & Juandi, 2023). The importance of teacher pedagogy in learning can be explained through several dimensions, including the quality of classroom interactions (Koh, 2019; Yürekli Kaynardağ, 2019), the use of effective teaching methods (Mynbayeva et al., 2018; Sivarajah et al., 2019), the ability to adapt to the diverse learning needs of students, and the creation of a conducive learning environment (Dörnyei & Muir., 2019; Tohara, 2021). Previous study added that effective pedagogy directly impacts improving student learning outcomes (Sammel et al., 2014). Teachers can enhance students' understanding of concepts, skills, and attitudes toward the subject by applying teaching strategies that align with learning objectives and student needs. The role of Lesson Study here, as a collaborative approach in teacher professional development, supports all essential aspects of effective pedagogy (Odondi, 2024). This, in turn, contributes to the improvement of student learning achievements.

Lesson Study is not only a tool for enhancing teaching practices but also a means to develop and refine overall teacher pedagogy (Dörnyei & Muir., 2019; Huang & Shimizu, 2016). With a focus on collaboration, reflection, and continuous learning, Lesson Study offers a comprehensive and sustainable approach to improving the quality of education and student learning outcomes. Through this approach, teachers become more adaptive, responsive, and effective in meeting students' learning needs while promoting the development of a collaborative and innovative learning community across various countries (Huang & Shimizu, 2016). Although Lesson Study has been implemented in various educational contexts worldwide, research on its impact on teacher pedagogy and student learning outcomes continues to evolve. Therefore, this article aims to conduct a scoping literature review to explore the impact of Lesson Study on teacher pedagogy. This review not only reveals the strengths and challenges associated with this approach in enhancing education quality but also identifies opportunities for future research and educational practice. By examining Lesson Study research trends over the last decade, this review will discuss its impact on teacher pedagogy and its influence on students' abilities across various learning aspects.

Previous literature reviews, such as those conducted systematically reviewed the history and current conditions of lesson study in Germany (Bucher et al., 2024). Similar research conducted through a Systematic Literature Review (SLR) focused on Lesson Study in Japan and the United States (Saito, 2012). Both studies were limited to specific countries and did not specifically address its role in teacher pedagogy. Another study systematically reviewed lesson studies focusing on mathematics learning (Ding et al., 2024). However, no SLR articles specifically discuss the impact of lesson study on classroom teacher pedagogy, including lesson study factors and the influence of lesson study by students. Lastly, other research on an SLR study of Lesson Study and its role in teacher professionalism shares similarities with this study (Cheung & Wong, 2014). However, other research focused on data from the years 2000 to 2010, whereas this study examines data from the last 10 years.

Therefore, the novelty of this research focuses on the impact of lesson study on teacher pedagogy in the learning context.

2. METHODS

This study utilizes a scoping literature review to comprehensively understand the literature on student mathematical literacy in mathematical problem-solving. This approach is aimed at gathering and analyzing studies or data in an organized manner, involving stages of identification, selection, and evaluation of relevant research following the guidelines (Moher et al., 2009). This study adopted the Preferred Reporting Items for Systematic Reviews and Meta-Analysis (PRISMA) method as a guideline. To initiate the search for review articles, we used the keywords ("lesson study" AND "teacher pedagogy" OR "pedagogy") to assist researchers in finding articles in relevant journal databases. The stages of the scoping review process, such as identification, screening, eligibility, and included, are detailed in the PRISMA flow diagram in Figure 1.

