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A scoping review of school leadership practices in Lesson Study

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ABSTRACT

There is growing interest in the value of teacher–learning communities for practice improvement. Lesson Study is an approach to build capacity, strengthen professional communities among teachers, and improve teaching. This article explores the function of leadership in LS. Literature searches were conducted in social science and education databases (Web of Science, Scopus, ERIC) with no time restrictions. The search focused on three areas: (1) studies on Lesson Study, (2) leadership and (3) elementary or middle school. Articles were screened by title and abstract, and the remaining articles were screened in full text. Thematic analysis identified facilitators and barriers for teachers' professional development. Results show a lack of research on Lesson Study leadership until 2011. Of the 15 studies included, 9 were qualitative, 4 mixed-methods, and only 2 quantitative. Thematic analysis revealed a limited focus on school leadership practices, emphasizing their importance for Lesson Study sustainability, tied to five helping factors and two obstacles. Key factors include collaborative vision building, effective time and resource management, trust, school–university collaborations, and multilevel leadership.

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Introduction

Although teaching can be a highly rewarding and satisfying profession, it is also recognized for its high stress levels and demanding nature (Ballet & Kelchtermans, 2009; Smethem, 2007). This may potentially contribute to a wide array of mental health related outcomes, such as burnout, depression and anxiety, absenteeism, presenteeism, turnover and premature retirement age (García-Carmona et al., 2019; Jurado et al., 2019; Leka & Jain, 2016; Perryman & Calvert, 2020; Skaalvik & Skaalvik, 2009). These challenges impose substantial costs on individual teachers, educational institutions, and society at large (Sorensen & Ladd, 2020).

Social interactions and collaboration are seen as decisive for teachers' learning and development, and studies suggests that teachers who have strong professional communities experience lower burnout rates and maintain employment longer than other teachers (Burns & Darling-Hammond, 2014; Cordingley, 2015; Hauge, 2019; Vetter, 2012). However, research shows significant variations regarding collaboration practices within and between schools (Muckenthaler et al., 2020; Patrick, 2022).

Lesson Study is a systematic approach aimed to build capacity and strengthen professional communities among teachers to enhance teaching effectiveness and students' learning outcomes (Huang & Shimizu, 2016; Lewis & Perry, 2017; Norwich & Ylonen, 2013; van den Boom-Muilenburg et al., 2022; Xu & Pedder, 2014). The method originated in Japan and has garnered global recognition and adoption. Unlike traditional top-down initiatives, Lesson Study begins by addressing the specific needs of teachers, directly tackling the challenges they encounter in their classrooms. This bottom-up approach ensures

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active participation from teachers themselves, empowering them to take ownership of the development efforts aimed at their profession (Gess-Newsome, 2015; Lewis et al., 2019).

Because Lesson Study requires dedicated time for teacher collaboration, it is essential to provide resources, support, and facilitation from school leadership (Perry & Lewis, 2009; van den Boom-Muilenburg et al., 2022). Despite the increasing interest in Lesson Study worldwide, the literature on school leadership in Lesson Study remains fragmented, lacking a comprehensive synthesis of evidence. To ensure the sustainability of Lesson Study in school, there is an urgent need for further research to understand how principals and school leaders can effectively implement and manage Lesson Study practices over time (Schipper et al., 2020; Zhang, 2015). In this paper we undertake a comprehensive scoping review of existing literature on the roles of school leaders in Lesson Study to address this knowledge gap

Lesson study

Lesson Study (LS) is a professional development approach originated in Japan at the end of the nineteenth century. Initially, LS was a way to share and experiment with modern teaching approaches, drawing inspiration from Western educational practice. Over the years the practice of LS has transformed to serve different purposes and educational ideas. Contributing to the successful implementation of LS in Japan, is the flexibility to adapt to the local system, and the interplay between top-down and bottom-up initiatives (Kusanagi, 2022).

Around the world, LS is known as flexible, bottom-up and collaborative (Kusanagi, 2022; Lewis, 2002). It gained popularity in the West in the late 1990s when there was a shift in the professional development approaches from short-term and individual to more collaborative teacher learning (Hargreaves & Dawe, 1990). At its core, LS aims to transform how teachers conduct their classrooms, with an emphasis on problem-solving and shared practices.

According to Dudley (2016) a LS cycle begins with a small group of teachers that come together and identify a teaching problem they want to solve. The teachers conduct research on why the students struggle with this problem and design a lesson plan together. Once the lesson plan is completed, one of the teachers teach the planned lesson. The other teachers observe the lesson, focusing on the teaching, to examine learning outcomes. A key aspect of this observation is watching the students learning in the context of being taught, rather than placing emphasis on the individual teacher. This sequence is followed by discussing students' learning and teaching methods. The cycles are repeated regularly to develop teachers' practices (Cumhur & Guven, 2022; Dudley, 2016). The multiple cycles allow for ongoing professional development, reinforcing the idea that improvement is a continual process (Lewis et al., 2006; van den Boom-Muilenburg et al., 2022). Figure 1 illustrates the LS cycle in five stages.

