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SCALING LESSON STUDIES FOR EDUCATIONAL REFORM:  
EXPLORING CHANGE MANAGEMENT AND  
IMPLEMENTATION STRATEGIES – A SYSTEMATIC  
LITERATURE REVIEW

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**Abstract:**

LS (LS), originating from Japan, refers to a collaborative professional development practice that has gained worldwide recognition for its effectiveness in enhancing teaching quality and student learning. Despite its proven benefits, scaling LS for systemic educational reform presents significant challenges, particularly in the realms of change management and implementation strategies. This Systematic Literature Review (SLR) seeks to identify and examine the main factors that impact the successful scaling of Lesson Studies within educational systems. Employing a comprehensive search across databases, which include (WoS), and Scopus, we screened 731 articles published between 2020 and 2024. The study's flow is based on the PRISMA framework. After applying inclusion criteria, 36 peer-reviewed studies were selected for in-depth analysis. The results indicate three themes: (1) change management and scaling strategies, (2) teacher capacity building and professional growth, and (3) cultural, social, and contextual adaptations. The findings indicate that adjusting LS to accommodate cultural, institutional, and social factors strengthens its role in continuous teacher development. While scaling LS poses challenges, particularly in maintaining collaboration virtually, digital platforms offer viable solutions without compromising core elements. Effective leadership and culturally responsive strategies are essential for successful implementation. LS's flexibility, emphasis on teamwork, digital adaptability, and adaptive leadership make it a robust model for educational reform and teacher development across diverse settings. This review adds to the existing literature by synthesizing current knowledge on implementation strategies and providing practical recommendations for educators and policymakers aiming to leverage Lesson Studies for educational reform. Upcoming research should prioritize longitudinal studies to assess the long-

term effects of these strategies on educational outcomes as well as investigate innovative solutions to the challenges identified.

**Keywords:**

LS, Lesson Studies, Change Management, Educational Reform

**Introduction**

Educational reform is an ongoing imperative to enhance teaching quality, foster collaborative professional development, and ultimately improve student outcomes. Among the various strategies employed to achieve these goals, Lesson Study (LS) has emerged as a highly effective and collaborative professional development practice. LS, which began in Japan, is a collaborative approach where teachers work together to plan, observe, and analyze lessons to improve teaching practices and deepen their pedagogical understanding. The systematic and reflective nature of LS cultivates a culture of constant enhancement as well as Professional Learning Communities (PLCs), making it a promising approach for widespread educational reform. However, scaling LS across diverse educational contexts poses significant challenges despite its proven benefits. These challenges include ensuring effective change management, fostering robust knowledge management systems, and implementing strategies that sustain teacher collaboration and professional growth.

Scaling LS necessitates addressing technology-based and people-based Knowledge Management (KM) strategies to assist and maintain effective teacher collaboration and knowledge sharing. Cheng (2020) emphasizes the critical role of KM strategies in sustaining LS, highlighting that people-based approaches—such as PLCs, cultivating communities of practice, as well as mentoring schemes—are pivotal in nurturing a knowledge-sharing culture. These strategies enable teachers to internalize and apply shared knowledge, enhancing their instructional practices. Conversely, information technology-based KM strategies, while effective in promoting knowledge sharing, may fall short in ensuring the internalization of knowledge, underscoring the need for a balanced approach. Additionally, leadership serves a crucial role in the successful implementation and scaling of LS. Chu (2016) illustrates that principals' effective knowledge leadership is essential for initiating and sustaining KM processes within schools. Leaders must act as knowledge vision builders, enablers, and role models to create an environment conducive to collaborative learning and continuous improvement. Without strong leadership, the launch and sustained practice of LS is likely to encounter significant obstacles, hindering its potential impact on educational reform. Given the multifaceted nature of scaling LS, an SLR is essential to synthesize existing research and identify effective change management and implementation strategies. This review explores the interplay between KM, leadership, and collaborative practices in scaling LS for educational reform.

By examining a diverse range of studies, including those by Cheng (2020) and Chu (2016), the review will illuminate best practices and common challenges encountered in various educational settings. Furthermore, it will determine gaps in the existing literature, providing a foundation for upcoming studies and practical applications. The goal is to develop a comprehensive framework that school leaders and policymakers can utilize to effectively scale LS, thereby driving sustainable and impactful educational reform. This SLR will add to the body of knowledge by offering evidence-based insights as well as actionable strategies,

ensuring that LS can be effectively integrated and scaled across different educational contexts to foster continuous professional development and improve student learning outcomes.

### Literature Review

Scaling LS for educational reform demands an intricate balance of effective change management and strategic implementation methodologies. A prominent research trend emphasizes the essential role of KM strategies in maintaining and enhancing LS initiatives. Cheng (2020) investigates the impact of people- and information technology-based KM strategies, revealing that human-centric approaches, such as fostering communities of practice and PLCs, significantly bolster knowledge sharing and internalization among educators. In parallel, Chu (2016) underscores the critical influence of leadership in KM implementation, illustrating how principals who adopt roles as knowledge vision builders and enablers can effectively drive LS practices. Additionally, Cheng, Hu and Shi (2019) explore cultural dimensions influencing LS in Japan, utilizing Nonaka and Takeuchi's SECI model to highlight how a high-trust culture and strong professional accountability are pivotal for embedding LS within educational institutions. Collectively, these studies demonstrate that both human-focused and technological KM strategies, supported by robust leadership, are fundamental for the successful expansion of LS across varied educational landscapes.

