



## THE POTENTIAL OF LESSON STUDY AND SELF-EFFICACY TO ENHANCE TEACHER PROFESSIONAL DEVELOPMENT: a systematic literature review

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### ABSTRACT

Empirical evidence suggests that collaborative contexts have an impact on teacher self-efficacy. Lesson Study (LS), known as a professional development model that fosters collaboration and inquiry-based features, could foster a positive effect on self-efficacy. However, our knowledge about how these conceptual frameworks correlate is limited. In order to shed light on the theme, a systematic literature review was conducted to investigate the relationship between LS and self-efficacy to improve teaching and learning. Four international databases were consulted (Web of Science, SCOPUS, ERIC and SciELO), and a total of eight studies met the inclusion criteria. The search was conducted in April, 2022 using the Preferred Reporting Items for Systematic Reviews and Meta-Analyses (PRISMA) statement checklist. The identified studies were qualitatively synthesized. The results provided striking evidence that LS has the potential to foster collaboration, improved teacher content knowledge, enhance outcome expectancies and increase teachers' self-efficacy, which, in turn, is a predictor of student academic achievement. On the other hand, it was revealed that lack of time and resources may contribute to insufficient outcome. Few studies were retrieved through the search engine. Finally, suggestions were proposed for future research.

**Keywords:** Lesson study. Self-efficacy. Teacher professional development. Collaborative learning. Systematic literature review.

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## O POTENCIAL DO LESSON STUDY E DA AUTOEFICÁCIA PARA A PROMOÇÃO DO DESENVOLVIMENTO PROFISSIONAL DOCENTE: uma revisão sistemática da literatura

### RESUMO

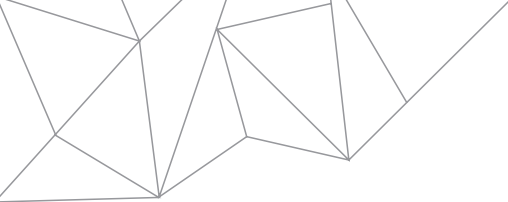
Evidências empíricas sugerem que os contextos colaborativos têm impacto na autoeficácia do professor. O Lesson Study (LS), conhecido como um modelo de desenvolvimento profissional docente que fomenta a colaboração baseada na investigação, pode gerar um efeito positivo sobre a autoeficácia. Contudo, o conhecimento sobre como estes conceitos se correlacionam é limitado. A fim de lançar luz sobre o tema, foi realizada uma revisão sistemática da literatura para investigar a relação entre o LS e a autoeficácia para aprimorar o ensino e a aprendizagem. Quatro bases de dados internacionais foram consultadas (Web of Science, SCOPUS, ERIC e SciELO), e um total de oito estudos preencheram os critérios de inclusão. A pesquisa foi conduzida, em abril de 2022, e utilizou o Preferred Reporting Items for Systematic Reviews e Meta-Analyses (PRISMA). Os estudos identificados foram sintetizados qualitativamente. Os resultados indicaram que o LS tem potencial para promover a colaboração, melhorar o conhecimento do conteúdo dos professores, aumentar as expectativas de desempenho e aumentar a autoeficácia dos professores, que, por sua vez, é um indicador do desempenho acadêmico dos estudantes. Por outro lado, foi revelado que a falta de tempo e de recursos pode contribuir para um fraco desempenho acadêmico. Poucos estudos foram recuperados através do mecanismo de busca. Ao final, foram propostas sugestões para futuras pesquisas.

**Palavras-chave:** Lesson study. Autoeficácia. Desenvolvimento profissional docente. Aprendizagem colaborativa. Revisão sistemática da literatura.

## LA RELACIÓN ENTRE EL ESTUDIO DE CLASE Y LA AUTOEFICACIA PARA PROMOVER EL DESARROLLO PROFESIONAL DOCENTE: una revisión sistemática de la literatura

### RESUMEN

La evidencia empírica muestra que los contextos colaborativos tienen un impacto en la autoeficacia docente. El Estudio de Clase (EC), conocido como un modelo de enseñanza que fomenta el desarrollo basado en la investigación profesional, puede tener un efecto positivo en la autoeficacia. Sin embargo, el conocimiento sobre cómo se correlacionan



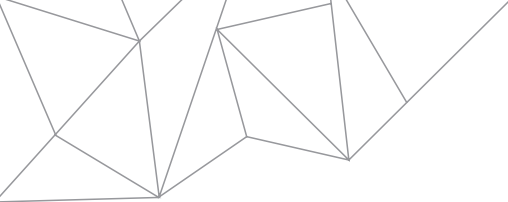
estos conceptos es limitado. Con el fin de arrojar luz sobre el tema, se realizó una revisión sistemática de la literatura para investigar la relación entre el EC y la autoeficacia para mejorar la enseñanza y el aprendizaje. Se consultaron cuatro bases de datos de estudios internacionales (Web of Science, SCOPUS, ERIC y SciELO) y un total de ocho estudios cumplieron los criterios de inclusión. La búsqueda se realizó en abril de 2022 y se utilizó los Preferred Reporting Items and Meta-Analyses (PRISMA). Los estudios identificados fueron sintetizados cualitativamente. Los resultados indican que EC tiene el potencial para promover la colaboración, aumentar el conocimiento del desempeño y aumentar la autoeficacia de los docentes, que a su vez es un indicador del desempeño de los estudiantes. Por otro lado, se reveló que la falta de tiempo y de recursos pueden contribuir a un desempeño deficiente. Se recuperaron pocos estudios a través del motor de búsqueda. Finalmente, se propusieron sugerencias para futuras investigaciones.