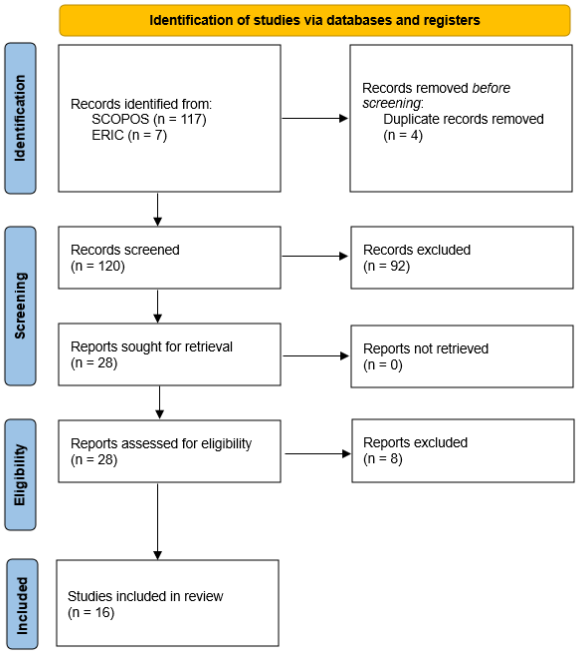

Figure 1. Schematic of the PRISMA approach

In the process of identifying articles relevant to the field of Education, we explored the SCOPUS and ERIC databases. We chose these two databases for their reputation for housing high-quality journals. The search was conducted in February 2024, using specific keywords to narrow the search results. We found 124 articles that matched our criteria, with 117 articles from the SCOPUS database and 7 articles from the ERIC database. At this stage, 4 duplicate articles were also removed from the total articles obtained.

The articles we found were then organized into a table based on their database source for a deeper selection process. We applied selection criteria that included articles published in peer-reviewed journals, articles published within the last decade, i.e., from 2014 to 2024, those available in open access, and those written in English. Out of the initial 120 articles identified, only 28 articles met these selection criteria, while the other 92 articles were excluded for not meeting our set criteria. The criteria for article inclusion and exclusion are clearly outlined in Table 1.

Table 1. Criteria of inclusion and Exclusion in the Screening Stage

Criteria	Inclusion	Exclusion
Type of publication	Solely journal articles	Non-empirical studies and proceeding articles
Language	English	Other
Year of publication	Publications from 2014 to 2024	research outside the year range of inclusion requirements
Accessibility	Full-text articles or open access	Preview articles or articles requiring a payment

Base on Table 1, after removing duplicate articles, 28 articles remained, which we reviewed further. The review criteria included the article's relevance to the predefined variables and keywords, relevance to the research questions, relevance to the type of research, and relevance to the field of study. Of these 28 articles, 8 did not meet our review criteria, leaving only 16 articles considered relevant and worthy of further analysis. Criteria of inclusion and exclusion in the eligibility stage is show in Table 2.

Table 2. Criteria of Inclusion and Exclusion in the Eligibility Stage

Criteria	Inclusion	Exclusion
Article title and keyword	An appropriate title and keyword that complied with the study's requirements	Did not match the requirements of the study and had an irrelevant title and keyword
Content	A relevant to the research question	An irrelevant to the research question
Field of article study	Lesson study and teacher pedagogy	Other

From the 16 selected articles, we summarized and displayed them in Table 3 according to the topics or research questions posed before we began discussing each of these articles one by one. From the selected articles, we then analyzed each one and extracted facts to answer the research questions that have been presented.

Table 3. Categories of Article Reviews

No	Author	Country	Level	Area	Factor	Achievement
1	(Bakker et al., 2024)	Nederland	SHS	Mathematics	Strategy planning	Understanding
2	(Wood & Cajkler, 2016)	United Kingdom	University	Mathematics	Strategy planning	Understanding
3	(Cajkler & Wood, 2015)	United Kingdom	JHS	Geography	Strategy planning	Learning outcomes
4	(Bartolini Bussi et al., 2017)	Italia	ES	Mathematics	Strategy planning	Understanding
5	(Samaniego & Espinosa, 2022)	Philippines	SHS	Mathematics	Strategy planning	Understanding
6	(Lamb & Aldous, 2016)	United Kingdom	SHS	Sport	Collaborative strategy	Understanding
7	(Pan et al., 2023)	Taiwan	SHS	Mathematics	Strategy planning	Self-confident
8	(Collet & Nakawa,	United	SHS	Social	Collaborative	Understanding

