

## REVIEW ARTICLE

# The effect of distributed leadership on teacher self-efficacy in Mainland China: A systematic review (2019–2025)

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## ABSTRACT

This systematic review synthesizes empirical studies published between 2019 and 2025 on the relationship between distributed leadership (DL) and teacher self-efficacy (TSE) in Mainland China. A total of 8,742 records were retrieved from major academic databases, with 10 high-quality studies selected through a PRISMA-guided screening process. The findings reveal a consistently positive association between DL and TSE, mediated by factors such as teacher collaboration, professional trust, teacher leadership, and ICT integration. Moderating influences, including interpersonal trust, school culture, and regional disparities, underscore the contextual complexity of DL within China's dual centralized governance structure and high power-distance culture. This review clarifies the mechanisms through which DL supports TSE and offers culturally responsive recommendations. It advocates for embedding DL into teacher professional development, strengthening departmental collaboration, increasing teacher leadership participation, and incorporating indigenous philosophies such as Wang Yangming's "unity of knowledge and action" to enhance intrinsic teacher agency. Overall, this review enriches the cultural lens of educational leadership and offers actionable strategies for fostering teacher professional growth.

**Keywords:** distributed leadership; teacher self-efficacy; Mainland China; educational leadership; professional development

## 1. Introduction

Since the 1990s, the concept of distributed leadership (DL) has gained prominence in educational research and policy discourse, offering a robust framework for rethinking how leadership operates in schools<sup>[1,2]</sup>. This shift from hierarchical, principal-centric models to collective, practice-oriented leadership mirrors broader trends in 21st-century school reform<sup>[3,4]</sup>. DL emphasises the distribution of leadership tasks across formal and informal roles, mobilising the collective expertise of teachers, support staff, and other stakeholders to enhance student learning<sup>[5,6]</sup>. Empirical syntheses consistently link DL with organizational

### ARTICLE INFO

Received: 5 September 2025 | Accepted: 19 September 2025 | Available online: 22 September 2025

### CITATION

Zhang C, Alias BS, Nordin MN. The effect of distributed leadership on teacher self-efficacy in Mainland China: A systematic review (2019–2025). *Environment and Social Psychology* 2025; 10(9): 4133. doi: 10.59429/esp.v10i9.4133

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learning, improved instructional capacity, and higher teacher commitment<sup>[7,8]</sup>. The importance of DL in the contemporary educational landscape is further shown by recent evaluations that emphasise its function in enhancing teacher resilience and adaptation in post-pandemic school reforms<sup>[9]</sup>.

In the Chinese context, national policy agendas promoting school “modernization” explicitly encourage flatter decision-making structures and teacher-led professional communities<sup>[10,11]</sup>. Case-study and survey evidence from Chinese schools indicates that when decision-making is shared, teachers report stronger professional efficacy, greater job satisfaction, and a deeper sense of collective responsibility<sup>[12-14]</sup>. DL’s capacity to foster a positive, supportive climate—one that empowers teachers as co-leaders—has therefore become a focal point of contemporary leadership research<sup>[15,16]</sup>. According to recent empirical research, collaborative professionalism and teacher well-being are positively impacted by distributed leadership in Chinese mainland schools<sup>[17]</sup>.

Meanwhile, teacher self-efficacy (TSE), that is, teachers’ belief in their ability to successfully perform teaching tasks is regarded as a key psychological construct linking leadership practices, teaching quality, and student outcomes<sup>[18]</sup>. A high level of self-efficacy is predictive of more effective teaching, greater openness to innovation, and stronger resilience in stressful situations<sup>[19]</sup>. Recent empirical studies have shown that distributed leadership (DL) significantly enhances teacher self-efficacy by promoting teacher collaboration, modeling instructional expertise, and supporting shared decision-making<sup>[14,20]</sup>. These connections are supported by more recent research showing that DL increases instructors’ instructional confidence and professional identity in a variety of cultural situations<sup>[21,22]</sup>.

Over the past two decades, the field of educational leadership has undergone a paradigmatic shift: leadership is no longer seen as the exclusive domain of a single “heroic” individual but is understood as a distributed, interactional process co-constructed through everyday practices among multiple actors within schools<sup>[23]</sup>. In contemporary Western contexts such as the United States and the United Kingdom, the idea of distributed leadership has exerted substantial influence on both research and practice in school leadership. As Karen Lewis, then vice president of the American Educational Research Association, observed: “Of all the ‘grand’ concepts in today’s educational leadership landscape, few are more glorious than ‘distributed leadership’. More and more schools and school systems are working to develop distributed leadership; a growing number of state education agencies and national education organizations are encouraging schools and school systems to do this”<sup>[24]</sup>.

However, the resonance of distributed leadership in China over the eight years since its introduction has been relatively muted, creating a sharp contrast between Western uptake and the Chinese context<sup>[25,26]</sup>. The reasons for this divergence are multifaceted, but one central contributing factor is that the interpretive and contextualized relevance of distributed leadership within Chinese school leadership environments has not been fully articulated or leveraged<sup>[27]</sup>.