**Palabras clave:** Estudio de clase. Autoeficacia. Desarrollo profesional docente. Aprendizaje colaborativo. Revisión sistemática de la literatura.

## 1 INTRODUÇÃO

Being regarded as a profession that allows for autonomy, teaching often leads to a feeling of isolation (MINTZES *et al.*, 2013; MON; DALI; SAM, 2016; CHIZHIK *et al.*, 2018), as well as a posture of competitive and hierarchical practices (CALVO; BLANCO; FUEYO, 2018) that several professionals face in their work environment. Such struggles may cause lack of motivation and involvement in exercising educational leadership, avoidance of investment in innovative pedagogical approaches, and restricted learning, collegiality, and professional self-identification (ZIMMERMAN; KITSANTAS, 1996; SCHUNK; ZIMMERMAN, 2012; ROSÁRIO; POLYDORO, 2014). The professional development approach Lesson Study (LS) is indicated by a growing number of scholars as a suitable model to address these issues (PUCHNER; TAYLOR, 2006a; SCHIPPER *et al.*, 2018). Following this rationale, this article presents a systematic literature review aiming to investigate the relationship between LS and self-efficacy to enhance teaching and student achievement.

The LS model in this study is considered as a form of inquiry-based professional development (PD) approach that is correlated to self-efficacy beliefs (PUCHNER; TAYLOR, 2006a; AKIBA *et al.*, 2019; KHOKHOTVA; ALBIZURI, 2020). From this epistemological perspective, this investigation is directed by two views. First, it regards LS as a form of PD in which teachers discuss their dilemmas or questions of interest and research their own practices. This is because LS was designed to promote a space for teachers to deepen content knowledge, increase understanding of pedagogy, and develop ability to analyze and



understand student learning by observing the lesson in action (BURROUGHS; LUEBECK, 2010).

The second view is that LS and self-efficacy are intrinsically associated (PUCHNER; TAYLOR, 2006a; SIBBALD, 2009) because, among other characteristics, LS counteracts the traditional isolation amongst teachers (CALVO; BLANCO; FUEYO, 2018; HERVAS, 2021) as they engage in active discussion and are given opportunities to self-reflect focusing on student learning (MON; DALI; SAM, 2016). This movement involves teachers and stakeholders to a transformative learning (WONG, 2018) that influences the personal dispositions, mental habits, beliefs and routines (LEWIS; PERRY, 2014) of the participating team. These aspects are circumscribed in the way the individual constructs meanings and how such constructions act in the individual's subjective experience and behavior (VIEIRA; COIMBRA, 2006) object of investigation of the self-efficacy beliefs.

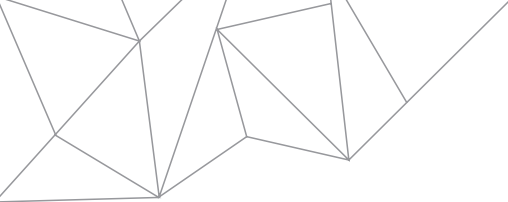
Given this context, an increasing amount of research underscores that LS can have a positive impact not only on teachers' pedagogical knowledge, but also on their motivation, professional community, teaching practice, and student achievement (CHIZHIK *et al.*, 2018; AKIBA *et al.*, 2019; MIHAJLOVIĆ, 2019; SCHIPPER *et al.*, 2020). More recently, several studies have demonstrated the value of LS practices to strengthen teacher motivation and self-efficacy. Much more than cooperation and assistance among teachers, LS has the potential to create bottom-up collaboration (CAJKLER; WOOD, 2016; MON; DALI; SAM, 2016), which might increase the perceived capability among them and, as a consequence, be beneficial for both teachers and students (PUCHNER; TAYLOR, 2006b; PERERA; JOHN, 2020).

Systematic reviews are critical to informing evidence on how LS is related to self-efficacy in educational contexts to promote a successful teacher development program. This review may contribute to formulate innovative professional development programs in all levels of system education. To achieve this goal, it is vital that know which studies are available to inform how these constructs are related. Therefore, the following review question was addressed: How does the LS approach relate to self-efficacy to improve teaching and learning? However, first, we introduce the theory.

## 2 THEORETICAL FRAMEWORK

### 2.1 Teacher professional development through Lesson Study

Lesson Study (LS) is claimed to be a process for developing and implementing effective classroom learning which favors innovation and promotes fast growing teacher professional development (DUDLEY *et al.*, 2019). LS is a form of teacher professional



development (PD) approach in which collaborative and active research is used for accomplishing pre-defined teaching and learning goals (TAKAHASHI; MCDOUGAL, 2016) and continuous improvement of teaching practice (NORWICH, 2018). Through such an approach, teachers jointly study teaching contents and instructions by observing lessons and reflecting on them (STIGLER; HIEBERT, 2016).