No	Author	Country	Level	Area	Factor	Achievement
	2022)	States		sciences	strategy	
9	(Wood & Cajkler, 2018)	United Kingdom	JHS	Mathematics	Collaborative strategy	Understanding
10	(Coenders & Verhoef, 2018)	Nederland	SHS	Chemistry	Strategy planning	Understanding
11	(Alsaeed, 2022)	Germany	SHS	Mathematics	Collaborative strategy	Learning outcomes
12	(Rochintaniawati et al., 2019)	Indonesia	SHS	Biology	Collaborative strategy	Understanding
13	(Aykan & Yıldırım, 2022)	Turkey	SHS	Mathematics	Collaborative strategy	Understanding
14	(Midgette et al., 2018)	United States	SHS	Mathematics	Collaborative strategy	Understanding
15	(Roorda et al., 2024)	Nederland	SHS	Mathematics	Collaborative strategy	Understanding
16	(Amador & Weiland, 2015)	United States	University	Mathematics	Collaborative strategy	Mathematical thinking

Note: Senior High School (SHS), Junior High School (JHS), and Elementary School (ES)

3. RESULTS AND DISCUSSION

Results

Lesson Study Trends

This trend in lesson study presents literature on the position and implications of lesson study within the global educational research framework. The analysis of this research trend not only examines the presence of lesson study in various countries (geographically) where the research is conducted but also considers the distribution patterns across different educational levels, from primary to tertiary education, as well as diversity in the research focus that spans various fields of educational science. Thus, a deep understanding of these aspects allows us to delve more deeply into the impact and relevance of lesson study in the context of globally improving education quality. Geographical distribution of studies by country is show in Figure 2.

Figure 2. Geographical Distribution of Studies by Country

The analysis of geographical distribution shows significant diversity among nine different countries, including the United Kingdom (Cajkler & Wood, 2015; Lamb & Aldous, 2016; Wood & Cajkler, 2016, 2018), the United States (Amador & Weiland, 2015; Collet & Nakawa, 2022; Midgette et al., 2018), the Netherlands (Bakker et al., 2024; Coenders & Verhoef, 2018; Roorda et al., 2024), Italy (Bussi et al., 2017), Germany (Alsaeed, 2022),

Turkey (Aykan & Yıldırım, 2022), Taiwan (Pan et al., 2023), Philippines (Samaniego & Espinosa, 2022), and Indonesia (Rochintaniawati et al., 2019). Findings show that European countries have a high research trend, such as the United Kingdom (the most), the United States, and the Netherlands, when compared to Asian countries like the Philippines, Indonesia, and Taiwan. Distribution of research by educational level is show in Figure 3.

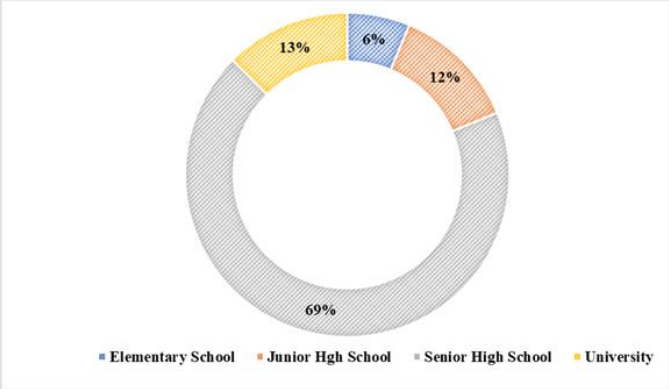

Figure 3. Distribution of Research by Educational Level

The analysis of research distribution on lesson study shows significant variation across educational levels, from elementary school (Bartolini Bussi et al., 2017), junior high school (Wood & Cajkler, 2018), senior high school (Alsaeed, 2022; Aykan & Yıldırım, 2022; Bakker et al., 2024; Coenders & Verhoef, 2018; Collet & Nakawa, 2022; Lamb & Aldous, 2016; Midgette et al., 2018; Pan et al., 2023; Rochintaniawati et al., 2019; Samaniego & Espinosa, 2022), to university (Amador & Weiland, 2015; Wood & Cajkler, 2016).