Leadership is consistently identified as a cornerstone in the literature concerning the scaling of LS, playing a vital role in initiating and sustaining collaborative professional development practices. Chu (2016) illustrates that proactive leadership from principals is indispensable for effective KM processes, thereby facilitating the ongoing practice of LS. Brundrett and Rhodes (2010) expand on this by discussing the broader role of leadership in enhancing quality and accountability within educational systems, providing a comprehensive framework that links leadership strategies to improved learning outcomes. Furthermore, Lipscombe, Buckley-Walker and Tindall-Ford (2023) examine the micro-processes enacted by middle leaders in fostering teacher collaboration, identifying procedural management and purposeful dialogue as key practices supporting effective PLCs. These contributions collectively highlight that strong leadership initiates and maintains the collaborative environments necessary for LS to thrive, thereby driving meaningful educational reform. Such leadership models facilitate the scaling and sustainability of LS across various educational settings.

PLCs and collaborative inquiry are extensively recognized as foundational elements for effectively scaling LS. Harris and Jones (2017) introduce the Disciplined Collaboration (DC) model, which emphasizes structured collaborative inquiry with integrated assessment measures, enhancing teacher engagement and the impact of professional learning. Postholm (2018) reinforces this perspective by reviewing studies demonstrating how collective and cooperative professional development processes among teachers lead to significant improvements in teaching practices and overall school performance. Complementing these findings, McKenney (2019) underscores the importance of developing the human, material, and structural infrastructure that facilitates collaborative curriculum design, which, in turn, enhances teacher professional development through LS. These studies collectively advocate for well-structured and supported collaborative frameworks as vital for accomplishing the scaling and sustainability of LS initiatives across diverse educational contexts.

Cultural and contextual factors significantly influence the implementation and scaling of LS, as evidenced by various studies. Kuno (2014, 2018) examines the cultural factors in Japan that contribute to the effective execution of LS, highlighting the importance of a high-trust culture

and the practice of Kaizen Kata for continuous improvement. Tan (2021) further explores the integration of bansho, a traditional Japanese chalkboard practice, into LS, providing guidelines for its incorporation into the LS cycle and emphasizing its role in enhancing pedagogical practices. Additionally, Zhang and Wong (2021) investigate the perceptions of teachers in China regarding their knowledge development through school-based learning activities, revealing that while self-knowledge and local knowledge are well-developed, collective and system knowledge require further emphasis. These studies collectively illustrate that cultural and contextual nuances significantly influence the effectiveness and scalability of LS, suggesting that adaptations may be necessary to align LS practices with the specific cultural and institutional contexts of different educational settings.

Despite the extensive research on LS and its scaling, several gaps and weaknesses persist within the current literature. While Cheng (2020) and Chu (2016) provide comprehensive insights into KM strategies and leadership, there is a clear gap in research exploring the integration of these strategies in diverse cultural and institutional contexts beyond Japan and Hong Kong. Kuno's work, though thorough in the Japanese context, highlights the need for similar research in other cultural settings to understand how LS can be effectively adapted and sustained globally (Kuno, 2014, 2018). Additionally, the effectiveness of information technology-based KM strategies in ensuring knowledge internalization, as identified by Cheng et al. (2019), indicates a potential limitation in relying solely on technological tools without adequate people-based support. Furthermore, Postholm (2018) and Harris and Jones (2017) call for more formative intervention studies to explore learning processes and actively drive expansive transformation led by practitioners, highlighting a gap in research focused on practical implementation and the long-term sustainability of LS at scale. Addressing these gaps is essential for developing a more holistic and adaptable framework for scaling LS in diverse educational environments.

### Research Question

Filling these gaps allows future research to develop more effective methodologies. Research Questions (RQs) are essential in a Systematic Literature Review (SLR) as they define the scope and guide the review process. Well-formulated RQs ensure the review remains focused, relevant, and specific, helping to determine which studies to include or exclude. They support a comprehensive search by minimizing bias and organizing the data, which leads to meaningful insights. RQs improve clarity, eliminating ambiguity and keeping the review targeted on specific issues. Furthermore, they enhance transparency and reproducibility, enabling replication of the review. Ultimately, RQs align the review with the study's objectives, whether identifying gaps, assessing effectiveness, or exploring trends.

Defining RQs is essential in the planning phase and forms the foundation of any SLR, as it guides the review methodology (Keele, 2007). Our SLR aims to assess the current state-of-the-art. The PICO framework, proposed by Lockwood, Munn and Porritt (2015), is used to formulate RQs. PICO stands for Population, Interest, and Context: **\*\*Population (P)\*\*** identifies the participants of interest, **\*\*Interest (I)\*\*** focuses on the phenomenon being studied, and **\*\*Context (Co)\*\*** defines the setting or environment of the study.

Employing the PICO framework systematically structures research questions by delineating study components, ensuring precision and focus, facilitating comprehensive literature searches and effective study design. This study formulated three RQs:

- How do educational institutions implement change management and scaling strategies (to sustain lesson studies across diverse educational settings)?
- In what ways do lesson studies contribute to enhancing teacher capacity within the framework of educational reforms?
- How do lesson studies facilitate professional growth and adapt to cultural, social, and contextual needs within various educational environments?