The data-driven nature of LS encourages a teacher-as-researcher mindset, contributing to a culture of continuous improvement within the school community (Schipper et al., 2020). As such, the collaborative engagement in LS can foster the development of a shared vision for teaching and learning beyond

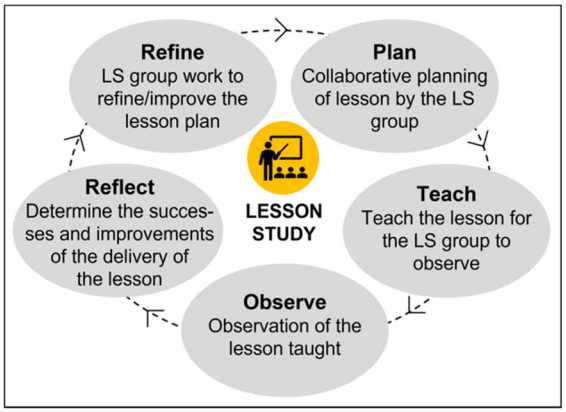

Figure 1. The five components of the Lesson Study cycle.

individual classrooms, contributing to a stronger sense of community and overall school improvement (Cajkler et al., 2014).

Successfully adapting LS to diverse sociocultural contexts outside of Japan has however proven challenging (Kusanagi, 2022). The inherent flexibility and adaptability of LS can make it difficult to understand the comprehensive picture of LS. For LS to flourish it is imperative to understand how to support and facilitate LS in different contexts (Kusanagi, 2022; Lewis, 2002).

School leadership for promoting teaching and learning

School leadership play pivotal roles in promoting teaching and learning in school. A strong leadership can drive a school towards achieving its goals of enhancing instructional practices and student achievement (Bredeson, 2000). However, promoting teaching and learning is a complex task that requires effective school leadership, and research have aimed to identify effective school leadership strategies. In the following we present findings from two reviews on effective leadership for teacher professional learning (Hallinger & Kulophas, 2020) and student outcomes (Robinson et al., 2009).

Both reviews highlight the school leaderships important role in communicating a vision and strategy for the direction of the school (Hallinger & Kulophas, 2020; Robinson et al., 2009). Communicating a shared vision, maintaining stable relationships and motivating teachers to contribute to achieve the vision is identified as an essential part of promoting teachers' professional learning (Hallinger & Kulophas, 2020). Setting educational goals, establishing the importance of selected goals, and communicating the goals clearly was the most reported exercise for school leaders in Robinson et al. (2009).

Secondly, leaders were identified to play a vital role in obtaining and allocating resources aligned with pedagogical goals (Robinson et al., 2009). Both reviews found that this aspect of school leadership was an essential aspects of principals' support for teachers' professional learning in the studies they reviewed (Hallinger & Kulophas, 2020; Robinson et al., 2009). Allocating funding, materials and information for pedagogical priorities, organizing schedules, recruiting expertise are examples of resources needed for improving teaching and learning (Robinson et al., 2009).

Thirdly, transferring agency to teachers was found to be important for teachers to assume greater ownership of their professional learning (Hallinger & Kulophas, 2020). Involving teachers in decision-making can empower teachers to shape their own learning experiences, be more engaged and motivated to invest in their professional growth. Distributing leadership to teachers was as such identified as an important role in effective school leadership (Hallinger & Kulophas, 2020).

Lastly, school leaders were found to have an important role in shaping the organisational climate and culture (Robinson et al., 2009). Fostering a culture of collective responsibility, in particularly, could potentially lead to powerful professional communities, reducing stress and burnout because problems are shared and more help is available (Robinson et al., 2009). Collaboration between teachers can benefit students when they are characterized by a focus on the relationship between teaching and learning, and collective responsibility for student achievement and well-being (Robinson et al., 2009). School leaders were as such found to have important roles in changing norms and content of teacher collaboration meetings (Robinson et al., 2009).

Materials and methods

Search strategy

The search strategy (keywords and research databases) was developed by the authors and assessed by a librarian. Searches were carried out between June 01 and June 15, 2023, by the authors in the social science and education databases Web of Science, Scopus and ERIC. The search string included three thematic areas, (1) the studies should focus on: Lesson Study, (2) school leadership, and (3) elementary school or middle school. The following search string was used: '("lesson study" OR "learning study") AND ("school management" OR "leadership" OR "principal" OR "headteacher" OR "administration") AND ("comprehensive school" OR "elementary school" OR "middle school" OR "school")'.

Inclusion and exclusion criteria

Inclusion and exclusion criteria were established based on four key parameters: *population* (in-service teachers at primary and lower secondary schools), *intervention type* (lesson study or learning study), *outcome* (focused on school leadership examination), and *study design* (limited to empirical studies). The review included all empirical, peer-reviewed articles written in English, without imposing any time restrictions. This decision was informed by preliminary searches, which suggested a scarcity of literature directly relevant to our research aims. Consequently, our search strategy was designed to encompass all relevant literature, ensuring a comprehensive review.

Data extraction

Publications were extracted from the databases and imported into EndNote to check for duplicates. The remaining publications were imported to Rayyan, a web-tool designed to screen literature reviews. The publications were first screened blinded by title and abstract by the authors. Records were thereafter compared and discussed. Full texts were screened independently, where the following information were extracted: authors names, purpose, population, design and main findings. This scoping review follow PRISMA (Preferred Reporting Items for Systematic Reviews and Meta-Analyses) guidelines (Moher et al., 2009).

Analyses

A data-driven thematic analysis was employed to identify leadership practices associated with sustaining LS in school. This approach involves identifying recurring themes across the empirical data in the included studies and sorting these overlapping findings into themes (Dixon-Woods et al., 2005). After identifying the trends in terms of purpose and method, we turned to analyzing the results from the included studies. We have categorized the findings from the studies under seven broader terms divided into five facilitators and two barriers.