Findings in this section indicate that the senior high school level has the highest research trend with 11 studies, followed by the university and junior high school levels with 2 studies each, and the elementary school level with the fewest at 1 study. This unique finding can be explained by several important factors related to the characteristics of education at these levels and the role of lesson study in supporting teaching and learning activities, such as the complexity of the learning material or strategies that teachers consider effective in the learning process. Research distribution by field of study is show in Figure 4.

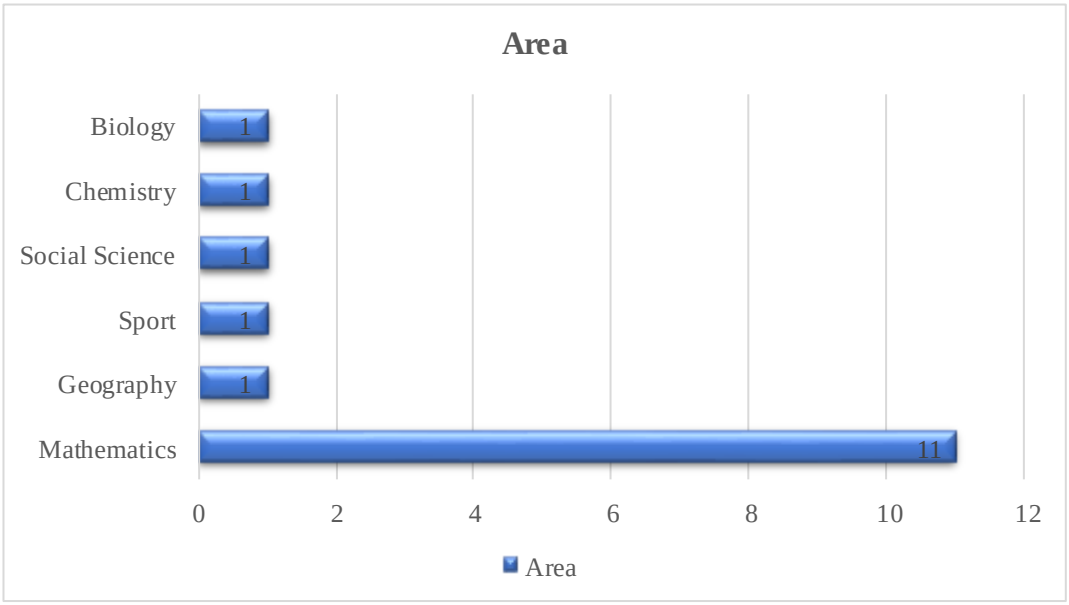

Figure 4. Research Distribution by Field of Study

Among all these fields, mathematics is the discipline where lesson study is most frequently applied, as seen in the diagram visualization in Figure 4. The complexity of mathematics is the main factor behind this trend. Many researchers reveal that students have difficulty understanding mathematical material. Through lesson study, numerous studies have demonstrated the effectiveness of teaching mathematics in the classroom.

Lesson study has been applied across various disciplines, including mathematics (Alsaeed, 2022; Aykan & Yıldırım, 2022; Bakker et al., 2024; Bartolini Bussi et al., 2017; Midgette et al., 2018; Pan et al., 2023; Roorda et al., 2024; Samaniego & Espinosa, 2022; Wood & Cajkler, 2016, 2018), biology (Rochintaniawati et al., 2019), chemistry (Coenders & Verhoef, 2018), social sciences (Collet & Nakawa, 2022), geography (Cajkler & Wood, 2015), and sports (Lamb & Aldous, 2016). Then lesson study factors in teacher pedagogy is show in Figure 5.