### Material And Methods

To conduct SLRs, the Preferred Reporting Items for Systematic Reviews and Meta-Analyses (PRISMA) framework by Page et al. (2021) is the standard, promoting thoroughness, transparency, and consistency. Adhering to PRISMA enhances accuracy and rigor through systematic identification, screening, and inclusion of relevant studies. It emphasizes randomized studies to minimize bias and provide solid evidence. WoS and Scopus were chosen for their extensive coverage and robustness. The PRISMA framework encompasses four stages: identification, screening, eligibility, and data abstraction. Identification involves searching databases for relevant studies. Screening excludes lower-quality studies based on predefined criteria. In the eligibility phase, selected studies are assessed for inclusion rigorously. Finally, data abstraction synthesizes findings, ensuring the comprehensive systematic review yields robust insights to inform future research and practice.

### Identification

This research implemented key stages of the systematic review process, beginning with selecting keywords and related terms using dictionaries, encyclopedias, and previous research. These terms formed search strings for the WoS and Scopus databases, identifying 731 relevant publications.

**Table 1: The Search String**

<b>Scopus</b>	ALL (“LS” OR “lesson studies” AND “change management” OR “educational reform”) AND ( LIMIT-TO ( PUBYEAR , 2020 ) OR LIMIT-TO ( PUBYEAR , 2021 ) OR LIMIT-TO ( PUBYEAR , 2022 ) OR LIMIT-TO ( PUBYEAR , 2023 ) OR LIMIT-TO ( PUBYEAR , 2024 ) ) AND ( LIMIT-TO ( LANGUAGE , “English”) ) AND ( LIMIT-TO ( SRCTYPE , “j”) ) AND ( LIMIT-TO ( PUBSTAGE , “final”) ) AND ( LIMIT-TO ( DOCTYPE , “ar”) ) <b>Date of Access: October 2024</b>
<b>WoS</b>	“LS” OR “lesson studies” AND “change management” OR “LS” OR “lesson studies” AND “change management” OR “educational reform” (All Fields) and Article (Document Types) and 2020 or 2021 or 2022 (Publication Years) and Article (Document Types) and English (Languages) and Article (Document Types) and 2023 or 2022 or 2021 or 2020 (Final Publication Year) and Article (Document Types) Date of Access: October 2024
<b>Date of Access: October 2024</b>	

### Screening

In the screening phase, research items were evaluated for alignment with the established RQs, focusing on LS, change management, and educational reform while removing duplicates. Initially, 500 publications were excluded, leaving 230 papers for detailed analysis based on specific inclusion and exclusion criteria (see Table 2). The review included only English-



language publications from 2020 to 2024, excluding non-English works, pre-2020 publications, conference papers, book reviews, and in-press items.

**Table 2: The Selection Criterion Is Searching**

Criterion	Inclusion	Exclusion
Language	English	Non-English
Timeline	2020 – 2024	< 2020
Literature type	Journal (Article)	Conference Paper, Book Chapter, Conference Review, Review, Book
Publication Stage	Final	In Press

### *Eligibility*

In the third step, known as the eligibility phase, 74 articles were selected for review. At this stage, the titles and key content of each article were thoroughly examined to confirm they satisfied the inclusion criteria and aligned with the current research objectives. Consequently, 23 articles were excluded for reasons such as being outside the relevant field, having insignificant titles, presenting abstracts that did not relate to the study's objectives, or being unable to access the full text of some empirical evidence. Consequently, 51 articles remained for the subsequent review.

### *Data Abstraction and Analysis*

This study employed integrative analysis to examine and synthesize various research designs, particularly quantitative methods, to identify significant topics and subtopics. Data collection-initiated theme development, as depicted in Figure 2, illustrates the analysis of 36 publications to identify relevant content. The authors reviewed substantial research on integrating digital tools and multimedia with inquiry-based learning, assessing each study's methodologies and findings. Collaboratively, themes were developed based on evidence, with a log maintained to document analyses, perspectives, questions, and insights. Results were compared to identify discrepancies in theme development, with disagreements resolved through discussions among co-authors.

**Table 3: Number and details of Primary Studies Database**

No	Authors	Title	Journal	Scopus	WoS
1	(Druken, 2023)	Practicing Teachers' Perspectives on the Purposes of Mathematics LS	Mathematics Teacher Education and Development	/	
2	(Hourigan & Leavy, 2024)	The complexities of assuming the 'teacher of teachers' role during LS	Professional Development in Education	/	
3	(Ni Shuilleabhain, Owens, Seery, & Hyland, 2024)	From beginning to mature: investigating the development of teacher community through LS	Frontiers in Education	/	
4	(Capone, Adesso, Manolino,	Culturally crafted LS to improve teachers' professional development in	Journal of Mathematics	/	

