

## Multi-Pathway Model of Instructional Leadership and Teacher Self-Efficacy: A Systematic Literature Review

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**Abstract:** This systematic literature review synthesizes empirical evidence on the relationship between instructional leadership and teacher self-efficacy and identifies the key mechanisms that mediate this relationship across diverse educational contexts. Following the PRISMA guidelines, a systematic search was conducted in the Scopus, ScienceDirect, and Google Scholar databases for empirical studies published between 2015 and 2025, using quantitative, qualitative, or mixed-methods designs and focusing on school-level instructional leadership and teacher self-efficacy. A total of 21 primary empirical studies met the inclusion criteria and were selected for qualitative synthesis. The review revealed a consistent positive relationship between instructional leadership and teacher self-efficacy. This relationship is supported by interconnected organizational, professional, and psychological mechanisms, including professional learning opportunities, teacher collaboration, supportive school environments, and trust in leadership. The findings indicate that effective instructional leadership is associated with stronger teacher confidence in their professional capabilities by fostering conducive conditions for learning and growth. Based on the synthesized evidence, this study proposes a Multi-Pathway Model that conceptualizes instructional leadership as a multi-level capacity-building process associated with stronger teacher self-efficacy. The review contributes to the educational leadership literature by providing an integrative explanation of the relationship between instructional leadership and teacher self-efficacy. It also offers practical implications for policymakers and school leaders to promote collaboration, continuous professional learning, and a positive school climate to enhance teacher capacity and sustain school improvement.

**Keywords:** educational leadership, instructional leadership, teacher self-efficacy, professional learning, systematic literature review.

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### ■ INTRODUCTION

In recent decades, instructional leadership has been a major focus of education reform and school improvement efforts worldwide. School leaders are increasingly expected to actively improve teaching and learning, support teachers' professional learning, and contribute to school improvement (Liu & Hallinger, 2018). As education systems increasingly emphasize school improvement and instructional quality, principals' role as instructional leaders has become increasingly important (Walker & Qian, 2022).

Along with this shift, teacher self-efficacy has gained significant attention as a key psychological factor that affects teaching quality, classroom practice, teacher motivation, and student learning. Numerous studies show that teachers with strong self-efficacy are more likely to adopt innovative teaching strategies, cope with challenges, and positively influence student learning outcomes (Karakose et al., 2024; Peteros, 2024). As a result, understanding how school leadership can strengthen teachers' self-efficacy has become an important research agenda in the educational leadership literature.

Instructional leadership refers to a set of leadership practices focused on improving the quality of teaching and learning in schools. As instructional leaders, principals set academic goals, supervise the learning process, monitor student progress, and create professional development opportunities for teachers (Hallinger et al., 2025). This leadership emphasizes the principal's active involvement in teacher learning practices and capacity building. One of the most influential models in the instructional leadership literature was developed by Hallinger and Murphy (1985), which identifies three core dimensions of instructional leadership: defining the school's mission, managing instructional programs, and developing a positive school learning climate. Each dimension includes specific functions that describe the principal's leadership practices in supporting the learning process.

Teacher self-efficacy refers to teachers' confidence in their ability to plan, organize, and execute the actions necessary to achieve learning objectives effectively. Rooted in social cognitive theory, this concept emphasizes how individual beliefs shape action choices, effort, perseverance, and responses to professional challenges (Berkovich, 2026). Teacher self-efficacy is a psychological factor that shapes teaching practices, work motivation, professional commitment, and teachers' ability to manage the classroom and support student success. Teachers with high self-efficacy tend to be more open to learning innovations, more persistent in dealing with difficulties, and better able to foster a positive learning environment (Thien & Hallinger, 2026). Previous research also shows that teacher self-efficacy is influenced not only by individual factors but also by organizational and social conditions in the school environment, including leadership support, collaborative culture, and professional development opportunities (Skaalvik & Skaalvik, 2023). Therefore, understanding the contextual factors that shape teachers' self-efficacy is

important to improving the quality of teaching and learning in schools.

Educational leadership research has increasingly highlighted instructional leadership's role in shaping teacher self-efficacy. Theoretically, instructional leadership is believed to create organizational conditions that support professional learning, collaboration, and a school culture oriented toward improving teaching quality. This condition can strengthen teachers' confidence in their ability to carry out professional duties effectively. These leadership practices create organizational conditions that foster teachers' professional growth, strengthen instructional capacity, and enhance confidence in carrying out teaching responsibilities (Long & Xia, 2025). Through these practices, principals provide resources, feedback, and social support that strengthen teachers' professional confidence.

A growing body of empirical research has examined the relationship between instructional leadership and teacher self-efficacy in various educational contexts (Khan et al., 2024; Liu et al., 2022; Qadach et al., 2020). Overall, existing studies consistently report a positive relationship between leadership practices and teachers' self-efficacy in their professional abilities. However, despite the growing volume of research, the evidence base remains fragmented and theoretically dispersed across different research traditions and analytical approaches.

Existing studies generally examine mediating factors separately, such as professional learning, school climate, teacher collaboration, trust, and teachers' collective efficacy (Jang et al., 2025; Shen et al., 2026). Although these studies provide valuable insights, most examine these mediators in isolation within different theoretical frameworks and research contexts. Consequently, current knowledge only partially examines how instructional leadership influences teacher self-efficacy.

Despite these consistent findings, the mechanisms through which instructional leadership

influences teacher self-efficacy remain insufficiently understood. Previous research suggests these relationships likely operate through mediating pathways such as school culture, trust, and collective efficacy (Gümü° & Belliba°, 2025; Karacabey et al., 2022). This suggests that instructional leadership's influence on teacher self-efficacy is complex and involves interrelated, multi-level processes. Therefore, a conceptual synthesis is needed to integrate these findings into a more comprehensive framework explaining how instructional leadership influences teacher self-efficacy.

Although previous studies generally report a positive relationship between instructional leadership and teacher self-efficacy, the strength, form, and mechanisms of this relationship vary. For example, Özdemir et al. (2020) reported a moderate relationship, whereas Thien and Liu (2024) identified a significant nonlinear relationship. Similarly, Siriparp et al. (2022) examined the relationship through a moderated mediation mechanism involving collective efficacy and teacher role. These variations suggest that existing evidence is fragmented across different relationship patterns and explanatory mechanisms. Consequently, an integrative framework is needed to synthesize these pathways into a coherent explanation of how instructional leadership shapes teacher self-efficacy.