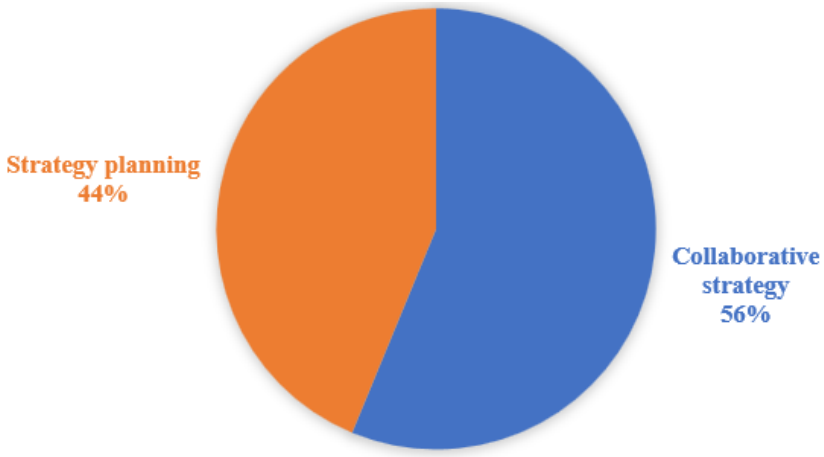

Figure 5. Research Distribution based on Lesson Study Factors

This topic presents literature on the factors of lesson study that influence teacher pedagogy. Base on Figure 5, there are 2 categories of factors affecting teacher pedagogy: Collaborative Strategy and Strategy Planning. The Collaborative Strategy factor includes Bridging the gap between theory and practice (Bakker et al., 2024), experience and development of reflective processes for prospective teachers (Wood & Cajkler, 2016), teachers' understanding of constructivist learning strategies (Samaniego & Espinosa, 2022), sharing experiences, thoughts, and ideas related to teaching and learning (Coenders & Verhoef, 2018), collaborative inquiry skills, collaboration in forming technology learning strategies (Rochintaniawati et al., 2019), team efforts to solve common problems related to solving mathematical problems (Roorda et al., 2024), and integrating lesson study with appropriate support into the field experience for prospective teachers (Alsaeed, 2022).

The Strategy Planning factor of lesson study includes Expanding and deepening understanding of learning and teaching (Wood & Cajkler, 2016), especially in working with international student groups (Alsaeed, 2022), teaching qualifications, pedagogical literacy, enhancing good learning planning and application of mathematics (Cajkler & Wood, 2015), improving learning strategies (Lamb & Aldous, 2016), influencing pedagogy and teacher attitudes in various social and cultural contexts (Collet & Nakawa, 2022), insights into teacher teaching and learning, teaching practices, learning strategies in the pandemic era, and meeting and devising learning strategies (Wood & Cajkler, 2018), improvements in teacher pedagogy (Cajkler & Wood, 2015). Distribution of research based on the influence of lesson study on student abilities is show in Figure 6.

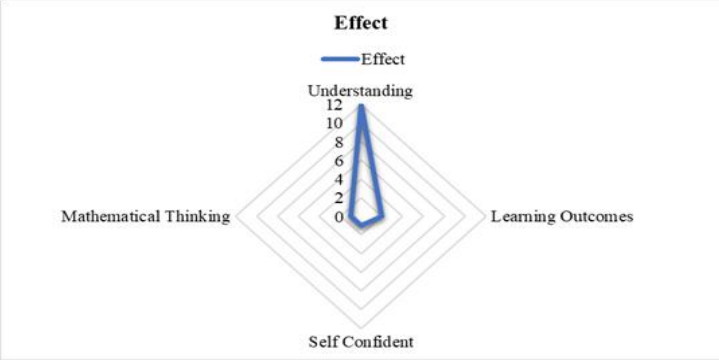

Figure 6. Distribution Influence of Lesson Study on Student Abilities

The findings indicate that lesson study, as a collaborative learning approach where teachers plan, observe, and reflect on lessons together, significantly enhances student abilities. The data visualization in Figure 6 clearly presents this information. From the data provided, it is evident that lesson study improves students' conceptual understanding (Aykan & Yıldırım, 2022; Bakker et al., 2024; Bartolini Bussi et al., 2017; Coenders & Verhoef, 2018; Collet & Nakawa, 2022; Lamb & Aldous, 2016; Midgette et al., 2018; Rochintaniawati et al., 2019; Roorda et al., 2024; Samaniego & Espinosa, 2022; Wood & Cajkler, 2016, 2018), learning outcomes (Alsaeed, 2022; Cajkler & Wood, 2015), confidence (Pan et al., 2023), and mathematical thinking abilities (Amador & Weiland, 2015).