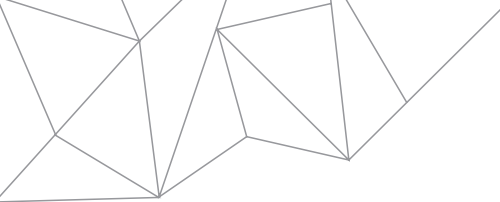
Having been accepted as a bottom-up approach (CALVO; BLANCO; FUEYO, 2018; UŞTUK; ÇOMOĞLU, 2021), LS is presented as an alternative to the conventional forms of top-down PD. Reviewing earlier studies, Fujii (2016) conceptualizes several principles of LS practice that challenges the conventional approaches. According the author, (1) LS begins with a question crafted by the LS team instead of one offered by external stakeholders or instructional research; (2) the content is led by its participants instead of by experts or administrators; (3) there is a linear and constructive communication amongst all members of LS in which novice and experienced teachers work collaboratively rather than hierarchically and last, (4) practice is the locus of research in LS, whereas in conventional PD, practice is mainly informed and conducted by research.

Traditionally, Japanese LS occurs across many curriculum areas or themes (YOSHIDA, 1999) and is implemented in four phases: (1) study curriculum and formulate goals; (2) plan, which refers to designing a live classroom lesson in detail, the so-called research lesson; (3) teach, when one member of the team teaches the research lesson and the others observe and collect data; and (4) reflect on one's own practice and beliefs with a view to its improvement (DUDLEY *et al.*, 2019). LS is conducted iteratively and may cycle in numerous times through the four phases, sometimes lasting years (FERNÁNDEZ, 2005) and research teams often meet two or three times per month for approximately 45 to 50 minutes, as in Saunders, Goldenberg and Gallimore (2009) or even weekly, as reported by Yoshida (1999) in his ethnographic research of the LS in math in a Japanese elementary school, and it is usually developed during one year long, as detailed by Fujii (2014).

As a collaborative form of teacher professional learning, LS has the potential to contribute to reduce the isolationist school culture widely denounced in educational contexts (PUCHNER; TAYLOR, 2006b; SCHIPPER *et al.* 2018, 2020; KHOKHOTVA; ALBIZURI, 2020) and has indicated positive effects on teachers' beliefs of self-efficacy and student achievement (MIHAJLOVIĆ, 2019; AKIBA *et al.*, 2019; PERERA; JOHN, 2020).

## 2.2 Teacher self-efficacy

Psychologist Albert Bandura denominated Social Cognitive Theory for the set of theoretical constructs he formulated to explain human functioning (BANDURA, 1986). Among these constructs, self-efficacy is considered a central mechanism, as it plays a major



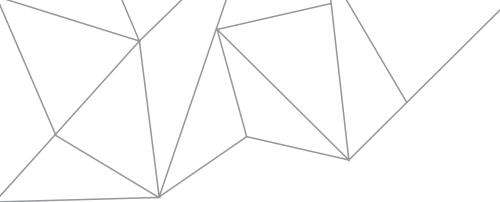
role in not only how people feel about themselves, but whether or not they successfully achieve their goals in life (BANDURA, 1977). Perceived self-efficacy is defined as “beliefs about one’s capabilities to organize and execute a course of action required to produce a certain attainment” (BANDURA, 1997, p. 3). Self-efficacy beliefs determine how people feel, think, motivate themselves and behave (BANDURA, 1994). As Bandura and other researchers have demonstrated, self-efficacy can have an impact on all fields of human life, from psychological states to behavior to motivation (BANDURA, 1986).

We begin to develop our sense of self-efficacy in early childhood through dealing with a wide variety of experiences, tasks and situations (BANDURA, 1986). However, the growth of self-efficacy does not end during youth but continues to evolve throughout life as people acquire new skills, experiences, and understanding. Bandura (1977) identified four sources of self-efficacy: mastery experiences, vicarious experiences, verbal persuasion, and physiological states. The author argued that the most influential way of creating a robust sense of self-efficacy is through mastery experiences. They refer to the experiences people go through in life and involve developing cognitive, behavioral, and self-regulatory tools for performing courses of action that will inform their capacity or failure in executing those actions. In other words, performing a task successfully strengthens their sense of self-efficacy, whereas failing to appropriately overcome a difficulty or solve a challenge can undermine and weaken self-efficacy.

The second source of creating and strengthening self-efficacy is through the vicarious experiences provided by social models. According to Bandura (1995, p. 197), witnessing other people similar to oneself successfully completing a task “can generate expectations in observers that they too will improve if they intensify and persist in their efforts”. Bandura asserted that people could be induced to believe that they can cope successfully with challenges verbal or social persuasion, the third source of strengthening self-efficacy beliefs. The author considered that this source was likely to be weaker than those generated from one’s own accomplishments because it does not come from an authentic experience. The last way of creating a strong sense of self-efficacy is through the physiological states, such as anxiety, stress, tiredness, pain, happiness, and well-being. It is noted, though, that the intensity of emotional and physical reactions by themselves are not the information what prevails, rather it is how one perceives and interprets them.