To address this gap, this study conducts a systematic literature review of empirical studies from 2015–2025 and seeks to construct a conceptual synthesis that moves beyond fragmented findings. Specifically, this study aims to develop a multi-pathway model explaining how instructional leadership operates through interacting organizational, professional, and psychological mechanisms, providing a more comprehensive understanding than previous approaches that tended to be partial. To operationalize these goals, this study formulated

the following three research questions: first, what are the characteristics of the relationship between instructional leadership and teacher self-efficacy reported in empirical studies; second, what factors play a role as mediators or mechanisms that explain the influence of instructional leadership on teacher self-efficacy; and third, how can these factors be integrated into a multi-pathway model that explains the influence of instructional leadership on teacher self-efficacy.

This review makes three major contributions to the educational leadership literature. First, this research goes beyond descriptive synthesis by integrating fragmented empirical findings into a conceptual framework that explains relationship patterns in a more systematic, multilevel manner. Second, this study develops a multi-pathway model of instructional leadership effects on teacher self-efficacy as a major theoretical contribution, showing that instructional leadership does not operate linearly but works through interactions among organizational, professional, and psychological mechanisms. This model offers a new perspective on how leadership practices translate into teachers' psychological capacity. Third, the findings provide practical implications by confirming that strengthening teacher self-efficacy requires a systemic leadership approach, not a separate, partial intervention.

## ■ **METHOD**

### **Research Design**

This study used a systematic literature review (SLR) design guided by the Preferred Reporting Items for Systematic Reviews and Meta-Analyses (PRISMA) framework to ensure transparency, rigor, and replicability (Page et al., 2021).

### **Data Sources and Search Strategy**

A comprehensive literature search was conducted in Scopus, ScienceDirect, and Google

Scholar for publications from 2015–2025. The search strategy used a combination of “*instructional leadership*” and “*teacher self-efficacy*” keywords with Boolean AND/OR operators. Google Scholar was used as a complementary search database to maximize literature retrieval. Articles identified through Google Scholar were subsequently verified against the predefined eligibility criteria, including publication in English-language international journals indexed in Scopus or the Web of Science (WoS) Core Collection. Studies that did not meet these criteria were excluded from the review.

### Eligibility Criteria

The inclusion criteria were limited to primary empirical studies that directly examined school-level instructional leadership and measured teacher self-efficacy at the individual teacher level, published in English-language international journals indexed in Scopus or the Web of Science (WoS) Core Collection. Eligible studies used quantitative, qualitative, or mixed-methods designs and reported empirical findings on the relationship between instructional leadership and teacher self-efficacy, for articles identified through Google Scholar, the journal’s indexing status was verified in Scopus or the Web of Science (WoS) Core Collection before the article was considered eligible for inclusion. Secondary studies, including systematic reviews and meta-analyses, studies focusing on the self-efficacy of principals or other non-teacher populations, and studies that did not directly measure teacher self-efficacy were excluded, along with non-empirical studies, articles unrelated to school-level instructional leadership, publications without full-text access, and studies published in journals that did not meet the indexing criteria.

### Study Selection Procedure

The study selection process followed the stages of identification, screening, eligibility

assessment, and inclusion. Duplicate records retrieved from different databases were identified and removed before screening. The screening and eligibility assessment were independently conducted by two reviewers using the predefined review protocol and eligibility criteria. The reviewers independently screened the titles and abstracts and subsequently assessed the full texts of potentially eligible studies.

Inter-rater agreement between the two reviewers was assessed using Cohen’s Kappa. For the 21 studies assessed by both reviewers, the observed agreement was 95.24%, with a Cohen’s Kappa coefficient of  $\kappa = 0.83$ . When disagreements occurred, the reviewers re-examined the relevant study against the predefined inclusion and exclusion criteria and discussed the rationale for their respective decisions. Disagreements were resolved through discussion and consensus, and the agreed decision was used for the final study selection. To ensure consistency, all included studies were assessed systematically according to the same eligibility and quality screening criteria.

Of the 7,989 initial records, 1,039 full-text articles were assessed for eligibility, resulting in 202 studies for systematic mapping and 21 studies initially selected for in-depth analysis. During subsequent verification of the inclusion criteria, three initially selected studies were found to be ineligible and were replaced by three eligible primary empirical studies from the systematic mapping pool, resulting in a final corpus of 21 primary empirical studies for qualitative synthesis. No new literature search was conducted at this stage. The overall study selection process is presented in Figure 1.

The methodological quality of the included studies was assessed using the Mixed Methods Appraisal Tool (MMAT), version 2018, which provides design-specific criteria for appraising qualitative, quantitative, and mixed-methods studies (Hong et al., 2019). The MMAT was

selected to accommodate the diversity of research designs represented in the final corpus. Each study was assessed according to the MMAT criteria applicable to its specific research design. Two reviewers independently conducted the

methodological quality assessment, and any discrepancies were discussed and resolved through consensus. The detailed criterion-level appraisal of the 21 included studies is presented in Table 1.