	Minisola, & Robutti, 2024)	mathematics: a case study in Italian secondary school	Teacher Education		
5	(Seleznyov, Goei, & Ehren, 2024)	International policy borrowing and the case of Japanese LS: culture and its impact on implementation and adaptation	Professional Development in Education	/	
6	(Zhang & He, 2023)	Facilitating language teachers' learning to teach critical thinking through LS	Teachers and Teaching: Theory and Practice	/	
7	(Bakker, Vries, & de Glopper, 2023)	Exchange on subject pedagogy during LS in initial teacher education	International Journal for Lesson and Learning Studies	/	
8	(Assalihee, Bakoh, Boonsuk, & Songmuang, 2024)	Transforming Islamic Education through LS (LS): A Classroom-Based Approach to Professional Development in Southern Thailand	Education Sciences	/	
9	(Qin, 2024)	Collaborative inquiry in action: a case study of LS for intercultural education	Asian-Pacific Journal of Second and Foreign Language Education	/	
10	(Tan, 2021)	Bansho as part of lesson and LS: from the origins to the present	International Journal for Lesson and Learning Studies	/	
11	(Jiang, Choy, & Lee, 2020)	Refining teaching expertise through analyzing students' work: a case of elementary mathematics teacher professional learning during LS in Singapore	Professional Development in Education	/	
12	(Tsukui & Saito, 2022)	History of subjectivity in dispositif: changing arrangements of Vietnamese teachers' meeting through LS for learning community	Asia Pacific Journal of Education	/	
13	(Patfield, Gore, & Harris, 2022)	Scaling up effective professional development: Toward successful adaptation through attention to underlying mechanisms	Teaching and Teacher Education	/	

14	(Zhang, Liu, Zheng, Luo, & Cheng, 2022)	Analysis of Social Interaction and Behavior Patterns in the Process of Online to Offline LS: A Case Study of Chemistry Teaching Design-Based on Augmented Reality	Asia Pacific Journal of Education	/	
15	(Arii, 2022)	Perceptions of leadership teams regarding organizational knowledge creation through LS: perspectives from P. Gronn's hybrid leadership	International Journal for Lesson and Learning Studies	/	
16	(McMillan & Jess, 2023)	Embracing complex adaptive practice: the potential of LS	Professional Development in Education	/	
17	(Boom-Muilenburg, de Vries, van Veen, Poortman, & Schildkamp, 2022)	Leadership practices and sustained LS	Educational Research	/	
18	(Khokhotva & Elexpuru Albizuri, 2020a)	Student voice in LS as a space for EFL teachers' learning: a case study in Kazakhstan	International Journal for Lesson and Learning Studies	/	
19	(Khokhotva & Elexpuru Albizuri, 2020b)	Teachers' educational beliefs change through LS: implications for school culture	International Journal for Lesson and Learning Studies	/	
20	(Nguyen, 2020)	Promoting Thai pre-service English teachers' reflective ability through microteaching LS	Asian EFL Journal	/	
21	Cheng (2020)	Knowledge management strategies for sustaining LS	International Journal for Lesson and Learning Studies	/	
22	(An, Chen, Fang, & Liu, 2022)	How does LS promote district education reform? – A case study of a district in Shanghai	International Journal for Lesson and Learning Studies	/	
23	(Bakker, de Glopper, & de Vries, 2022)	Noticing as reasoning in LS teams in initial teacher education	Teaching and Teacher Education	/	
24	(Richit & Tomkelski, 2020)	Secondary school mathematics teachers'	Acta Scientiae	/	