In the context of Education, “efficacy is perceived as teachers’ belief or conviction that they can influence how well students learn, even those who may be difficult or unmotivated” (GUSKEY; PASSARO, 1994, p. 3). In their theoretical and empirical study, Goddard, Hoy and Woolfolk (2000) sought to develop a model of collective teacher efficacy as well as test the instrument to examine 47 urban elementary schools. The results supported Bandura (1993) study by providing additional evidence that the effect of teacher efficacy beliefs about





the capabilities of their faculty are systematically related to student achievement. In fact, “teachers’ beliefs in their personal efficacy to motivate and promote learning affect the types of learning environments they create and the level of academic progress their students achieve” (BANDURA, 1993, p. 117).

### 3 RESEARCH METHOD

#### 3.1 Research design and data collection procedure

This study comprised the following stages: (i) developing and executing a search strategy, (ii) selecting studies from their titles and abstracts, (iii) analysis of full texts for quality assessment and (iv) final selection of eligible texts. The authors followed the PRISMA 2020 statement (PAGE *et al.*, 2021) to conduct the systematic literature search on April 14, 2022 focusing on four international databases: Web of Science, SCOPUS (particularly selected for this topic due to the fact that it is where the International Journal for Lesson and Learning Studies [IJLLS] is indexed), Educational Resources Information Center (ERIC) and Scientific Electronic Library Online (SciELO). The searches used no restriction of time neither language and the search terms “Lesson Study” in the title and “self-efficacy” in all fields were combined by the Boolean operator AND. The eligibility criteria and the quality indicator questions are presented in Table 1 and Table 2, respectively.

Table 1 – Inclusion and exclusion criteria and quality indicator questions.

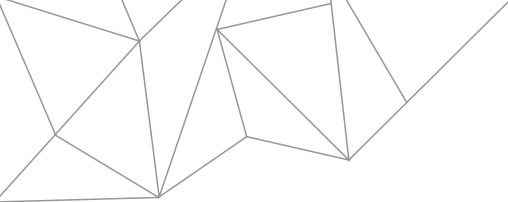
INCLUSION CRITERIA		EXCLUSION CRITERIA	
1.	Publication had to be peer-reviewed	1.	Literature reviews
2.	Study had to relate LS and self-efficacy in a professional development approach	2.	Studies that did not aim to investigate how LS and self-efficacy relate
3.	Study had to deploy empirical practice of LS in the Educational context	3.	Studies that are not published as journal article, such as conference proceedings and guidelines
4.	Study had to be published in English, Portuguese or Spanish	4.	Duplicated publications

Source: The authors (2021).

Table 2 - Quality indicator questions.

QUALITY INDICATOR QUESTIONS	
1.	Was the purpose, research question, hypothesis, objective clearly stated?
2.	Was the language and writing of the article appropriate?
3.	Were the methods well-elaborated and transparent?
4.	Were the concepts of LS and self-efficacy theoretically defined?
5.	Have the research questions been answered?

Source: The authors (2021).



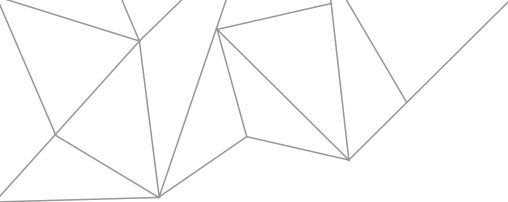
### 3.2 Data synthesis

Data were synthesized qualitatively, and results summarized narratively. Due to the fact that the studies presented different designs, outcomes, participants, contexts, among other aspects, a meta-analysis was not conducted. Data were synthesized according to the thematic analysis and presented in consonance with the data extraction information and findings, as presented in Table 3.

Table 3 – Data extraction sheet used to extract information from studies included for final qualitative synthesis.

Citation	Title	Country	Subject	School phase	Type and method of study	Duration	Funding
Akiba <i>et al.</i> (2019)	Lesson study design features for supporting collaborative teacher learning	U.S.A.	Math	Elementary school	Quantitative Case Study	1 academic year	Yes
Chong and Kong (2012)	Teacher Collaborative Learning and Teacher Self-Efficacy: The Case of Lesson Study	Singapore	Math, Humanities, Science	Elementary and secondary schools	Qualitative Empirical exploratory	7 weeks	No
Puchner and Taylor (2006)	Lesson study, collaboration and teacher efficacy: Stories from two school-based math lesson study groups	U.S.A.	Math	Elementary school	Qualitative Case study	6 months	Yes
Schipper <i>et al.</i> (2018)	Developing teachers' self-efficacy and adaptive teaching behaviour through lesson study	The Netherlands	Languages, Social sciences and Sciences	Secondary school	Quasi-experimental mixed methods	1 academic year	Yes
Schipper <i>et al.</i> (2020)	Promoting a professional school culture through lesson study? An examination of school culture, school conditions, and teacher self-efficacy	The Netherlands	Languages, Social sciences, Sciences and other	Secondary school	Quantitative Quasi-experimental explorative study	2 academic years	Yes
Mihajlović (2019)	Increasing Pre-service Kindergarten Teachers' Mathematics Teaching Efficacy through Lesson Study	Serbia	Math	Higher education	Quantitative Quasi-experimental Design	1 academic year	Yes