Results

Following a descriptive overview of the included articles, we structured the presentation of results around five overarching themes identified in the literature as promising school leadership strategies for implementing and sustaining LS. Additionally, we will address two themes identified as barriers in implementing and sustaining LS.

Descriptives

A total of 222 studies were identified through searches in the databases ERIC, Scopus and Web of Science. No additional records were identified through other sources. As depicted in the PRISMA flow diagram (Figure 2), a total of 153 publications underwent assessment based on title and abstract. Among these, 130 articles were excluded due to discrepancies in outcome ($n = 72$), population ($n = 41$), intervention type ($n = 9$), and study design ($n = 8$). Subsequently, 23 full-text studies were evaluated for eligibility, of which eight were excluded primarily due to scope mismatch (outcome $n = 6$, population $n = 2$), resulting in 15 relevant publications.

Table 1 presents the distribution of the included publications by country and year. The earliest publication focusing on school leadership dates back to 2011, originating in Singapore (Lim et al., 2011). Notably, the initial publications predominantly emerged from Asian countries, which is also the primary geographical source of the included publications in this review. The first studies outside Asia were in the US, starting in 2019. European contributions primarily stemmed from the Netherlands, with three studies published by overlapping authors from 2020 to 2022, alongside a representation from the UK. The majority of the studies employed qualitative datasets (9 out of 15), followed by four mixed-methods studies and two quantitative studies.

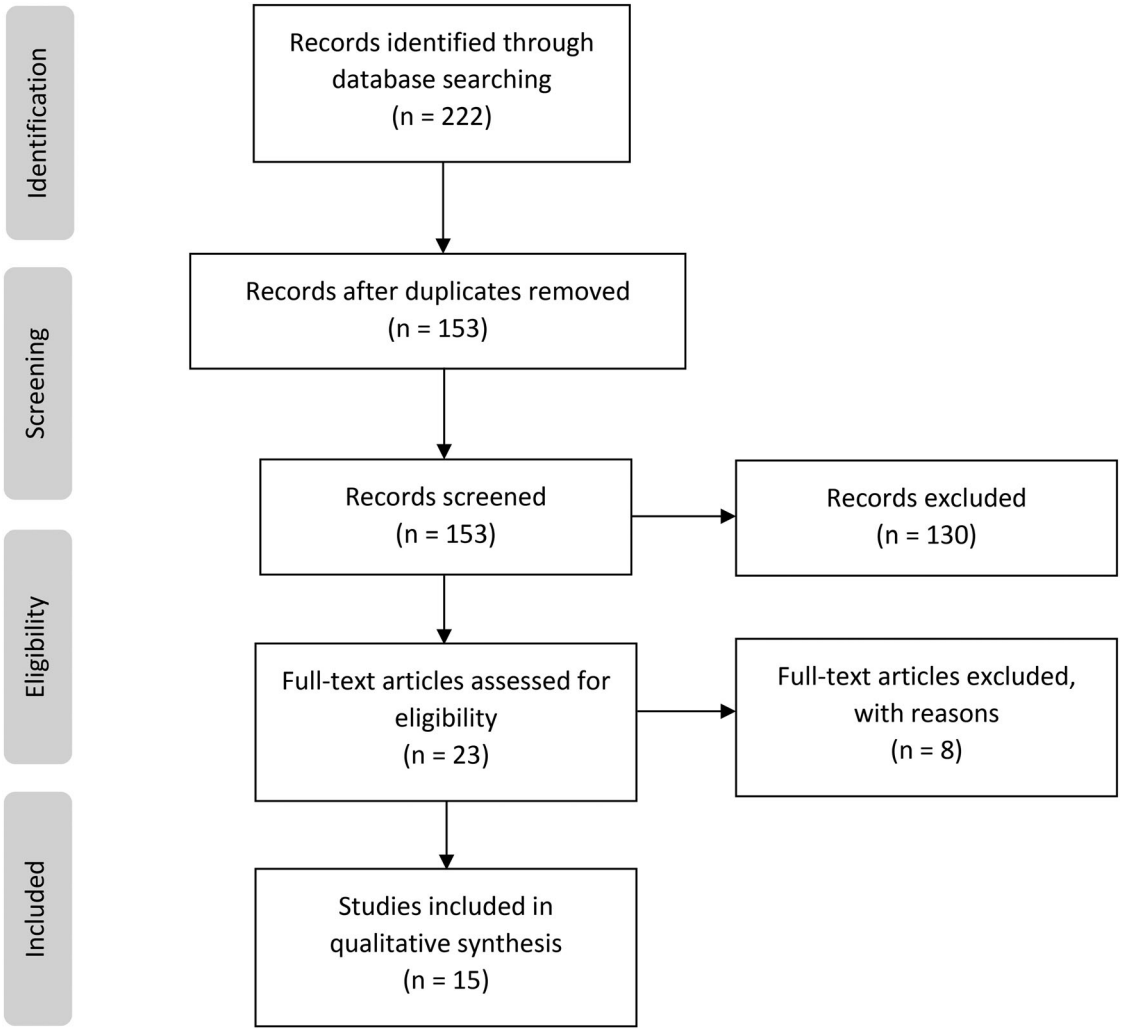

Figure 2. Study selection flowchart (PRISMA).