**Table 1.** Methodological quality appraisal of the included studies using MMAT 2018

| Study ID | Design                      | Participants representative | Appropriate measurements | Complete outcome data | Confounders accounted for | Appropriate exposure/intervention measurement |
|----------|-----------------------------|-----------------------------|--------------------------|-----------------------|---------------------------|-----------------------------------------------|
| S1       | Quantitative non-randomized | Y                           | Y                        | Y                     | Y                         | Y                                             |
| S2       | Quantitative non-randomized | Y                           | Y                        | CT                    | CT                        | Y                                             |
| S3       | Quantitative non-randomized | Y                           | Y                        | Y                     | Y                         | Y                                             |
| S4       | Quantitative non-randomized | Y                           | Y                        | Y                     | Y                         | Y                                             |
| S5       | Mixed methods               | Y                           | Y                        | Y                     | Y                         | Y                                             |
| S6       | Quantitative non-randomized | Y                           | Y                        | CT                    | CT                        | Y                                             |
| S7       | Quantitative non-randomized | Y                           | Y                        | Y                     | Y                         | Y                                             |
| S8       | Quantitative non-randomized | Y                           | Y                        | CT                    | CT                        | Y                                             |
| S9       | Quantitative non-randomized | Y                           | Y                        | Y                     | Y                         | Y                                             |
| S10      | Quantitative non-randomized | Y                           | Y                        | Y                     | Y                         | Y                                             |
| S11      | Quantitative non-randomized | Y                           | Y                        | Y                     | Y                         | Y                                             |
| S12      | Quantitative non-randomized | Y                           | Y                        | CT                    | CT                        | Y                                             |
| S13      | Quantitative non-randomized | Y                           | Y                        | CT                    | CT                        | Y                                             |
| S14      | Quantitative non-randomized | Y                           | Y                        | Y                     | Y                         | Y                                             |
| S15      | Quantitative non-randomized | Y                           | Y                        | Y                     | Y                         | Y                                             |
| S16      | Quantitative non-randomized | Y                           | Y                        | CT                    | CT                        | Y                                             |
| S17      | Quantitative non-randomized | Y                           | Y                        | CT                    | CT                        | Y                                             |
| S18      | Quantitative non-randomized | Y                           | Y                        | Y                     | Y                         | Y                                             |
| S19      | Quantitative descriptive    | Y                           | Y                        | Y                     | CT                        | Y                                             |
| S20      | Quantitative non-randomized | Y                           | Y                        | Y                     | Y                         | Y                                             |
| S21      | Quantitative non-randomized | Y                           | Y                        | Y                     | Y                         | Y                                             |

Note. S1–S21 correspond to the studies listed in Table 2. Y = Yes; CT = Cannot Tell. Methodological quality was appraised using the applicable MMAT 2018 criteria (Hong et al., 2019).

The methodological quality appraisal showed variation in the availability of methodological information across the included studies. Most studies provided sufficient information on participant characteristics, measurement procedures, and exposure assessment. In contrast, several did not provide

enough information to assess the completeness of outcome data or the extent to which potential confounding factors were addressed. The appraisal findings informed interpretation and synthesis of the evidence, particularly when integrating findings from studies with different methodological designs.