Chizhik <i>et al.</i> (2018)	Developing student teachers' teaching self-efficacy through Shared Mentoring in Learning Environments (SMILE)	U.S.A.	Not mentioned	Higher education	Experimental mixed method approach	1 academic years	No
Mintzes <i>et al.</i> (2013)	Enhancing Self-Efficacy in Elementary Science Teaching With Professional Learning Communities	U.S.A.	Science	Elementary school	Mixed method experimental research design	3 years	Yes

Source: The authors (2021).

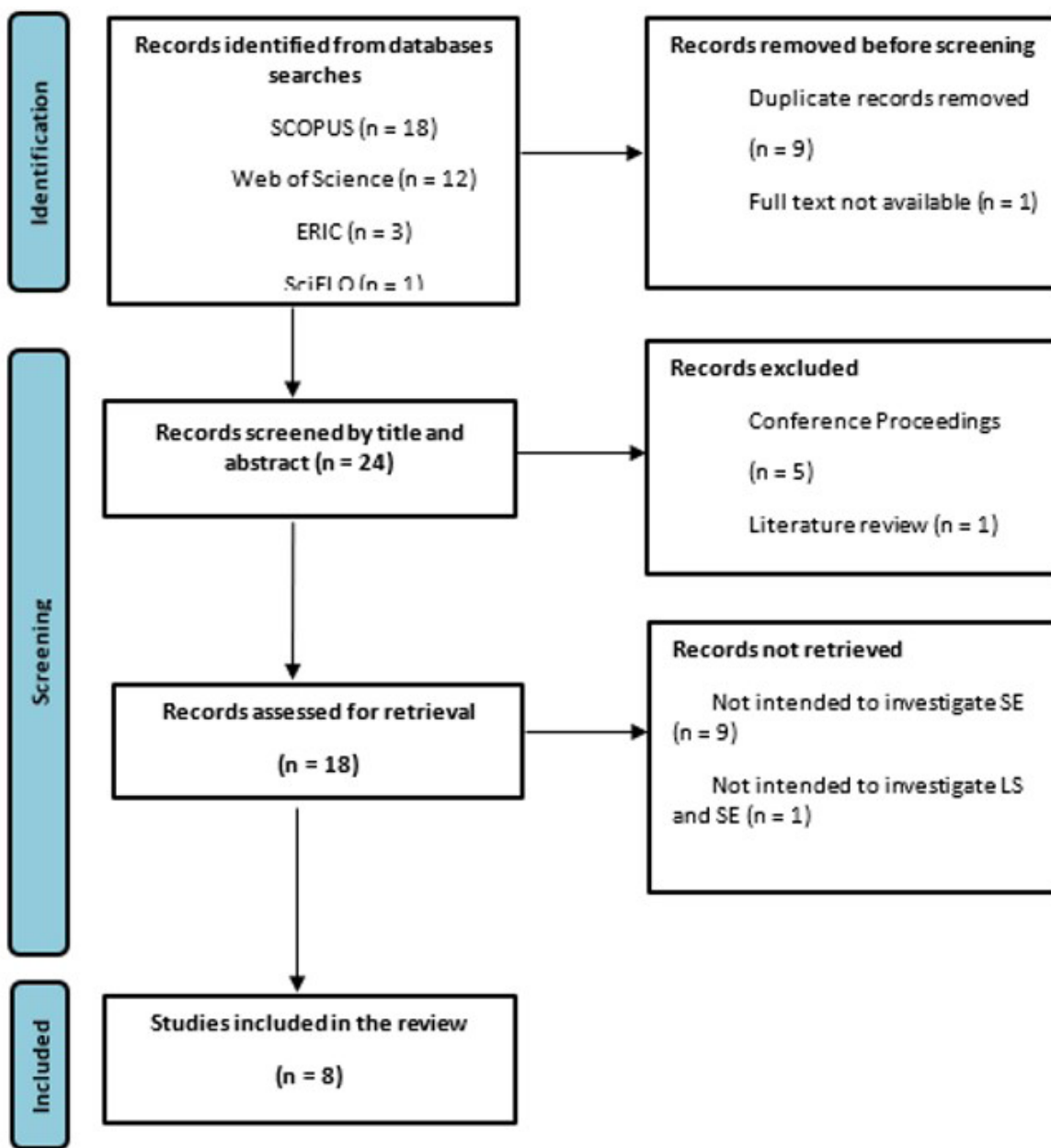
### 3.3 Risk of bias and quality indicator questions

The authors formulated search strategies and identified the appropriate search terms, the keywords, and the quality indicators questions. The quality of each study included in the review was checked by the authors independently. This was done to ensure that all the included studies reported the elements required to assess their quality.