Table 1. Number of papers published by country and year.

Countries	10–14	15–19	20–23	Total
Hong Kong	1	1	1	3
Netherlands			3	3
US		1	2	3
Singapore	1	1		2
Indonesia			1	1
Japan	1			1
Taiwan		1		1
UK		1		1
Total	3	5	7	15

Thirteen of the publications investigated school leadership strategies within the context of LS, with six studying individual school cases (Abu-Alghayth et al., 2020; Cheng & Ko, 2012; Rozimela, 2020; Saito & Sato, 2012; Zhang, 2015) and eight encompassing multiple schools. Among the latter, five adopted qualitative methodologies (Lee & Madden, 2019; Shih-Hsiung, 2016; van den Boom-Muilenburg et al., 2022; Wolthuis et al., 2020, 2022) and three utilized survey-based approaches (Akiba & Howard, 2021; Lim et al., 2011; Lim-Ratnam et al., 2019). Notably, two publications deviated somewhat in scope: one introduced a tool for evaluating the impacts of LS on teachers and student outcomes (Godfrey et al., 2019), while the other examined the efficacy of people-based versus information-based knowledge management in LS (Cheng, 2020). For comprehensive details on the included publications, please refer to Table 2.

Table 2. Characteristics of studies included in the review.

	Authors (date)	Purpose	Sample	Design	Main findings
1	Abu-Alghayth et al. (2020)	To examine the role of LS in a center school	One principal in one school in the United States	Qualitative (narrative)	A comprehensive understanding of school culture, sustained professional development, and collaborative practices were identified as pivotal factors driving the successful adoption and implementation of Lesson Study. Additionally, Lesson Study demonstrated a significant impact on enhancing both teacher and student engagement in the teaching and learning process. By empowering teachers to tailor lessons to address individual student needs, Lesson Study played a crucial role in promoting instructional efficacy and fostering student success.
2	Akiba and Howard (2021)	To examine state and district approaches to sustaining LS	34 PD district leaders in the United States	Mixed methods (Survey, interviews, and policy documents)	The sustainability of Lesson Study varied significantly across districts, depending on their approach to integration within the instructional system. Districts that integrated Lesson Study as a fundamental component of their instructional framework, fostering ownership among schools and teachers while providing necessary support, exhibited higher sustainability rates. Conversely, districts that prioritized strict adherence to implementation protocols and centralized facilitation experienced a decline in Lesson Study participation over time.
3	Cheng and Ko (2012)	To analyze school leaders' strategies and leadership to identify the supporting conditions that promote LS	One principal and 5 teachers in one school in Hong Kong	Qualitative (case study)	The presence of a learning-focused leader was crucial for fostering a learning community within the school. Lessons gleaned from this study emphasized the importance of committed school leaders acting as change agents, empowering teachers to enact meaningful changes within their school environment. School leaders play a pivotal role in institutionalizing supportive policies and allocating resources, thereby nurturing a culture conducive to productive collective learning.
4	Cheng (2020)	To explore the effectiveness of people-based and IT-based knowledge management (KM) strategies in schools to facilitate and sustain LS	184 principals in Hong Kong	Qualitative (survey)	People-based knowledge management strategy were found to be more effective than IT-based strategies in facilitating knowledge sharing and internalization through Lesson Study in the school context. While teachers were encouraged to utilize IT for tasks such as storing, retrieving, capturing, and sharing lesson plans and teaching materials, sustaining Lesson Study effectively in schools and fostering a knowledge-sharing culture relied on principals' application of people-based knowledge management strategies.
5	Godfrey et al. (2019)	To test a methodology for developmental evaluation of LS	133 teachers in 26 primary and 7 secondary schools in England	Mixed methods (survey, self-evaluation, interviews, impact framework tool)	Findings revealed promising outcomes regarding the utilization of the developed scale to measure changes in teachers' pedagogical outcomes. Additionally, qualitative improvements were documented among both teachers and students as a result of engaging in Lesson Study cycles.
6	Rozimela (2020)	To explain the results and the process of a school-based initiative endeavor to implement LS at a	One principal, 13 teachers, and six classes of students in one	Qualitative (observation and interviews)	The principal's support and the teachers' strong commitment to enhancing their teaching quality within the school emerged as pivotal factors. Promising improvements were observed in teacher collaboration, learning activities, scaffolding practices, and reflection. Nonetheless, there was also recognition of the

(*continued*)

Table 2. Continued.