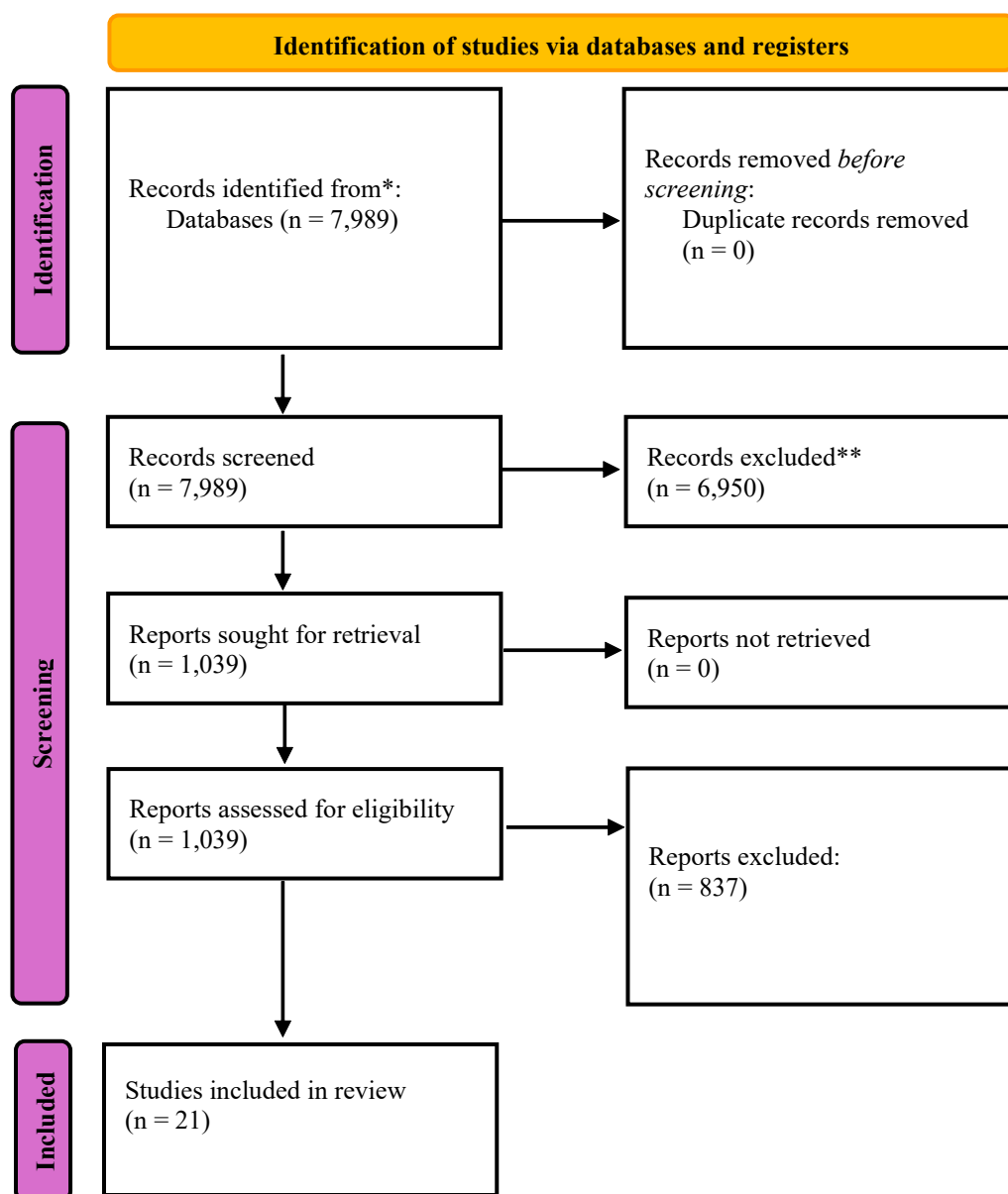


**Figure 1.** PRISMA 2020 flow diagram of the study selection process

## Data Extraction and Analysis

Data were independently extracted by the two reviewers using a predefined extraction form, including contextual information, research design, study population and teacher self-efficacy measurement, sample characteristics, instruments, and key findings. Any discrepancies in the extracted information were discussed and resolved by consensus. The extracted findings were synthesized using thematic analysis guided by the six-phase approach (Braun & Clarke, 2006, 2021). First, the extracted findings from the included studies were repeatedly reviewed to familiarize the researchers with the evidence and identify recurring patterns relevant to the research questions. Second, relevant findings were coded according to the reported relationship patterns, the measurement of teacher self-efficacy, mediating and moderating mechanisms, and contextual factors. Third, related codes were grouped into preliminary themes representing recurring patterns across the studies. Fourth, the preliminary themes were reviewed against the extracted findings to assess their coherence, relevance, and distinctiveness, with overlapping themes refined or combined where appropriate. Fifth, the themes were defined and named

according to their substantive meaning and relevance to the review objectives. Sixth, the final themes were synthesized narratively across the included studies to identify overarching relationship patterns, explanatory mechanisms, and methodological trends. The resulting thematic synthesis then integrated the identified mechanisms into the proposed multi-pathway conceptual model of the relationship between instructional leadership and teacher self-efficacy.

## RESULT AND DISCUSSION

### Characteristics of the Relationship Between Instructional Leadership and Teacher Self-Efficacy (RQ1)

To address RQ1, the characteristics of the relationship between instructional leadership (IL) and teacher self-efficacy (TSE) were examined across the 21 studies included in the in-depth review. The included studies varied in methodological approach, geographical context, publication year, and the form of the reported relationship between IL and TSE. Table 2 summarizes the included studies' characteristics, including their methodological approaches, the nature of the reported relationship, identified mediating and explanatory factors, and key findings.

**Table 2.** Overview of the included studies and their characteristics

| Study ID | Study                    | Country           | Methodological Approach            | Nature of Relationship | Dominant Mediator                 | Key findings                                                                    |
|----------|--------------------------|-------------------|------------------------------------|------------------------|-----------------------------------|---------------------------------------------------------------------------------|
| S1       | Liu et al. (2021)        | 32 OECD countries | Quantitative, SEM                  | Direct & indirect      | Teacher job satisfaction          | IL significantly related to TSE and job satisfaction                            |
| S2       | Zheng et al. (2019)      | China             | Quantitative, questionnaire survey | Direct & indirect      | Professional learning communities | IL significantly related to TSE, with PLC components mediating the relationship |
| S3       | Hallinger et al. (2018)  | Iran              | Quantitative, SEM                  | Direct & indirect      | Collective teacher efficacy       | Significant relationships among IL, TSE, and collective efficacy                |
| S4       | Liu and Hallinger (2018) | China             | Quantitative, SEM                  | Direct & indirect      | Professional learning             | IL positively associated with TSE and professional learning                     |

|            |                              |                   |                                           |                         |                                                |                                                                                                               |
|------------|------------------------------|-------------------|-------------------------------------------|-------------------------|------------------------------------------------|---------------------------------------------------------------------------------------------------------------|
| <b>S5</b>  | Özdemir et al. (2020)        | Turkey            | Mixed method                              | Direct                  | —                                              | IL moderately strengthened TSE                                                                                |
| <b>S6</b>  | Cansoy and Parlar (2018)     | Turkey            | Quantitative, survey                      | Direct & indirect       | Collective teacher efficacy                    | IL positively strengthened TSE and collective efficacy                                                        |
| <b>S7</b>  | Khan et al. (2024)           | India             | Quantitative, survey & mediation analysis | Direct & indirect       | Teacher self-efficacy                          | IL significantly related to TSE and job satisfaction, with TSE mediating the IL–job satisfaction relationship |
| <b>S8</b>  | Musa et al. (2020)           | Malaysia          | Quantitative, survey                      | Direct & indirect       | Trust                                          | IL positively correlated with TSE and trust                                                                   |
| <b>S9</b>  | Thien and Liu (2024)         | Malaysia          | Quantitative, SEM                         | Nonlinear               | Professional learning                          | Significant nonlinear relationship with TSE                                                                   |
| <b>S10</b> | Kılınc et al. (2022)         | Turkey            | Quantitative, survey                      | Direct                  | —                                              | IL dimensions significantly linked to TSE                                                                     |
| <b>S11</b> | Siriparp et al. (2022)       | Thailand          | Quantitative, survey                      | Indirect                | Collective efficacy; teacher role              | IL influenced TSE through collective efficacy and teacher role                                                |
| <b>S12</b> | Elfira et al. (2024)         | Indonesia         | Quantitative, PLS-SEM                     | Direct & indirect       | Teacher self-efficacy                          | IL significantly related to TSE and teacher performance, with TSE mediating the IL–performance relationship   |
| <b>S13</b> | Ma and Marion (2021)         | China             | Quantitative, survey                      | Direct & indirect       | Trust; school climate                          | Supportive learning climate increased teacher efficacy                                                        |
| <b>S14</b> | Chen and Rong (2023)         | China             | Quantitative, survey                      | Conditional / moderated | Teacher collegiality                           | The positive relationship between IL and TSE was stronger under higher levels of teacher collegiality         |
| <b>S15</b> | Mokhtar and Abd Razak (2024) | Malaysia          | Quantitative, SEM                         | Direct                  | —                                              | IL positively influenced TSE                                                                                  |
| <b>S16</b> | Liu et al. (2025)            | China             | Quantitative, SEM                         | Indirect                | Professional learning community; self-efficacy | Positive relationship with TSE                                                                                |
| <b>S17</b> | Bellibas and Liu (2017)      | 32 OECD countries | Quantitative, survey                      | Direct                  | —                                              | Significant positive IL–TSE relationship                                                                      |
| <b>S18</b> | Ma'mun and Suryana (2019)    | Indonesia         | Quantitative, survey                      | Direct                  | —                                              | Significant influence on TSE                                                                                  |

|            |                      |             |                      |                   |                          |                                                                       |
|------------|----------------------|-------------|----------------------|-------------------|--------------------------|-----------------------------------------------------------------------|
| <b>S19</b> | Niemted (2020)       | Indonesia   | Quantitative, SEM    | Direct            | —                        | Positive relationship with TSE                                        |
| <b>S20</b> | Cadungog (2015)      | Philippines | Quantitative, survey | Indirect          | Professional development | Significant relationships among IL, professional development, and TSE |
| <b>S21</b> | Hammad et al. (2024) | Oman        | Quantitative, SEM    | Direct & indirect | Collaboration            | IL positively influenced TSE                                          |