## 4 RESULTS AND DISCUSSION

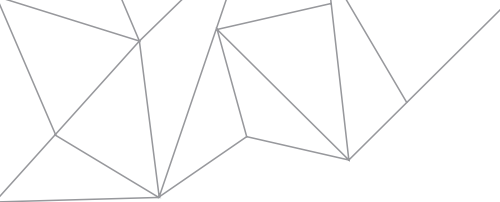
The initial search returned 34 studies. After removing duplicates and articles which were not published in full, 24 studies were screened from titles and abstracts, of which 18 were screened in full. After full screening, ten studies were excluded because they were not intended to investigate either LS or self-efficacy. Finally, eight studies that met the inclusion criteria were included in the review. The details for the search screen procedure are presented in the PRISMA 2020 flow diagram (Figure 1).

Figure 1 – PRISMA 2020 flow diagram for the search screening procedure.



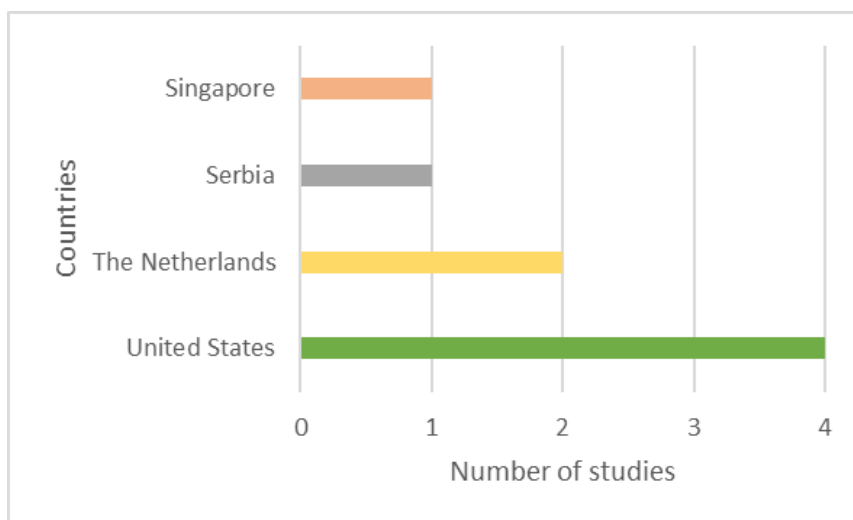
Source: Adapted from the PRISMA 2020 statements (PAGE *et al.*, 2021)  
 Note: SE = Self-efficacy; LS = Lesson Study

The included studies were conducted in four countries, with most studies from the United States (n = 4), two conducted in the Netherlands, one in Serbia and one in Singapore (Graphic 1). According to the World Bank economic classification, most of the studies were conducted in high-income countries (n = 7) and one study was conducted in an upper middle-income country. This result may indicate that providing financial supports for teachers and research projects is critical to enable the implementation and sustainability of LS. Using survey data from 87 teachers in 24 teacher groups engaged in mathematics



LS during one academic year, Akiba et al. (2019) found that facilitators' focus on student thinking, the quality of materials, and duration of lesson study were significantly associated with teacher participation in an effective inquiry process, which in turn is associated with perceived positive changes in teacher knowledge, self-efficacy, and expectation. However, the authors noted that many LS groups in the United States which promote continuous, long-term learning processes of LS are funded and the appropriate development of this approach requires a great amount of time and resources.

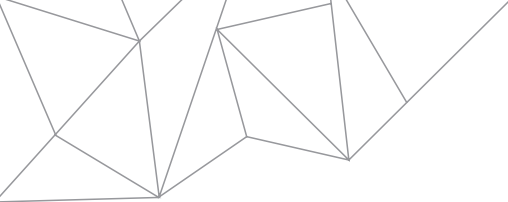
Graphic 1 – Frequency of studies published by countries.



Source: The authors (2021).

Indeed, most studies reported having received funding to conduct the project ( $n = 6$ ), such as Puchner and Taylor (2006a), whose qualitative study of two school-based math lesson study groups reported participating teachers and advisors received a small stipend, and funding was reverted to provide substitute teachers for the day of the teaching of the lesson and debriefing. Conversely, Takahashi and McDougal (2016) assert the necessity to provide teachers with suitable and sufficient time to participate in the LS model through the use of funds. In the same perspective, Lewis, Perry and Hurd (2009) pointed out that, even when the project is not officially funded, other ways of providing it are usually undertaken in order to assure its development.