	Authors (date)	Purpose	Sample	Design	Main findings
		suburban elementary school	school in Indonesia		necessity for adjustment and time in teachers' habitual practices to fully integrate Lesson Study.
7	Lee and Madden (2019)	To examine how cognitive coaching and LS can build leadership capacity among principals and teachers, and enhance the content and pedagogical knowledge	8 principals and selected teachers from 37 middle and high schools in the US	Mixed methods (observations, survey, focus interviews, and blog posts)	Three themes emerged regarding the impact of Lesson Study on the role of principals as instructional leaders. Firstly, Lesson Study provided principals with an invaluable opportunity to immerse themselves in the teaching and learning process, enhancing their pedagogical insights. Secondly, Lesson Study prompted principals to transition from mere evaluators to supportive coaches, fostering a more reciprocal relationship with teachers. Lastly, Lesson Study reshaped principals' perceptions of effective evaluation practices, leading to a redefinition of their role in assessing teaching effectiveness.
8	Lim et al. (2011)	To examine what conditions support the implementation and sustainability of LS	Teachers and leaders in 64 schools (primary, secondary, and junior college) in Singapore	Qualitative (survey)	School leaders were underscored as crucial in providing supporting conditions for Lesson Study implementation in the school. School leaders expressed a firm conviction in the positive impact of Lesson Study on both teacher knowledge and student outcomes. Moreover, the study highlighted the importance of safeguarding time for Lesson Study meetings and having an advocate among the teachers, which proved beneficial for sustaining Lesson Study initiatives.
9	Lim-Ratnam et al. (2019)	To examine LS structure and implementation processes in a non-Japanese context	329 principals and 466 teachers in Singapore	Mixed methods (survey and case studies)	School leaders played a pivotal role in establishing the necessary conditions for the successful implementation of Lesson Study within the school. Their firm belief in the transformative potential of Lesson Study on both teacher development and student outcomes was evident. Moreover, the study highlighted the importance of safeguarding dedicated time for Lesson Study meetings and cultivating advocacy among teachers, which were instrumental in sustaining Lesson Study initiatives.
10	Saito and Sato (2012)	To explore how a principal worked to turn around a school by utilizing LS as a managerial tool	One principal at a junior high school in Japan	Qualitative (case study)	The study highlighted the principal's commitment to fostering collaborative learning experiences that encompassed cognitive, social, and ethical dimensions. This emphasis led to the extension of Lesson Study practices across subject domains, prioritizing joint observation and reflection on lessons. Additionally, the principal actively engaged with teachers on an individual level, fostering collegiality among them and nurturing the leadership capacities of middle-level leaders within the school community.
11	Shih-Hsiung (2016)	To investigate the development of LS in three rural elementary schools	3 principals and 40 faculty members in three schools in Taiwan	Qualitative (interviews, observations and focus groups)	In small rural schools, collaboration challenges arose due to the scarcity of teachers specializing in the same area. However, forming partnerships between schools were not found to be sufficient to address this issue in this instance. Additionally, while principals modeling Lesson Study practices alleviated concerns about opening lessons for observation, residual apprehension persisted in this particular scenario.
12					

(*continued*)

Table 2. Continued.

	Authors (date)	Purpose	Sample	Design	Main findings
	van den Boom-Muilenburg et al. (2022)	To examine school leadership in schools that sustained LS	3 school leaders in two secondary schools in the Netherlands	Qualitative (case study)	The analysis revealed diverse leadership practices implemented to sustain Lesson Study between schools. Overall, the study underscored the significance of scheduling Lesson Study, leadership availability, familiarity with LS principles, and the appointment of a Lesson Study coordinator by school leadership. However, the execution of these practices appeared contingent on the unique context of each school.
13	Wolthuis et al. (2020)	To explore the organizational tasks and processes schools set up for organizing LS teams	9 school leaders and 15 teachers from 10 schools in the Netherlands	Qualitative (interviews)	The authors noted a lack of consensus within schools regarding the execution of Lesson Study and the responsible parties. Few schools had developed policies regarding Lesson Study, and minimal awareness existed among school leaders about their crucial role in establishing organizational prerequisites for teacher engagement in Lesson Study. The study recommends raising awareness among school leaders about their pivotal role in fostering conducive conditions for teacher learning within their respective schools.
14	Wolthuis et al. (2022)	To examine which school factors influence (dis)continuation of LS	21 teachers and 15 school leaders from 14 schools in the Netherlands	Qualitative (interviews and narrative)	The most cited school factors influencing the (dis)continuation of Lesson Study included part-time teaching arrangements, staff turnover, school improvement policies, and scheduling issues. The convergence of these constraining factors posed significant challenges to sustaining Lesson Study initiatives. The authors emphasize the importance of identifying these school-level constraints and moving away from simplified and abbreviated professional development initiatives towards more comprehensive and impactful teacher learning experiences.
15	Zhang (2015)	To identify the strategies school leaders utilized to overcome challenges and sustain Lesson Study innovations successfully	One principal, assistant principal, 2 curriculum leaders, 8 teachers in a primary school in one Hong Kong	Qualitative (case study)	The school effectively utilized positive peer leadership to implement Lesson Study activities. School leaders positioned themselves as peers and supporters rather than authoritative figures or managers, fostering a teacher-centered approach to promoting Lesson Study. The adoption of positive peer leadership necessitated a re-evaluation and redefinition of the roles and responsibilities of school leaders, teachers, and teacher trainers.

School leaders' roles in implementing and sustaining Lesson Study

Collaborative vision building. Four of the papers emphasize the significance of creating a shared vision for the school's work, highlighting its role in sustaining LS practices (Abu-Alghayth et al., 2020; Cheng & Ko, 2012; Saito & Sato, 2012; van den Boom-Muilenburg et al., 2022; Zhang, 2015). For instance, leaders who proactively prepare schools for change by crafting a clear vision were found to be connected to the long-term sustainability of LS initiatives (van den Boom-Muilenburg et al., 2022). A shared vision, often developed by the principal or leadership team, positions LS as a central component of the school's operational ethos. Crucially, such a vision must resonate with teachers, necessitating their involvement in the visioning process (van den Boom-Muilenburg et al., 2022). Schools can embark on a change journey by encouraging staff to contribute their ideas and opinions, fostering a sense of ownership and alignment with the vision (Abu-Alghayth et al., 2020).