Note. “Direct” indicates that the study examined the relationship between instructional leadership and teacher self-efficacy without testing an intervening mechanism. “Indirect” indicates that the study explicitly tested a mediating or explanatory mechanism between instructional leadership and teacher self-efficacy. Studies classified as “direct and indirect” examined both the direct relationship and at least one intervening mechanism. “—” indicates that no dominant mediator was reported or tested.

As presented in Table 2, the 21 studies included in the final synthesis employed predominantly quantitative approaches across diverse geographical contexts. The studies varied in methodology and in how they reported the relationship between instructional leadership (IL) and teacher self-efficacy (TSE), including direct, direct and indirect, indirect, nonlinear, and conditional or moderated relationships. The reviewed studies also identified several factors associated with or positioned within the IL–TSE relationship, including collective teacher efficacy, professional learning, professional learning

communities, trust, school climate, teacher collegiality, professional development, and collaboration. Rather than presenting these characteristics as separate descriptive distributions, Figure 2 synthesizes their interrelationships by mapping the included studies’ geographical contexts to their methodological approaches and the organizational, professional, and psychological mechanisms identified in the reviewed evidence. This visualization highlights how contextual and methodological patterns converge with different explanatory mechanisms across the 21 included studies.

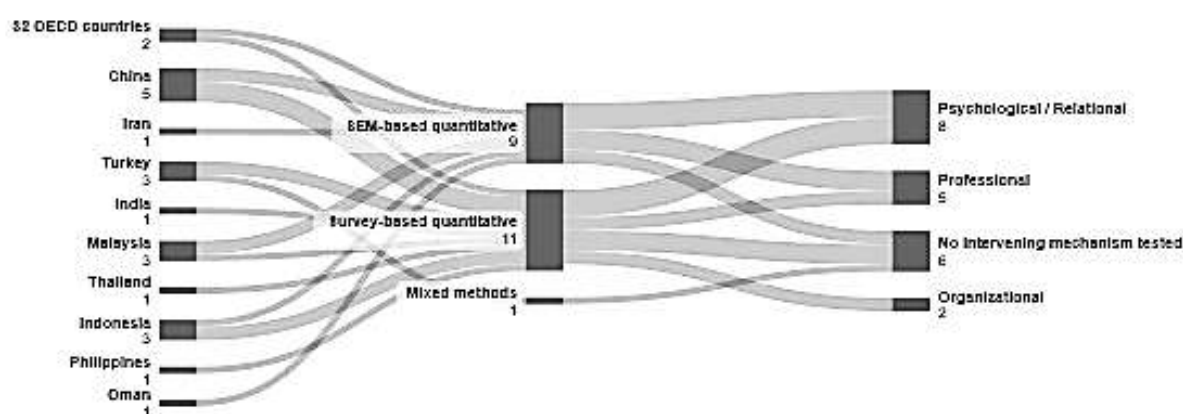


**Figure 2.** Sankey diagram mapping geographical contexts, analytical approaches, and mechanism/explanatory categories across the included studies, Note: Mechanism categories represent mediating, moderating, or conditioning factors, as well as other explanatory mechanisms identified across the reviewed studies. They should not be interpreted as statistically equivalent mediation pathways. The categories reflect the conceptual or analytical mechanisms examined in the respective studies.

Figure 2 highlights the interconnected characteristics of the evidence base across geographical, methodological, and explanatory dimensions. Studies are geographically concentrated in Asian educational contexts, particularly China, Turkey, Malaysia, and Indonesia, with fewer studies from Iran, India, Thailand, the Philippines, Oman, and cross-national OECD settings. Methodologically, the evidence is strongly oriented toward quantitative approaches, particularly survey-based research and structural equation modeling (SEM), with limited representation of mixed-methods research. These patterns provide contextual information for interpreting the different forms of the relationship between instructional leadership (IL) and teacher self-efficacy (TSE) identified across the reviewed studies.

Regarding the relationship itself, the reviewed literature generally reported a positive association between instructional leadership and teacher self-efficacy. Several studies examined IL as a direct predictor or correlate of TSE, including (Bellibas & Liu, 2017; K yl n  et al., 2022; Liu et al., 2021; Ma'mun & Suryana, 2019; Mokhtar & Abd Razak, 2024; Niemted, 2020;  zdemir et al., 2020). This pattern indicates that studies across different educational contexts report a positive association between instructional leadership and teacher self-efficacy. However, the form and conditions of the relationship vary.

However, the relationship did not take the same form or strength across all studies. Hallinger et al. (2018) reported significant relationships among instructional leadership, teacher self-efficacy, collective teacher efficacy, and organizational commitment. In contrast,  zdemir et al. (2020) reported a moderate relationship between instructional leadership and teacher self-efficacy. Chen and Rong (2023) found that teacher collegiality conditioned the relationship between IL and TSE, with the positive relationship being stronger under higher levels of

collegial support. Siriparp et al. (2022) reported an indirect relationship between instructional leadership and teacher self-efficacy through collective teacher efficacy and teacher role. In addition, Thien and Liu (2024) identified a significant nonlinear relationship between instructional leadership and teacher self-efficacy.

These findings indicate that the IL–TSE relationship cannot be characterized solely as a uniform direct association. Instead, the reviewed evidence shows variation in how and under what conditions the relationship has been examined. The finding on teacher collegiality suggests that organizational context may condition the association between leadership and teacher self-efficacy. Similarly, the findings on collective teacher efficacy and teacher role suggest that factors may lie between leadership practices and teachers' efficacy beliefs. The nonlinear finding reported by Thien and Liu (2024) further indicates that the association between IL and TSE does not necessarily increase proportionally as instructional leadership increases.