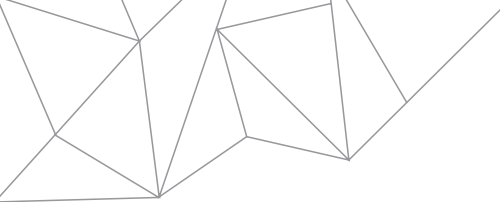
Most studies investigated the relation between LS and self-efficacy in two subject domains, math ( $n = 4$ ) and sciences ( $n = 4$ ), followed by languages ( $n = 2$ ) and social sciences ( $n = 2$ ), and humanities ( $n = 1$ ). It is noted that some studies investigated more than one subject. This result corroborates previous studies that identified that LS was most investigated in the field of mathematics education (GÜLHAN, 2021) followed by science (FLUMINHAN; SCHLÜNZEN; SCHLÜNZEN JUNIOR, 2021). Surprisingly, one study did not



make it clear which subject area the LS approach involved. This observation is consistent with Bandura (1986, 1997) statement that the influence of efficacy beliefs is very much dependent on contextual factors that include the nature of the task and conditions of the environment. Even so, the results obtained in the retrieved studies show that LS has positive impact on teachers' self-efficacy beliefs, such as confidence in being able to effectively teach the specific content, perceived knowledge growth (CHIZHIK *et al.*, 2018; AKIBA *et al.*, 2019; SCHIPPER *et al.*, 2018, 2020), and the ability to keep students motivated and engaged (PUCHNER; TAYLOR, 2006a; MIHAJLOVIĆ, 2019).

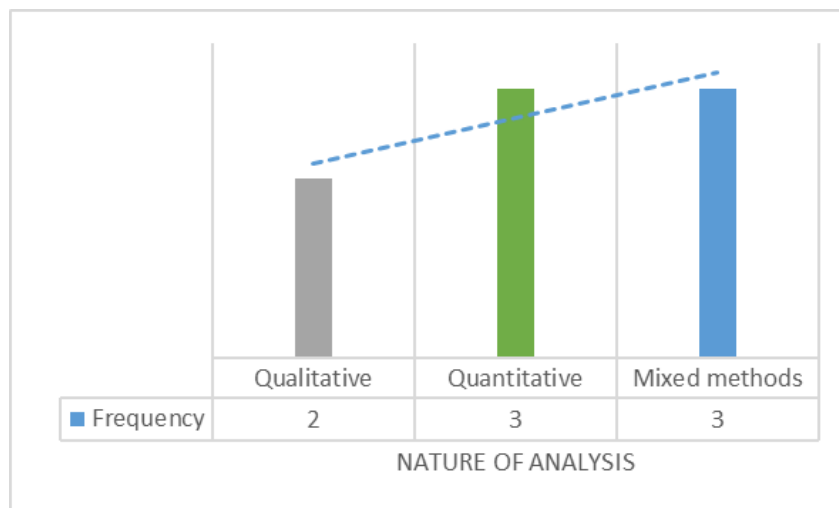
As LS is designed and implemented by the team, the results showed that the sense of joint ownership, responsibility and hands-on practice provided conditions and opportunities to strengthen the most relevant source of self-efficacy: mastery experiences (CHONG; KONG, 2012; MINTZES *et al.*, 2013; CHIZHIK *et al.*, 2018). Whereas traditional teacher PD approaches are often regarded as a "training" moment which aims to transport the teacher to an artificial reality that is alien to the school context and results in deepening the distance between the theory and the reality experienced in the daily life of the educational environment (SCHLÜNZEN *et al.*, 2020), the LS movement enables teachers "to bridge the gap between theory and practice" (SCHIPPER *et al.*, 2020, p. 362) and experience the complexity of teaching. This positive experience allowed teachers a safe and authentic environment to lessen their anxiety, develop pedagogical knowledge and reflect on their own practice in a nonthreatening space (CHONG; KONG, 2012; MINTZES *et al.*, 2013), which are indicators of opportunities to develop and sustain teacher self-efficacy.

Although previous reviews on LS report most studies are qualitative in nature (GÜHAN, 2021), the findings in this review show a tendency for quantitative ( $n = 3$ ) and mixed methods approaches ( $n = 3$ ), as demonstrated in Graphic 2. The two qualitative studies (PUCHNER, TAYLOR, 2006; CHONG; KONG, 2012) selected for this review reported that as teachers participated in the LS approach, they observed greater student engagement and communicated higher expectations of student performance, indicating that their experience could have led to higher efficacy. Similar stance was taken by the quantitative studies (AKIBA *et al.*, 2019; MIHAJLOVIĆ, 2019; SCHIPPER *et al.*, 2020) which documented that LS provided teachers or future teachers with learning opportunities that fostered perceived positive changes in teacher knowledge, collegiality, collaboration, higher expectation, motivation and self-efficacy. This is further supported by the mixed methods approach studies that highlighted the LS movement provided a nonthreatening environment for teachers to undergo a wide range of improved personal self-efficacy experiences: enhanced outcome expectancies, confidence in their instructional behavior, engagement of students, emotional support, among others. All of which informed to be positively related with students' achievement, as earlier evidence has demonstrated (PERERA; JOHN, 2020). These features are consistent with the literature that suggests that teachers' personal



efficacy to motivate and promote learning in their students is possibly one of the main ways through which efficacy beliefs affect students' cognitive development and academic progress (BANDURA, 1995).