This signifies that lesson study contributes more than just enhancing academic knowledge; it also supports the development of students' cognitive and affective abilities (Amador & Weiland, 2015). Findings show that the role of lesson study has a comprehensive impact on learning, with the most significant impact on students' understanding, followed by students' learning outcomes, self-confidence, and finally mathematical thinking skills.

Discussion

The prominence of the United Kingdom can be attributed to various educational innovations initiated by educators there in addressing learning issues. Among the most notable practices is lesson study, where teachers in the United Kingdom often involve their colleagues in the planning, observation, and discussion to improve the learning process (Buchanan & Parry, 2019; Coenders & Verhoef, 2018). This initiative, as described by previous study highlights the importance of continuous professional development and knowledge exchange among educators, creating an environment that supports innovation and enhances teaching quality (Chong & Kong, 2012; Greenhow et al., 2021). Furthermore, education in European countries is considered superior compared to Asia consistent with findings showing that the United Kingdom, the United States, and the Netherlands dominate the research trends in lesson study (Thieme et al., 2012). Therefore, a strong focus on professional development and collaboration among teachers in European countries is a key factor behind the high research trends in these countries, offering a model for other countries in promoting educational research and innovation.

This inclination can be explained by several key factors related to the characteristics of education at this level and the role of lesson study in supporting teaching and learning activities. This complexity arises not only due to more abstract subject matter (Muhaimin et al., 2024; Niss & Højgaard, 2019; Prahani et al., 2021), but also due to other demands on teachers, including the need to integrate technology into teaching (Agormedah et al., 2019), adapt to various student learning styles (Akram et al., 2022; Dasari et al., 2024; Rahmi et al., 2023), and prepare students for national exams or standardized tests that often emphasize a deep understanding of the material. To address these challenges, a more strategic and mature

approach is require. Lesson study, as a collaborative method involving the design, observation, and joint reflection on teaching practices, becomes invaluable (Lewis et al., 2019; Richit et al., 2021). Through lesson study, teachers can jointly explore and evaluate effective teaching strategies for abstract material and identify ways to overcome barriers in students' understanding at the senior high school level. This not only strengthens teachers' teaching skills but also helps in developing more inclusive and accessible teaching materials for a diverse range of student learning types (Aas, 2023; González & Deal, 2019). Furthermore, other study add that lesson study supports the exchange of experiences and creative solutions among teachers, which ultimately contributes to improving the overall quality of learning at all educational levels (Chong & Kong, 2012).

Mathematics is often viewed as an abstract and challenging subject by both students and educators (Graven & Heyd-Metzuyanim, 2019; Scheiner et al., 2019). This negative perception makes mathematics one of the subjects students dislike the least. Additionally, based on the literature in Figure 3, the high school level has the most applications, and the mathematical material at this level is now about more than concrete mathematics. However, it has entered the realm of abstract mathematics (Muhaimin et al., 2023; Muhaimin & Juandi, 2023). Consequently, in the learning process, teachers often face various challenges, including students' difficulties in understanding mathematical concepts (Tambychik & Meerah, 2010), fear or anxiety towards mathematics (Mutodi & Ngirande, 2014), and low student motivation to learn mathematics (El-Adl & Alkharusi, 2020; Fuqoha et al., 2018).