From a Social Cognitive Theory perspective, these findings can be understood by viewing teacher self-efficacy as a psychological belief that develops through interactions between individuals and their social environments. Accordingly, instructional leadership need not directly determine self-efficacy in every context. Rather, leadership practices may shape the organizational conditions, professional experiences, and social interactions through which teachers develop and reinforce efficacy beliefs.

This theoretical perspective explains the generally positive relationship identified in the reviewed literature. Instructional support and professional development can give teachers opportunities to experience successful performance, corresponding to mastery experiences. Collaborative practices and interactions with colleagues can provide opportunities to observe others, exchange

strategies, and learn from successful practices, corresponding to vicarious experiences. Feedback, encouragement, and recognition can serve as forms of social persuasion, while supportive, psychologically safe working conditions may shape teachers' emotional responses to instructional challenges.

The theoretical perspective also helps explain why the relationship varies across studies. If teacher self-efficacy develops through social, experiential, and affective processes, teachers may experience the same leadership practices differently across organizational settings. Thus, the stronger IL–TSE relationship observed under higher teacher collegiality and the indirect relationship involving collective teacher efficacy are consistent with the possibility that organizational and professional conditions shape how leadership practices are translated into teachers' efficacy beliefs. These interpretations, however, should be understood as theoretical explanations of patterns identified across the reviewed studies rather than as evidence that all of these processes operate uniformly across contexts.

Overall, the findings addressing RQ1 indicate that the relationship between instructional leadership and teacher self-efficacy is generally positive but heterogeneous in form and conditions. The evidence includes direct, indirect, nonlinear, and conditional relationships, suggesting that a single direct pathway cannot adequately explain the association between instructional leadership and teacher self-efficacy. This finding supports RQ2, which examines the organizational, professional, and psychological or relational factors identified across the reviewed studies as potential mediating or explanatory mechanisms.

### **Mediating Factors and Mechanisms Linking Instructional Leadership and Teacher Self-Efficacy (RQ2)**

To address RQ2, the reviewed studies were examined for factors that mediated or explained

the relationship between instructional leadership (IL) and teacher self-efficacy (TSE). The synthesis identified several recurring factors operating at organizational, professional, and psychological levels. These included a collaborative work environment, professional development/professional learning, supportive school climate, and trust in leadership. The reviewed studies also reported mechanisms involving collective teacher efficacy, teacher role, teacher collegiality, and professional learning communities. These factors indicate that the relationship between instructional leadership and teacher self-efficacy may operate through multiple interconnected processes rather than through a single pathway.

The collaborative work environment emerged as an important organizational mechanism. The reviewed literature indicates that instructional leadership is associated with opportunities for teachers to collaborate, exchange instructional practices, and engage in professional interaction. In this context, collaboration provides a social environment in which teachers can share experiences and instructional strategies. Evidence on teacher collegiality similarly suggests that organizational context can shape the relationship between instructional leadership and teacher self-efficacy. For example, Chen and Rong (2023) found that the positive relationship between IL and TSE was stronger under higher levels of teacher collegiality.

A second mechanism concerns professional development and professional learning. Several studies in Table 2 identified professional learning, professional development, or professional learning communities in relation to the IL–TSE relationship. Liu and Hallinger (2018), for example, reported a positive association between instructional leadership, teacher self-efficacy, and professional learning, while Cadungog (2015) examined the relationships among instructional leadership, professional development, and teacher self-efficacy. Liu et al. (2025) similarly

examined professional learning communities and self-efficacy. These findings suggest that instructional leadership may be connected with teacher self-efficacy through opportunities for continuing professional learning and development.

The role of professional learning can be interpreted through Social Cognitive Theory, particularly the importance of mastery experiences in the development of efficacy beliefs. Professional learning may provide teachers with opportunities to acquire knowledge, develop instructional skills, practice new approaches, and experience successful performance. These experiences can contribute to teachers' perceptions of their capability to perform instructional tasks. Thus, professional development represents a potential professional mechanism through which instructional leadership may be associated with teacher self-efficacy rather than merely functioning as an additional leadership outcome.

A third mechanism identified in the reviewed literature is supportive school climate. For example, Ma and Marion (2021) examined trust and school climate in relation to instructional leadership and teacher self-efficacy, reporting that a supportive learning climate was associated with teacher efficacy. The role of school climate is important because leadership practices are implemented within an organizational environment. A supportive environment can provide teachers with conditions that facilitate engagement with instructional initiatives and professional activities.

From a Social Cognitive Theory perspective, a supportive school climate reflects the social and affective conditions that shape teachers' professional experiences. When teachers perceive their working environment as supportive, their responses to instructional challenges may be more favorable, potentially supporting the development and maintenance of efficacy beliefs. This interpretation is consistent

with the theoretical proposition that self-efficacy is influenced not only by successful performance experiences but also by social interaction and affective states.

Trust in leadership represents another mechanism identified in the reviewed studies. Musa et al. (2020) reported a positive relationship involving instructional leadership, teacher self-efficacy, and trust, while Ma and Marion (2021) also identified trust alongside school climate. Trust matters because it reflects teachers' perceptions of and responses to school leadership. When teachers perceive leadership as supportive and credible, they may be more receptive to instructional guidance and professional initiatives. In this sense, trust may help explain how teachers experience leadership practices psychologically.

The reviewed studies also identified collective teacher efficacy as an important mechanism. Hallinger et al. (2018) reported significant relationships among instructional leadership, teacher self-efficacy, and collective efficacy, while Cansoy and Parlar (2018) similarly examined instructional leadership, teacher self-efficacy, and collective teacher efficacy. Siriparp et al. (2022) reported an indirect relationship involving collective efficacy and teacher role. These findings suggest that teachers' efficacy beliefs may connect not only to their individual experiences but also to perceptions of teachers' collective capability within their professional environment.