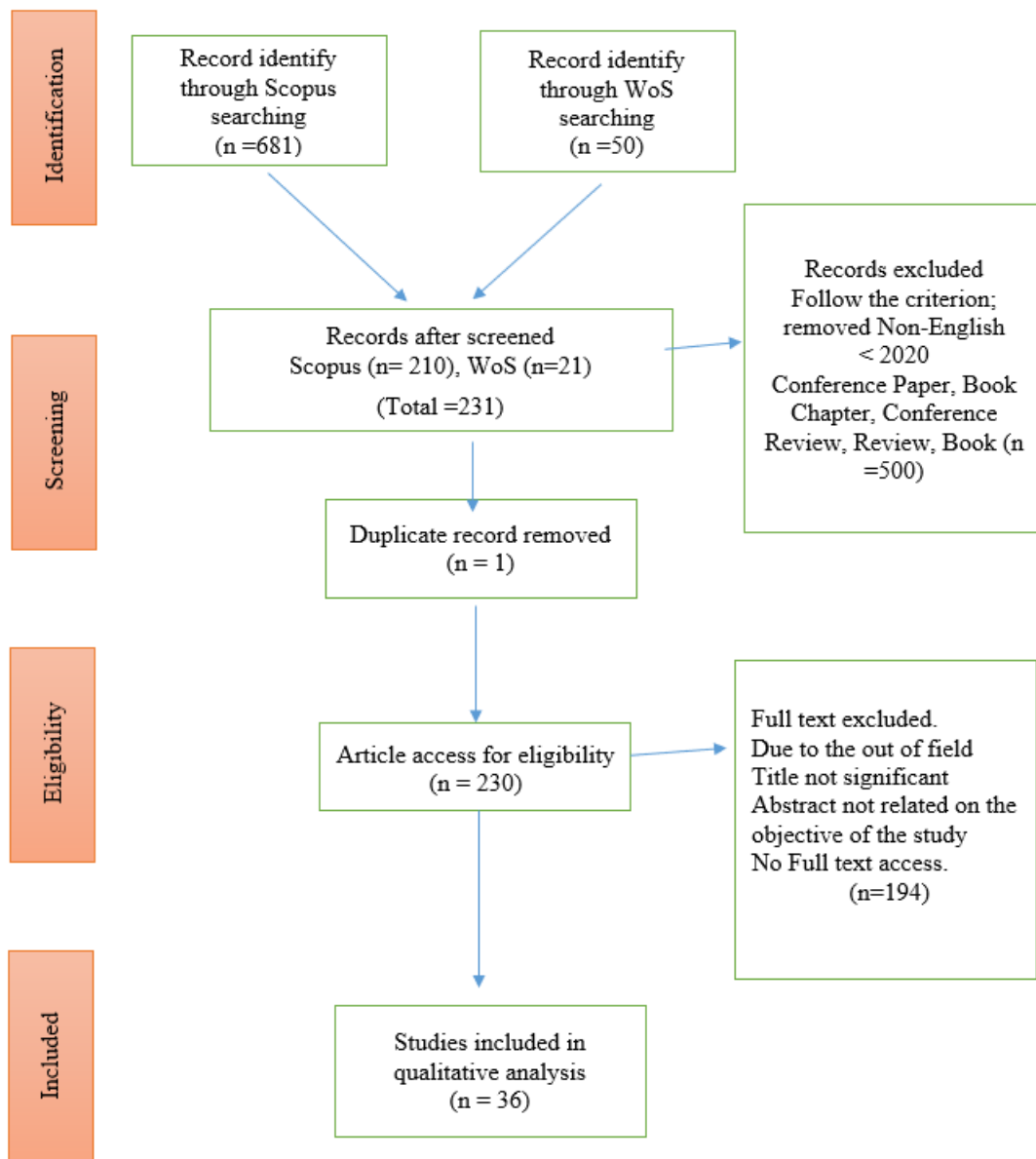
		professional learning in a LS			
25	(Wolthuis, van Veen, de Vries, & Hubers, 2020)	Between lethal and local adaptation: LS as an organizational routine	International Journal of Educational Research	/	
26	(Wake & Seleznyov, 2020)	Curriculum design through LS	London Review of Education		/
27	(Goei et al., 2021)	Online LS: virtual teaming in a new normal	International Journal for Lesson and Learning Studies		/
28	(Lee & Tan, 2020)	Teacher learning in LS: Affordances, disturbances, contradictions, and implications	Teaching and Teacher Education		/
29	(Jhang, 2020)	Teachers' attitudes towards LS, perceived competence, and involvement in LS: evidence from junior high school teachers	Professional Development in Education		/
30	(Halvorsen, Harris, Doornbos, & Missias, 2021)	LS in historical inquiry: Teachers working across rural communities	Teaching and Teacher Education		/
31	(Huang, Helgevold, & Lang, 2021)	Digital technologies, online learning and LS	International Journal for Lesson and Learning Studies		/
32	(Uffen, de Vries, Goei, van Veen, & Verhoef, 2022)	Understanding teacher learning in LS through a cultural-historical activity theory lens	Teaching and Teacher Education		/
33	(Fox & Poultney, 2020)	Teacher professional learning through LS: teachers' reflections	International Journal for Lesson and Learning Studies		/
34	(da Ponte, Quaresma, & Mata-Pereira, 2022)	Teachers' learning in LS: insights provided by a modified version of the interconnected model of teacher professional growth	ZDM-Mathematics Education		/
35	(Cajkler & Wood, 2019)	LS in ITE: A Family of Approaches	LS in Initial Teacher Education: Principal and Practices		/

36	(Ronda & Danipog, 2022)	Examining teacher-academic collaboration in LS for its potential in shaping teacher research identity	Asia Pacific Journal of Education		/
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### Quality of Appraisal

Following the guidelines suggested by Machost and Stains (2023), we identified the primary studies—original research articles, papers, or documents included in the systematic review post-selection process—as the primary evidence to address the RQs. We then assessed the quality of the presented research and conducted a quantitative comparison using the Quality Assessment (QA) approach of Abouzahra, Sabraoui and Afdel (2020), which comprises six QA criteria for our SLR. Each criterion was rated using a scoring system with three possible findings: “Yes” (Y) was assigned a score of 1 if fully met, “Partly” (P) received a score of 0.5 if partially met, and “No” (N) given a score of 0 if not met. The six QA criteria include: QA1—Is the purpose of the study clearly stated? QA2—Is the interest and the usefulness of the work clearly presented? QA3—Is the study methodology clearly established? QA4—Are the concepts of the approach clearly defined? QA5—Is the work compared and measured with other similar work? Meanwhile, QA6—Are the limitations of the work clearly mentioned? This structured assessment ensures a comprehensive evaluation of each study’s quality and relevance to the research objectives.

The table presents a QA process for evaluating a study based on specific criteria, with three experts rating each criterion as “Yes” (Y), “Partly” (P), or “No” (N). The criteria include: 1. Is the purpose of the study clearly stated? This evaluates if the study’s objectives are well-defined and clearly communicated. 2. Is the interest and usefulness of the work clearly presented? This assesses how the study’s importance and contributions are articulated. 3. Is the study methodology clearly established? This evaluates if the methodology is well-defined and suitable for the study’s goals. 4. Are the concepts of the approach clearly defined? This assesses the clarity of the theoretical framework and key concepts. 5. Is the work compared and measured with other similar work? This examines if the study is compared to existing research. 6. Are the limitations of the work clearly mentioned? Scores are summed, and studies must exceed a combined score of 3.0 to proceed.