This can be illustrated in a study conducted in Hong Kong, where a school confronted challenges related to declining student enrollment (Cheng & Ko, 2012). Recognizing LS as a potential avenue for improving teaching and learning, the principal created a sense of urgency for change, and a need for launching LS in the school. The principal instilled a sense of urgency for change and advocated for the adoption of LS within the school. To support this endeavor, the principal developed and communicated a vision for the school's work. In such ways, the principal was able to unite the staff on a common vision and a way to go about it (Cheng & Ko, 2012).

Time and resource management. Secondly, our analyses revealed that allocating time and other resources for LS emerged as a critical factor for fostering collaborative work and collective learning among staff members across the reviewed literature (Abu-Alghayth et al., 2020; Cheng & Ko, 2012; Saito & Sato, 2012; van den Boom-Muilenburg et al., 2022; Wolthuis et al., 2022; Zhang, 2015). School leaders were recognized as pivotal facilitators and organizers of LS activities for teachers, often by adjusting schedules to accommodate LS meetings and participation in coaching and training sessions (Abu-Alghayth et al., 2020; Cheng & Ko, 2012; Saito & Sato, 2012; van den Boom-Muilenburg et al., 2022; Zhang, 2015). For instance, principals restructured daily routines, reduced teaching loads, organized substitute teachers, provided financial resources, produced LS materials, and enlisted LS experts to provide guidance and assistance in implementing the approach (Abu-Alghayth et al., 2020; Cheng & Ko, 2012; Saito & Sato, 2012). Survey data from Singapore indicated that providing time for teachers to participate in LS meetings was deemed the most crucial mechanism for supporting LS implementation (Lim et al., 2011; Lim-Ratnam et al., 2019). Additionally, Wolthuis et al. (2020) discovered that in schools where teachers were responsible for scheduling meetings themselves, sustaining LS was less successful.

Institutionalizing and integrating LS into organizational routines emerges as important for its sustainability across multiple studies (Abu-Alghayth et al., 2020; Cheng & Ko, 2012; Saito & Sato, 2012; Wolthuis et al., 2020). School principals played significant roles in this process by formulating school policies to motivate teachers to engage in LS, for instance by delineating the organizational routines, leading to improved clarity among teachers regarding how the work should be conducted and by whom (Abu-Alghayth et al., 2020; Cheng & Ko, 2012; Saito & Sato, 2012; Wolthuis et al., 2020). Four studies emphasized the significance of principals developing organizational plans for LS within schools and integrating them into school policies (Abu-Alghayth et al., 2020; Cheng & Ko, 2012; Saito & Sato, 2012; Wolthuis et al., 2020).

Trust-based foundations. Thirdly, our findings highlight the pivotal role of school leaders in fostering a trusting environment conductive to teacher collaboration and professional learning (Saito & Sato, 2012; Shih-Hsiung, 2016; van den Boom-Muilenburg et al., 2022; Zhang, 2015). Trust was found to be especially important in LS, because of teachers need to be confident enough to open their classrooms and teaching to colleagues. Establishing trust can be achieved through school leaders modelling behavior, providing assistance, and motivating teachers' professional growth, while also demonstrating knowledgeability and availability (van den Boom-Muilenburg et al., 2022). Being involved with teachers in the processes can also promote a trusting environment that is a basis for a professional learning community (Saito & Sato, 2012; Shih-Hsiung, 2016; van den Boom-Muilenburg et al., 2022; Zhang, 2015). For

instance, van den Boom-Muilenburg et al. (2022) argue that an "open door" policy facilitated dialogue and feedback to teachers. Similarly, Abu-Alghayth et al. (2020) showed that close collaboration between the principals and teachers were contributing to the successful implementation of LS. Zhang's study (2015) also emphasize the importance of collaboration between principal and teachers in LS. The school leaders adopted a supportive rather than authoritarian stance, viewing themselves as fellow teachers dedicated to fostering a sense of collective responsibility, which in turn nurtured teacher support.

A similar factor was distributing leadership of LS processes to teachers' by cultivating internal trainers (Zhang, 2015). This was done by identifying teachers with a strong interest and motivation to spearhead LS. Internal trainers could for example transfer expertise of external consultants in leading and supporting teacher and expand best practices in school. Internal trainers was as such identified as a valuable resource for aiding their colleagues and enhancing the school's capacity to sustain LS practices (Saito & Sato, 2012).

School–university collaborations. Fourthly, our research indicates that establishing partnerships with other schools and universities can be instrumental in advancing knowledge on LS and sustaining its implementation (Shih-Hsiung, 2016). Collaboration with external educational institutions can provide opportunities to enhance new insights and pedagogical strategies related to LS, as well as to refine existing effective teaching and learning approaches (Lee & Madden, 2019). These partnerships can offer valuable support to both new and experienced school leaders, fostering communities to share knowledge and develop innovative ideas (Lee & Madden, 2019; Shih-Hsiung, 2016). School leaders play a pivotal role in facilitating and nurturing such collaborative endeavors.

Multi-level leadership. Lastly, our investigation identified a noteworthy study by Akiba and Howard (2021) that specifically delved into the division of leadership across government levels, including federal, state, and district levels. The study focus on the sustainability of LS once federal funding ceased. They examined a singular state as a case study. Their findings revealed that only 12 out of the 34 districts managed to sustain LS practices beyond the funding period, showing limited state involvement in sustaining LS, with districts primarily responsible for its continuation (Akiba & Howard, 2021).