Taken together, these findings suggest that the mechanisms linking instructional leadership and teacher self-efficacy operate across organizational, professional, and psychological levels. At the organizational level, collaboration, collegiality, and school climate shape the context in which leadership practices are experienced. At the professional level, professional development, professional learning, and

professional learning communities provide opportunities for learning and skill development. At the psychological level, trust and collective efficacy reflect how teachers perceive their leaders, colleagues, and their collective professional capability.

This multilevel interpretation is consistent with Social Cognitive Theory, which emphasizes reciprocal interactions among individual factors, behavior, and environmental conditions. Instructional leadership can therefore be understood as part of an environment that shapes teachers' opportunities for learning, interaction, feedback, and professional experience. These experiences, in turn, may contribute to teachers' efficacy beliefs. Importantly, the evidence does not support treating all of these factors as statistically confirmed mediators in every study. Rather, they represent mediating factors or explanatory mechanisms identified across different studies and research designs.

Overall, RQ2 shows that the reviewed literature explains the relationship between instructional leadership and teacher self-efficacy through interconnected mechanisms rather than a single universal mediator. The recurring roles of collaboration, professional learning and development, supportive school climate, trust, and collective efficacy provide the empirical basis for integrating these mechanisms into the multi-pathway conceptual model addressed in RQ3.

### **Multi-Pathway Integration of the Identified Mechanisms (RQ3)**

To address RQ3, the factors identified in the reviewed literature were integrated into a multi-pathway conceptual model explaining how instructional leadership may be associated with teacher self-efficacy. The model synthesizes the recurring mechanisms identified in RQ2 and the different forms of the IL–TSE relationship identified in RQ1. Rather than assuming a single

linear pathway from instructional leadership to teacher self-efficacy, the synthesis organizes the identified mechanisms into interconnected organizational, professional, and psychological pathways.

The organizational pathway incorporates collaboration, teacher collegiality, school climate, and organizational culture. Collaboration was identified in Hammad et al. (2024), while teacher collegiality was found to condition the relationship between IL and TSE in Chen and Rong (2023). Ma and Marion (2021) examined school climate in relation to instructional leadership and teacher efficacy. These findings provide the empirical basis for positioning organizational conditions as one component of the proposed model.

The professional pathway incorporates professional development, professional learning, professional learning communities, and teacher job satisfaction. Cadungog (2015) examined the relationship among instructional leadership, professional development, and TSE, while Liu and Hallinger (2018) reported relationships involving instructional leadership, professional learning, and TSE. Liu et al. (2025) examined professional learning communities in relation to self-efficacy, and Liu et al. (2021) included teacher job satisfaction in examining the relationship involving instructional leadership and TSE. These findings support representing professional learning and development as an important pathway within the proposed conceptual model.

The psychological pathway incorporates trust in leadership, collective teacher efficacy, and teacher role. Musa et al. (2020) and Ma and Marion (2021) examined trust in relation to instructional leadership and teacher self-efficacy. Hallinger et al. (2018) and Cansoy and Parlar (2018) reported relationships involving collective teacher efficacy, instructional leadership, and TSE, while Siriparp et al. (2022) examined collective efficacy and teacher role in relation to