In facing these challenges, lesson study emerges as an effective learning strategy. This strategy facilitates teachers to collaborate in designing, observing, and reflecting on the learning process, aiming to enhance students' understanding and ability to solve mathematical problems (Guner & Akyuz, 2020; Takahashi & McDougal, 2016). Collaboration and joint reflection with fellow teachers can encourage the development of more creative teaching methods tailored to the specific needs of students. Other study revealed through their research findings that through Lesson Study, teachers can evaluate each other regarding the problems found while also providing solutions or strategies for solving the problems faced by teachers (Hourigan & Leavy, 2023). In this way, it can address various issues in learning, especially in complex mathematics learning. Thus, lesson study becomes a valuable tool for teachers in responding to and overcoming students' difficulties in learning mathematics, enabling more dynamic, interactive, and engaging learning for students and effectively changing their perceptions towards mathematics. Simultaneously, this highlights mathematics as a research trend in lesson study due to the numerous problems teachers encounter in teaching mathematics, whether from students, the material, or the approaches used.

Collaborative strategy in lesson study highlights the importance of cooperation and reflective processes in teaching, particularly in teacher pedagogy. Connecting theory with practice ensures that theoretical knowledge is integrated into real classrooms, thereby strengthening the foundations of teaching with empirical evidence for teachers (Chong & Kong, 2012; Winje & Løndal, 2021; Yin, 2019).. Shared reflective experiences and discussions on constructivist learning strategies enrich the collective understanding and assist in developing more effective and responsive teaching methods (Kolb & Kolb, 2009; Suppiah et al., 2020). Collaborative inquiry skills and teamwork in problem-solving are essential components in identifying and addressing barriers in the learning process, especially in challenging fields such as the complexities of mathematics learning (Graesser et al., 2018). This factor also includes the use of technology as part of the learning strategy and the integration of lesson study into the field experience of prospective teachers, enriching their preparation to become professional educators (Coenders & Verhoef, 2018; Harris & Hofer, 2011).

Strategy Planning is enhancing the ability to plan and execute effective teaching strategies. This factor broadens the understanding of learning and teaching, especially in education in various countries worldwide, and is crucial in developing inclusive and global pedagogy (Huang & Shimizu, 2016; Opertti & Brady, 2011). Pedagogical literacy and good learning planning create a foundation for more meaningful and structured teaching. Adaptive and flexible learning strategies become critically important in changing contexts, such as during the COVID-19 pandemic (Negara et al., 2022; Srinivasan et al., 2021). This factor also emphasizes the need for teachers to meet and collaborate in designing innovative learning approaches and ensuring that these approaches are relevant to the continuously evolving pedagogical challenges.

This study has several limitations that need to be considered. First, the literature search was limited to SCOPUS and ERIC databases. While these databases are known for their collection of high-quality journals, this limitation may have resulted in relevant studies that may be available in other databases needing to be identified. Second, this study only included data from articles published within the last ten years, from 2014 to 2024, limiting visibility into trends and the impact of Lesson Study before this period. Third, only articles written in English and available in open access were examined, potentially overlooking relevant research published in other languages or accessible through paid subscriptions. Fourth, because the article focuses on the impact of Lesson Study on teacher pedagogy and student learning outcomes, other aspects, such as its influence on the emotional well-being of teachers or students, were not explored. Further research using a broader database, extending the search period, and including articles in various languages and paid articles will enrich the understanding of Lesson Study in education. Additionally, considering the psychosocial aspects of the Lesson Study could provide additional insights into its benefits for the educational community.

Based on the above disscussion, to expand the study on Lesson Study, future research opportunities could include comparative studies exploring how Lesson Study is adapted and applied in different countries and cultures. This would provide insights into how this approach is tailored to meet the unique needs of diverse education systems. Further research could also be expanded to other disciplines, such as social sciences or languages, to identify the benefits and challenges of Lesson Study beyond mathematics and science. Lastly, there is untapped potential in integrating technology into Lesson Study, which could be an important focus for subsequent research.

4. CONCLUSION

Lesson Study plays a crucial role in the professional development of teachers through collaborative strategies and strategic planning. The analysis of the geographic distribution of research indicates that Lesson Study is widely applied in various countries, with the United Kingdom dominating. Furthermore, the high school level is the predominant educational stage for the application of Lesson Study, and the abstract nature of mathematical material forms the basis for its dominance in the field of study in the application of Lesson Study by teachers.

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