**Figure 1: Flow diagram of the proposed searching study (Moher, Liberati, Tetzlaff, & Altman, 2009)**

### Result and Finding

A QA of 36 studies (PS1 to PS36) demonstrates strong results, with studies like PS2, PS4, PS6, PS14, PS15, PS16, PS19, PS21, PS25, PS27, PS30, PS31, PS35, and PS36 achieving full scores in purpose, methodology, conceptual clarity, and limitations. Others scored 83.3%–91.7%, with minor gaps in usefulness, conceptual precision, and comparative work. Studies PS1, PS3, and PS11 scored around 75%, indicating some weaknesses. Overall, strengths include purpose articulation and methodological soundness, though improvements are suggested in practical relevance and comparative analysis for future rigor.

**Table 4: Quality Appraisal**

Data	QA1	QA2	QA3	QA4	QA5	QA6	Total Mark	Percentage (%)
PS1	1	0.5	1	1	0.5	0.5	4.5	75
PS2	1	1	1	1	1	1	6	100
PS3	1	0.5	0.5	1	1	0.5	4.5	75
PS4	1	1	1	1	1	1	6	100
PS5	1	1	1	1	0.5	0.5	5	83.3
PS6	1	1	1	1	1	1	6	100
PS7	1	1	0.5	1	0.5	1	5	83.3
PS8	1	0.5	1	1	1	0.5	5	83.3
PS9	1	1	0.5	1	0.5	1	5	83.3
PS10	1	1	1	0.5	1	1	5.5	91.7
PS11	1	0.5	1	1	0.5	0.5	4.5	75
PS12	1	1	1	1	0.5	1	5.5	91.7
PS13	1	0.5	1	1	1	0.5	5	83.3
PS14	1	1	1	1	1	1	6	100
PS15	1	1	1	1	1	1	6	100
PS16	1	1	1	1	1	1	6	100
PS17	1	1	1	0.5	1	0.5	5	83.3
PS18	1	1	1	1	0.5	1	5.5	91.7
PS19	1	1	1	1	1	1	6	100
PS20	1	1	0.5	1	1	1	5.5	91.7
PS21	1	1	1	1	1	1	6	100
PS22	1	1	1	1	1	0.5	5.5	91.7
PS23	1	1	1	1	1	0.5	5.5	91.7
PS24	1	1	1	0.5	0.5	1	5	83.3
PS25	1	1	1	1	1	1	6	100
PS26	1	1	1	1	1	0.5	5.5	91.7
PS27	1	1	1	1	1	1	6	100
PS28	1	0.5	1	1	1	1	5.5	91.7
PS29	1	1	1	1	1	0.5	5.5	91.7
PS30	1	1	1	1	1	1	6	100
PS31	1	1	1	1	1	1	6	100
PS32	1	1	1	0.5	0.5	1	5	83.3
PS33	1	1	1	1	1	0.5	5.5	91.7
PS34	1	1	1	1	0.5	1	5.5	91.7
PS35	1	1	1	1	1	1	6	100
PS36	1	1	1	1	1	1	6	100

**Summary**

- **Highest Score:** Studies such as PS2, PS4, PS6, PS14, PS15, and others scored 100%, demonstrating strengths in purpose clarity, methodological rigor, conceptual definition, comparative analysis, and limitations acknowledgment.
- **Lowest Score:** PS1, with a score of 75%, showed strengths in purpose and methodology but requires enhancement in usefulness, comparative analysis, and limitations discussion for a more comprehensive contribution.

### ***Change Management and Scaling Strategies***

LS serves as a dynamic platform for teacher professional development, often encountering challenges in adaptation and sustainability across different educational contexts. Patfield et al. (2022) emphasize that scaling professional development effectively requires balancing fidelity to core practices with necessary local adaptations. Their findings suggest that even minor adjustments in LS implementation can significantly affect outcomes, highlighting the importance of understanding underlying mechanisms rather than simply replicating practices. Seleznyov (2018) discusses the complexities of implementing the Japanese LS (JLS) internationally, where cultural differences require adaptations that, if not managed well, can dilute the effectiveness of the LS model. These studies collectively emphasize the need for contextual sensitivity when scaling LS, suggesting that successful educational reform through LS requires alignment with local values and practices.

Leadership is pivotal in sustaining LS within educational institutions. Boom-Muilenburg et al. (2022) show that leadership practices, such as regular scheduling, active involvement, and appointing LS coordinators, contribute to embedding LS into school routines. Effective leadership ensures LS becomes an enduring part of school culture, driving continuous improvement in teaching and learning. Bakker et al. (2022) further explore the role of leadership by examining how LS teams in teacher education programs focus on planning and identification, fostering teacher reflection and sustaining LS practices. These findings suggest that sustained success in LS initiatives depends on proactive leadership that supports collaborative teaching practices and enables teachers to engage more deeply with LS. Additionally, cultural and systemic factors are crucial in scaling LS effectively. Seleznyov et al. (2024) argue that cultural dimensions, such as those identified by Hofstede, can either facilitate or hinder LS adaptation. For example, the collectivist nature of Japanese culture aligns naturally with collaborative models like LS, while individualistic cultures may face greater challenges without adjustments. Halvorsen et al. (2021) explore LS in rural settings, where logistical barriers, such as geographical distances, complicate implementation. They suggest strategies must account for cultural compatibility and practical challenges to ensure LS's scalability.