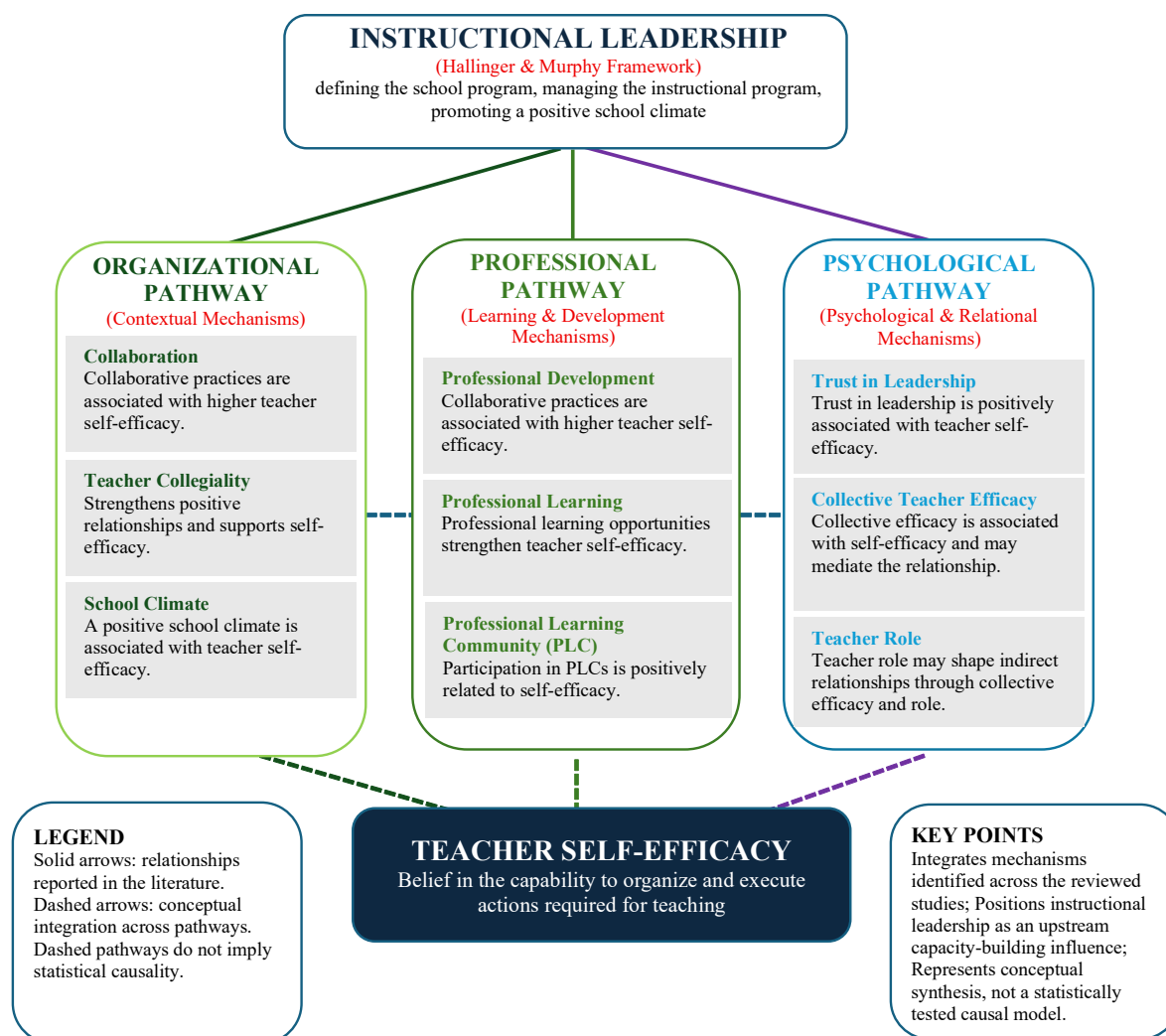


**Figure 3.** Proposed multi-pathway conceptual model linking instructional leadership and teacher self-efficacy. Note: This model is a conceptual synthesis derived from the reviewed literature and does not represent a statistically tested causal model

the IL–TSE relationship. These findings provide a basis for incorporating psychological and relational processes into the proposed model.

The three pathways are conceptually interconnected rather than mutually exclusive. This organization represents the synthesis made in the present review: organizational conditions provide the context in which teachers interact and work collaboratively; professional mechanisms represent opportunities for learning and development; and psychological mechanisms capture relational and efficacy-related processes

identified in the reviewed studies. The proposed connections among these pathways should therefore be understood as a literature-derived conceptual interpretation, rather than as relationships that were simultaneously tested in a single empirical model.

This interpretation aligns with Social Cognitive Theory, which emphasizes reciprocal interactions among personal factors, behavior, and environmental conditions. In the present synthesis, instructional leadership represents an important environmental and social influence,

whereas teacher self-efficacy represents an individual psychological belief. The organizational, professional, and psychological mechanisms identified in the reviewed studies offer potential pathways through which these elements may connect.

The proposed model can also be interpreted through Hallinger and Murphy's instructional leadership framework, particularly its emphasis on defining the school mission, managing the instructional program, and promoting a positive school learning climate (Hallinger & Murphy, 1985). This synthesis extends this leadership perspective by linking instructional leadership to the organizational, professional, and psychological mechanisms identified across the reviewed literature.

Importantly, the proposed multi-pathway model is a conceptual synthesis derived from the reviewed literature, rather than a statistically validated causal model. The included studies examined different relationships and mechanisms across different methodological designs and educational contexts. Therefore, interpret the model as an integrative framework for organizing the reviewed evidence, not as evidence that all pathways operate simultaneously or with equal strength.

Overall, RQ3 integrates the findings from RQ1 and RQ2 into a coherent conceptual framework. RQ1 established that the relationship between instructional leadership and teacher self-efficacy is generally positive but varies in form and strength. RQ2 also identified organizational, professional, and psychological factors associated with, or potentially explaining, this relationship. Building on these findings, the proposed model links instructional leadership to teacher self-efficacy through multiple interconnected pathways, while recognizing that the proposed cross-pathway relationships require further empirical testing.

## ■ IMPLICATION

This study's findings have theoretical and practical implications for educational leadership development. Theoretically, the findings suggest that principals' instructional leadership influences teacher self-efficacy indirectly and multidimensionally, operating through organizational, professional, and psychological processes. These findings reinforce the role of teacher self-efficacy as a critical mechanism linking school leadership practices to teacher professional development and learning outcomes. Furthermore, the proposed multi-pathway model contributes to the literature by offering an integrative framework explaining how a collaborative environment, a supportive school climate, professional development, and trust in leadership collectively shape teachers' professional beliefs.

Practically, the findings highlight that strengthening teacher self-efficacy requires a systemic and sustainable leadership approach. Principals need to act not only as instructional supervisors but also as facilitators of professional learning and builders of a supportive school climate. Leadership practices that encourage collaboration, mentoring, and shared learning goals can strengthen teachers' confidence in addressing instructional challenges. Therefore, leadership development programs should emphasize not only managerial competencies but also the ability to foster a collaborative and psychologically safe school environment.

## ■ LIMITATION AND FUTURE RESEARCH

This study has several limitations that need to be considered. First, most reviewed studies used a survey-based quantitative approach, so an in-depth understanding of instructional leadership practices in everyday school contexts remains limited. Second, the geographical

distribution of research, dominated by Asian and European countries, suggests that cultural contexts and educational systems are not yet fully represented. Third, variations in research design and measurement instruments may reduce consistency across studies. Given these limitations, future research should adopt more diverse methodological approaches, including qualitative studies and mixed-methods designs, to better understand instructional leadership practices across school contexts. Longitudinal research is also needed to examine the dynamics of the relationship between instructional leadership and teacher self-efficacy over time in greater depth. In addition, empirically testing the proposed multi-pathway conceptual model is an important agenda to validate the relationships between variables and identify contextual factors that can strengthen or weaken those relationships.

### ■ CONCLUSION

This study reviews and integrates research on the relationship between instructional leadership and teacher self-efficacy across a variety of educational contexts. The review aims to clarify how instructional leadership contributes to teachers' confidence in their professional abilities and to synthesize the mechanisms that explain this relationship. The findings indicate that instructional leadership consistently shows a positive relationship with teacher self-efficacy across different countries and school contexts. Beyond this direct relationship, the review highlights mediating processes at organizational, professional, and psychological levels, including a collaborative school environment, professional development opportunities, a supportive school climate, and trust in leadership. Based on these insights, this study proposes an integrated multi-pathway conceptual model that explains how instructional leadership may influence teacher self-efficacy through interrelated mechanisms rather than through a single linear pathway. Overall, the

review contributes to the literature by offering an integrative framework that consolidates fragmented findings and clarifies how instructional leadership practices relate to the development of teacher self-efficacy. Therefore, strengthening instructional leadership may represent an important strategy for fostering teachers' confidence in their professional abilities.

### ■ DECLARATION OF GENERATIVE AI USAGE IN THE WRITING PROCESS

During the preparation of this work, the authors used AI tools to improve the manuscript's readability and language. After using these tools, the authors carefully reviewed and edited the content as needed and take full responsibility for the published article.

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