Graphic 2 - Frequency and type of data analysis.



Source: The authors (2021).

Albeit LS is able to contribute to feelings of self-efficacy, this study reviewed articles that showed that supporting the development of lesson study and providing opportunities for teachers to study, discuss, jointly plan a lesson, observe the research lesson and reflect on it takes a great amount of time and resources. Mihajlović (2019), suggested that the fact that the participant student teachers had taught only two individual lessons might have influenced the results in her study. Although there was a significant difference in the self-reported competence to teach mathematics lessons and ability to get and keep pupils motivated, the author did not find significant difference in teacher self-efficacy total scores between groups. One reason might be because: “teacher education programmes have an impact on in-service teachers’ practice, but it sometimes takes years for the impact to appear in practice” (MIHAJLOVIĆ, 2019, p. 89-90).

By way of contrast, Mintzes *et al.* (2013) found that a group of elementary school teachers grew sustainably over a period of three years as a result of their participation in a LS program. They identified significant changes favoring the experimental group on all quantitative measures of self-efficacy. In a systematic review carried out to investigate how the Lesson Study is implemented in Turkey, Gülhan (2021) identified that time to meet the teachers emerged as one of the difficulties for the development of LS. Along the same line, previous studies pointed to the necessity of investing resources in order to enable teachers to participate in the LS activities (TAKAHASHI; McDOUGAL, 2016; FLUMINHAN; SCHLÜNZEN; SCHLÜNZEN JUNIOR, 2021).



## 5 FINAL CONSIDERATIONS

This review presents a conceptual framework that weaves together the research on the LS approach and the self-efficacy beliefs, therefore, it examined how the LS approach is associated with self-efficacy to produce effective teacher professional development. The findings showed that LS was conducted in eight high-income or upper middle-income countries. The usefulness of LS in promoting teacher efficacy was demonstrated in all levels of the education system, from elementary school to higher education. Most of the research used quantitative or mixed-methods approaches and reported positive benefits derived from the relationship between LS and self-efficacy for teachers' learning and the quality of classroom teaching and learning. Indeed, identified studies showed that LS and teacher efficacy are correlated, and that they predict student achievement. Evidence used to support these claims come from empirical studies developed in two major subject domains, mathematics and science. In addition, the retrieved studies highlighted some contextual factors and conditions that contributed to the success and spread of LS implementation, most notably, teacher collaboration and strengthening of teacher self-efficacy beliefs.

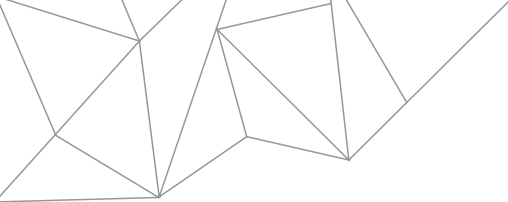
Due to the scarcity of research, more investigation is merited as there is much to gain regarding this burgeoning field. It would be recommended for future research to investigate not only the potential of LS to promote self-efficacy, but also how this relationship is culturally established locally. Furthermore, it would also be fruitful to consider students' perspective (i.e. students' perceived teacher motivation) when investigating this theme. In addition, further research is also required to explore how LS impacts teachers' self-efficacy to promote a more inclusive educational context.

Even though the findings suggest promising results, there are several limitations in this study that need to be acknowledged. One of them is related to the fact that we excluded theoretical publications, books, conference materials, dissertations, and guidelines, and we restricted our search to articles written in English, Portuguese and Spanish. Thus, we may have missed relevant studies from other languages, a possible cause of bias. We also searched different databases to ensure that relevant studies were included in the review, such as the British Education Index, British Educational Research Association (BERA) and Latin American and Caribbean Health Sciences Literature (LILACS), however, those searches did not result in articles that met the inclusion criteria. In addition, some studies could not be included due to the lack of access. On the other hand, our searches were not restricted to a particular region or time, which helped to widen the coverage.



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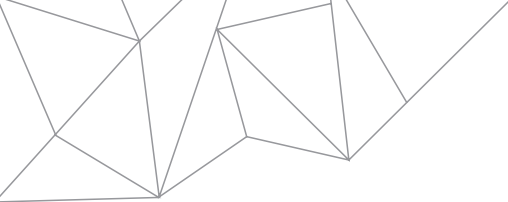
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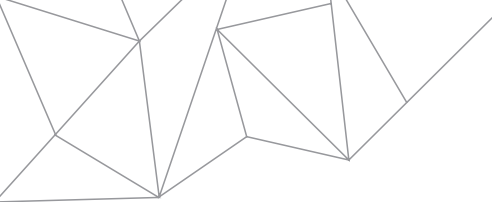
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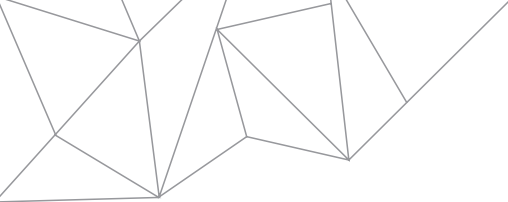
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