KM strategies are essential in facilitating LS. Cheng (2020) highlights that people-based KM approaches, such as communities of practice and mentoring, significantly impact knowledge sharing and internalization within LS. While technology-based strategies support dissemination, they are less effective for internalizing knowledge, reinforcing the importance of interpersonal connections. Ronda and Danipog (2022) observe that teacher-academic collaborations in LS bridge practice and research, fostering a research-oriented professional identity. Virtual adaptations have also been explored, as shown by Goei et al. (2021), who identify opportunities and constraints in transitioning LS to online environments. They found that while online platforms provide convenience, achieving the close collaboration typical of face-to-face LS poses challenges, suggesting strategies to maintain LS's collaborative essence in virtual formats.

### ***Teacher Capacity Building and Professional Growth***

LS has appeared as a potent approach for enhancing teachers' professional capacity, fostering continuous improvement in instructional practices, and deepening subject knowledge. Studies by Druken (2023), Capone et al. (2024), and Bakker et al. (2023) highlight how teachers involved in LS benefit from a collaborative process that allows them to explore pedagogical challenges, refine instructional strategies, and focus on student learning outcomes. Druken



(2023) reports that teachers found LS particularly useful in understanding reform standards and focusing on student thinking, suggesting that it helps teachers navigate educational reforms by providing a structured method for professional development. Capone et al. (2024) further illustrate that LS provides a culturally responsive platform for teachers to confront and adapt their teaching practices, enhancing awareness of instructional actions within different educational contexts. This adaptability to various teaching scenarios facilitates a deeper engagement in professional growth among educators, as supported by Bakker et al. (2023), who found that novice and experienced teachers alike benefit from exchanging subject-pedagogical knowledge during LS cycles.

Moreover, LS promotes reflective practices, allowing teachers to gain self-awareness about their instructional impact, which is instrumental for professional growth. Nguyen (2020), Khokhotva and Elexpuru Albizuri (2020b) emphasize that reflective activities embedded within lesson studies enable teachers to assess their competencies and teaching effectiveness critically. Nguyen (2020) demonstrates that reflective practices in microteaching lesson studies significantly enhanced Thai pre-service teachers' reflective abilities, which are critical for ongoing self-improvement. Khokhotva and Elexpuru Albizuri (2020a) introduce student voices into the LS framework triggered transformative learning among English teachers, challenging and reshaping their educational beliefs. Similarly, Machost and Stains (2023) discovered that teachers' positive attitudes towards reflection and self-improvement were associated with higher levels of engagement in lesson studies, indicating that reflective practices are essential for fostering a proactive approach to professional development.

The collaborative aspect of lesson studies is essential for building a supportive environment that fosters collective professional growth among teachers. Fox and Poultney (2020) and Richit and Tomkelski (2020) all observe that collaborative learning through LS facilitates joint professional development (JPD), where teachers can share best practices, learn from each other's experiences, as well as develop a shared understanding of instructional goals. Fox and Poultney (2020) highlight that although constraints like budget limitations exist, collective engagement in lesson studies strengthens teachers' commitment to student performance and professional improvement. Richit and Tomkelski (2020) add that the collaborative nature of lesson studies empowers teachers to engage in reflective and adaptive professional practices, reinforcing a culture of continuous development within educational institutions.

### ***Cultural, Social, and Contextual Adaptations***

LS has demonstrated significant adaptability across various cultural and educational contexts, with its core methodology evolving to meet localized needs. Studies have emphasized that the collaborative environment of LS fosters an appreciation of non-essentialist, student-centered teaching practices, promoting cultural sensitivity and adaptability in educators. For instance, Qin (2024) highlights how Chinese instructors benefited from incorporating intercultural communication into their LS sessions, expanding their grasp of nuanced intercultural concepts, and applying more student-centered methodologies. This shift towards reflective pedagogy is echoed in Khokhotva and Elexpuru Albizuri (2020b) a study in Kazakhstan, which found that LS nurtures constructive changes in teachers' beliefs, transforming them from transmission-based to constructivist approaches, ultimately fostering a more inclusive school culture. Likewise, Uffen et al. (2022) illustrate how cultural-historical activity theory aids in identifying the significance of teachers' attitudes towards LS, suggesting that cultural context heavily influences LS outcomes in diverse educational landscapes.

Moreover, LS's ability to bridge hierarchical structures within school systems has facilitated open communication and egalitarian engagement among teachers, which is essential for professional growth in culturally diverse settings. Tsukui and Saito (2022) explore this in the Vietnamese context, where LS has encouraged egalitarian discussions among educators, counteracting traditional top-down structures. This format allows teachers to freely exchange ideas and engage in collaborative reflection, which aligns with the egalitarian nature of LS in Japan, as documented by Wake and Seleznyov (2020). These findings suggest that LS can be instrumental in redefining professional boundaries, fostering a culture of mutual learning, and challenging existing power dynamics within educational institutions. Additionally, the introduction of LS models that integrate socio-material arrangements, as noted by Zhang and Wong (2021) in their study on Online-to-Offline (O2O) LS, underscores the flexibility of LS in adapting to both digital and physical environments, further expanding its relevance in diverse educational contexts.

The adoption of hybrid and digital LS models has also proven effective in adapting LS to the challenges of modern education, particularly in response to global events such as the COVID-19 pandemic. Huang, Klein and Beck (2020) discuss how digital technologies have been leveraged to sustain LS practices remotely, enabling continuous professional development despite physical constraints. This transition to digital platforms allows for sustained collaborative learning, although challenges such as equity in access to digital resources remain. Zhang and He (2023) support this view, observing that online LS environments facilitate teacher development and maintain LS's collaborative essence, which is crucial for teachers in remote or under-resourced areas. The adaptability of LS to digital contexts illustrates its resilience and underscores its potential as a scalable model for teacher training in various global settings.