These findings highlight the importance of integrating federally funded professional development innovations into the broader state, district, and school context. While district leaders are identified as key drivers of instructional reform, a top-down approach focusing solely on fidelity of implementation is deemed insufficient for sustaining LS. Instead, sustainability is associated with local adaptation, highlighting the importance of school and teacher ownership (Akiba & Howard, 2021).

Barriers in sustaining LS in school

Competence to lead developmental work. Our research indicates that not all principals possessed the necessary competence to effectively facilitate LS in their schools. However, several studies showed that competence can be developed through participation in research and developmental projects facilitated by external experts (Abu-Alghayth et al., 2020; Cheng & Ko, 2012; Lee & Madden, 2019; Rozimela, 2020; Saito & Sato, 2012; Zhang, 2015). For example, in Lee and Madden (2019) school leaders were trained through cognitive coaching to collaborate with teachers during the implementation of LS. The result of the study indicated that LS not only benefitted principals as leaders, but it also fostered a more reciprocal relationship between teachers and school leaders as they worked together towards a common goal.

Additionally, three of the studies touched upon the importance of leadership style for implementing and sustaining LS in school (van den Boom-Muilenburg et al., 2022; Wolthuis et al., 2020; Zhang, 2015). Wolthuis et al. (2020) demonstrated that when school leadership's utilized LS primarily as a managerial tool to advance their own objectives and vision, rather as a professional development practice for teachers, it leads to dissatisfaction among teachers and compels them to conform to directives. Conversely, leaders who adopt a more collaborative, facilitative and guiding approach are more successful in sustaining LS in schools (van den Boom-Muilenburg et al., 2022; Zhang, 2015).

Stability of staff. Wolthuis et al. (2022) demonstrated that various employment characteristics influence the discontinuation of LS, including part-time employment, turnover, planned or unplanned leave of absence, work location, and newly hired teachers. The primary barriers to continuing LS were largely related to the stability of teacher staff eligible for participating in and continuing with LS processes over time. For LS to function optimally, teachers need ongoing research lessons to build knowledge and professional communities over time. Consequently, it can be challenging to sustain community and knowledge-building efforts when teaching staff is not stable. Larger schools faced greater difficulties in sustaining LS compared to smaller schools due to both higher turnover rates and logistical complexities (Wolthuis et al., 2022).

Wolthuis et al. (2022) further discussed how beginning teachers present a dual role as both promoters and inhibitors. While new teachers often report high workload and limited time for activities beyond class preparation and teaching, they also tent to exhibit enthusiasm and strong eagerness to participate in LS activities.

Discussion

Our review aimed to comprehensively map the evidence concerning the roles of school leaders in sustaining LS, delving into how principals and other school leaders can effectively instigate and maintain LS practices within educational institutions. Despite the recognition of leadership's importance in LS across several screened articles, only 15 articles met our inclusion criteria, indicating limited attention given to school leadership practices for sustaining LS in the existing literature. Nonetheless, there is a growing focus on school leadership practices over time, with the first publication outside Asia in the US and England in 2019.

Through our analysis, we identified five key leadership practices closely related to the sustainability of LS: collaborative vision building, time and resource management, trust-based foundations, school–university collaborations, and multilevel leadership. The first two align closely with existing research on effective school leadership for enhancing teaching and learning outcomes (Hallinger & Kulophas, 2020; Robinson et al., 2009). Moreover, we recognized two significant barriers: lack of competence to lead developmental initiatives, and the challenge of maintaining staff stability. Across all studies reviewed, there was a consistent emphasis on the indispensable role of school leadership in sustaining LS practices.

Leadership was found to play significant roles in shaping a school's culture of learning and growth (Abu-Alghayth et al., 2020; van den Boom-Muilenburg et al., 2022; Zhang, 2015). For example, preparing schools for change, through creating a vision, was found to facilitate sustainability (Cheng & Ko, 2012; van den Boom-Muilenburg et al., 2022). Furthermore, involving teachers in developing the schools' vision, and detailing how the school should work to attain this vision, both fosters ownership and enhances the likelihood of successful implementation (Shih-Hsiung, 2016). A thorough preparation phase to unify staff seems to be important in undertaking LS initiatives.

For motivating and encouraging staff to take on new initiatives, creating meaning and coherence between LS and other school activities was found to be a promising leadership strategy (Cheng, 2020). School principals play significant roles in formulating school polices to motivate teachers in conducting LS. For instance, by describing LS organization and the relationship to other activities in school policy. In schools that was successful in implementing LS, institutionalizing and integrating the work in organizational routines was found to improve teachers understanding on how the work should be done and by whom (Abu-Alghayth et al., 2020; Cheng & Ko, 2012; Saito & Sato, 2012; Wolthuis et al., 2020). Successful school leaders are recognized for their important roles in effectively communicating strategies for professional development activities (Hallinger & Kulophas, 2020; Robinson et al., 2009).

Further, it is important to build trust and confidence in the change process (Cheng & Ko, 2012). Our review highlights the significance of cultivating a *trusting* environment for teachers in LS due to its practice-based nature. Modeling LS cycles, collaboration between school leader and teachers, motivating and demonstrating knowledgeability and availability was found to be promising elements for fostering a trusting environment (Saito & Sato, 2012; van den Boom-Muilenburg et al., 2022; Zhang, 2015).

However, if teachers have a full schedule and are pressed on time for being involved in developmental initiatives, implementation may be less successful (Zhang, 2015). One of the main challenges in schools for implementing new initiatives are described in the literature as lack of time in teachers' schedule (Hallinger & Kulophas, 2020; Robinson et al., 2009; Zhang, 2015). The identified studies describe the value of school leaders planning and organizing for LS activities in school. We found that schools that successfully implemented LS, had school leaders that supported teachers in relation to structuring their time, reducing workload and applied for grants to support teachers professional development (Godfrey et al., 2019; Wolthuis et al., 2020; Zhang, 2015). School leaders planning to implement LS should therefore carefully consider time allocation and financial structures when involving teachers in LS.

After prioritizing and initiating LS in schools, the literature found that it was a challenge to sustain LS. The interplay between school leadership and teachers on equal terms was described as a promising strategy. Distributing leadership to teachers may serve as facilitating factor by empowering them with autonomy in decision-making and fostering ownership of LS (Akiba & Howard, 2021). For instance, Saito and Sato (2012) emphasize the role of school leadership in identifying teachers with a strong interest and motivation in LS, who can serve as valuable resources to support their colleagues. Similarly, Zhang (2015) illustrates that cultivating internal trainers (teacher leaders) can enhance the school's capacity for sustaining LS over time, by transferring the expertise of external consultants in leading and supporting teacher professional development into the capacity of internal coaches (Zhang, 2015). Cheng and Ko (2012) suggest that showcasing successful front runners among teachers can boost confidence among their peers, thereby encouraging broader participation in LS initiatives.

In contrast to prior literature, the LS literature highlights the significance of collaboration with partnering schools and external experts for sustaining LS practices (Lee & Madden, 2019; Shih-Hsiung, 2016). Establishing a network for teachers to exchange knowledge can fosters innovative practices and sustains LS initiatives within schools. School leaders play a pivotal role in facilitating such partnerships (Lee & Madden, 2019; Shih-Hsiung, 2016).

Sustaining LS practices also seems to be related to the support that schools receive from the local- and district school authorities. As we have shown, school leaders need recourses to sustain LS. In Japan, LS is sustained through its organizational structure from educational authorities to schools. However, most of the research in our review was smaller projects with lack of systemic organization. One publication examined the role of federal and district level, in a state project implementing LS in the US (Akiba & Howard, 2021). The authors emphasize the potential of district leaders as catalysts for instructional reform, advocating for the integration of LS into the broader district system. This integration involves setting clear expectations, strategically adapting LS practices, and providing essential support and funding to schools and teachers. However, sustainability hinges on local adaptation, emphasizing the ownership of LS practices by schools and teachers (Akiba & Howard, 2021).

Combined, these results demonstrate that school leadership have a vital role implementing and sustaining LS practices in school. It is however important to prepare for the complexity of the organizational work when starting with new professional development initiative (Wolthuis et al., 2020). Considering the complexity of initiating and sustaining a professional development initiative in school, school leaders should consider school readiness to implement initiatives such as LS. Likewise, school leaders should take the specifics of their own context as the starting point for making decisions about which initiatives and support are suitable (van den Boom-Muilenburg et al., 2022; Wolthuis et al., 2022).

Limitation

There are three limitations to the study that warrant consideration. Firstly, it is possible that certain studies were overlooked due to the choice of search engine, database, or keywords. Different scholars may have made alternative decisions regarding the inclusion or exclusion of selected studies. However, blind screening was employed to mitigate bias and ensure the objectivity of the review process.

Secondly, the review focused on English-language publications pertaining to LS, potentially neglecting valuable contributions from non-English sources. This bias might have led to the exclusion of significant studies from Japan—the origin of LS—as well as from other countries.

Lastly, the limited number of included studies may have implications for the generalizability of the findings. Additionally, none of the studies incorporated experimental designs, which precludes an evaluation of the effectiveness of different leadership structures within LS. Nonetheless, given the underexplored nature of this aspect in LS literature, the identification of studies addressing leadership remains pivotal for mapping the field.

Implications for future research

Our findings highlight the crucial role of school leadership both in preparing schools for organizational change and for sustaining LS practices within schools. Given the adoption of LS in schools across the US and Europe, there is a pressing need for future research on how LS can be contextually translated and integrated outside of Japan.

The current scarcity of research on the specific functions of school leadership within LS emphasizes the necessity for future studies to delve deeper into effective strategies for school leadership to implement and sustain LS initiatives. While our review identified several school leadership strategies relevant to LS, there is a need for more research unlocking the specific strategies tailored for implementing and sustaining LS in schools in different contexts.

Furthermore, our review points towards the importance of organizational facilitation of LS, suggesting that LS should be integrated at various levels within educational structures. Future research should investigate whether it is imperative to establish a formal organizational structure to sustain LS in schools, or if local support from school leaders is sufficient.

The scarcity of studies on leadership strategies in LS also emphasize the need for future research to conduct large-scale studies aimed at understanding teachers' needs for support and facilitation in implementing and sustaining LS practices. Exploring the effectiveness of LS in building capacity and strengthening professional communities among teachers, as well as delineating the specific roles of school leaders in this process, would be valuable avenues for future investigation.

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