The role of leadership within LS, particularly in supporting cultural adaptations, is another recurring theme. Ariei (2022) and Cajkler and Wood (2019) document how leadership teams in Japan have used hybrid leadership approaches to drive knowledge creation through LS, fostering an environment conducive to sustained professional growth. This approach to leadership, combining individual and group interactions, highlights the importance of culturally adaptive leadership in implementing LS effectively across different educational systems. Khokhotva and Elexpuru Albizuri (2020b) further support this by noting that leadership support is crucial for instilling a collaborative culture within schools, particularly in contexts where LS is a novel practice. The consistent emphasis on leadership underscores the importance of contextually aware and culturally responsive administration to maximize the impact of LS.

### **Discussion and Conclusion**

LS has emerged as a transformative method for teacher professional development. However, its implementation faces significant challenges when scaled across diverse educational environments. Scaling LS effectively requires more than merely replicating its methods. It necessitates a deep understanding of the core principles and the specific adaptations needed for local contexts. Cultural differences often necessitate modifications, but if these adjustments are not carefully managed, they can undermine LS's intended impact. Therefore, aligning LS with local educational values and practices is critical for successful scaling. Leadership is key in driving the change management process, ensuring that LS becomes embedded in school culture. Regular scheduling of LS activities, active engagement from school leaders, and the appointment of coordinators help institutionalize the practice. Through effective leadership, LS

can evolve into a sustainable model that motivates teachers to engage deeply, thus fostering long-term professional growth and educational reform.

Cultural and systemic factors are pivotal when scaling LS. Cultural characteristics, such as collectivism or individualism, significantly influence the feasibility and success of LS adaptation. In collectivist cultures, collaborative models like LS tend to align with societal values, while in individualistic cultures, LS may require significant modifications to resonate with local educational norms. Additionally, logistical barriers, such as geographical distances in rural areas, pose practical challenges to scaling LS effectively. To overcome these challenges, implementation strategies must focus on aligning LS with local educational structures while addressing logistical constraints. KM strategies, such as communities of practice and mentoring, are crucial to sustaining LS over time. These people-centered approaches facilitate the sharing of knowledge and resources, ensuring the continuous exchange of best practices among educators. While technology-driven KM strategies can aid knowledge dissemination, face-to-face interactions are more effective for internalizing LS principles. Collaborative partnerships between educators and researchers bridge the gap between research and practice, reinforcing LS's role in educational reform.

LS plays a vital role in teacher professional development by enabling continuous improvement of teaching methods and deepening subject knowledge. The method allows teachers to engage with pedagogical challenges, refine their instructional strategies, and focus on student-centered learning outcomes. LS supports the adaptation of educational reforms by emphasizing student thinking and culturally responsive practices. New and experienced educators benefit from sharing subject-specific insights during LS cycles, fostering professional growth. Reflective practices are a cornerstone of LS, promoting self-awareness and critical thinking about instructional effectiveness. Microteaching, a key activity in LS, enhances pre-service teachers' reflective abilities, allowing them to refine their teaching practices based on real-time feedback. Including student perspectives in LS discussions encourages transformative learning among educators, challenging their educational beliefs and improving their teaching approaches. Teachers who embrace reflective practices are more likely to engage meaningfully in LS, contributing to their long-term professional development and ensuring the process is scalable across different educational contexts.

The collaborative nature of LS is central to its success as an implementation strategy for educational reform. Through LS, teachers participate in a shared learning environment, exchange best practices, and develop a mutual understanding of teaching goals. Despite challenges such as budget constraints, collective engagement in LS strengthens teachers' commitment to improving student outcomes and enhancing professional effectiveness. The adaptability of LS across different cultural and educational settings demonstrates its scalability. In diverse contexts, LS fosters collaborative learning environments that promote student-centered teaching practices and cultural sensitivity. This collaborative approach facilitates the shift from traditional, transmission-based teaching to constructivist methodologies, which are essential for inclusive education. Furthermore, LS fosters intercultural competence, encouraging educators to apply culturally responsive instructional methods and develop a nuanced understanding of diverse student populations. These characteristics make LS a powerful tool for scaling educational reform and promoting teacher development across various settings.

The adaptability of LS is also evident in its ability to bridge hierarchical structures within schools, facilitating open communication and equal engagement among teachers. In some educational contexts, LS helps counteract traditional top-down structures by encouraging egalitarian dialogue and collaborative reflection. The incorporation of digital tools has further expanded the reach of LS, allowing it to function in hybrid and online environments, which became particularly valuable during global disruptions like the COVID-19 pandemic. Despite challenges related to equitable access to digital resources, online LS environments continue to foster teacher development and maintain the collaborative essence of the model. Effective leadership is critical for adapting LS to various cultural contexts. Hybrid leadership approaches, combining individual and group engagement, support knowledge creation and foster sustained professional growth. A culturally responsive leadership style, combined with adaptive strategies, is essential for ensuring the successful implementation of LS across diverse educational systems. Ultimately, LS's flexibility, emphasis on collaboration, and capacity for digital adaptation position it as a robust model for scaling educational reform and teacher development worldwide.

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### Conflicts of Interest

No potential conflict of interest was reported by the author(s).

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