Teachers’ perceptions of self-efficacy also play an important role in helping them adapt to new changes in their work<sup>[28]</sup>. Examining the role of distributed leadership in enhancing teacher self-efficacy in schools is crucial for ensuring high-quality education. DL, through shared decision-making, a collaborative culture, and peer support, provides teachers with professional autonomy and development opportunities, and has been shown to significantly enhance teacher self-efficacy and the overall organizational capacity of schools<sup>[3,5,29]</sup>. According to recent research, distributed leadership plays a crucial role in maintaining professional motivation in quickly evolving environments and in fostering teacher resilience and instructional adaptability during post-pandemic educational reforms<sup>[30]</sup>.

In the Chinese context, the application of DL has unique characteristics. On the one hand, the dual governance structure between the central and local governments results in highly centralized policies, while, at the school level, there is a gradual increase in autonomy during implementation. On the other hand, influenced by collectivism and high-power distance culture, hierarchical expectations and interpersonal trust within school organizations significantly moderate the practice and effectiveness of DL<sup>[12,31]</sup>. These cultural dynamics remain important, according to recent research: collectivist attitudes can impede shared leadership because of a large power distance, but they can also promote collaborative behaviours that increase teacher efficacy<sup>[32,33]</sup>.

Despite the growing interest in DL research, there remains a lack of systematic integration regarding the mechanisms through which distributed leadership affects teacher self-efficacy in Mainland China, as well as the contextual conditions under which this influence is strengthened or weakened. Moreover, although international research on educational leadership increasingly emphasizes cultural responsiveness and theoretical pluralism, few reviews have embedded localized contextual factors into an integrative framework addressing the psychological impact of distributed leadership on teachers. By combining the most recent empirical data (2019–2025), this review fills that gap by capturing both the recurring themes and recently discovered dynamics in this area.

However, existing literature on how distributed leadership (DL) influences teacher self-efficacy in schools of Mainland China, through which mechanisms and under what conditions, remains fragmented and lacks systematic synthesis. To address this gap, the present systematic review focuses on empirical studies published between 2019 and 2025. Guided by the overarching aim to understand how distributed leadership influences teacher self-efficacy within the Chinese educational context, this review was structured around the following three core research questions.

- 1) What is the overall relationship between distributed leadership and teacher self-efficacy in the Chinese educational context?
- 2) What are the key mechanisms, both mediating and moderating, through which distributed leadership affects teacher self-efficacy, and how do contextual variables (e.g., trust, department structures, regional factors) shape this relationship?
- 3) How can culturally rooted and philosophically informed approaches enhance the implementation of distributed leadership practices to improve teacher self-efficacy in Mainland China?

In addition to consolidating previous findings, this review demonstrates how DL–TSE dynamics have changed in response to new digital, cultural, and policy issues in Chinese schools by specifically focussing on the most current body of research.

## **2. Conceptualization**

### **2.1. Distributed leadership**

Even while distributed leadership has received a lot of attention lately, there isn't yet a single, accepted definition for the term. The collaborative, interactive, and dynamic aspect of DL is still emphasised by recent research, especially in educational systems that are undergoing transformation<sup>[34-36]</sup>. While Spillane (2005)<sup>[6]</sup> highlighted leadership as the interaction of leaders, followers, and context, Gronn<sup>[1]</sup> made a distinction between individual (numerical) and coordinated (concertive) leadership behaviours. Harris (2008)<sup>[37]</sup> went on to say that leadership is a dynamic organisational process rather than the property of a single person.

DL emphasises that principals, teachers, and staff all share leadership responsibilities in schools, with principals serving as facilitators rather than monopolising power<sup>[38]</sup>. This cooperative approach fosters mutual trust and enables adaptable, situation-specific solutions to learning obstacles<sup>[39]</sup>. According to recent studies, DL is becoming more and more relevant for digital transformation, where instructors take the lead in innovative teaching methods and ICT integration<sup>[35]</sup>.

## **2.2. Teacher self-efficacy**

Bandura coined the term "self-efficacy," which describes a person's confidence in their capacity to plan and carry out actions to accomplish desired results<sup>[40]</sup>. Teachers' confidence in their ability to manage instructional obstacles and impact student learning is reflected in their self-efficacy<sup>[18,41]</sup>. Higher self-efficacy teachers exhibit more tenacity, fortitude, and high-quality education<sup>[19]</sup>.

According to recent research, TSE is extremely context-sensitive and is influenced by post-pandemic recovery, digital instruction demands, and curricular revisions<sup>[17,42]</sup>. These viewpoints emphasise that TSE is a concept ingrained in social and organisational contexts in addition to being a psychological resource available to individuals.

## **2.3. Linking distributed leadership to teacher self-efficacy**

By empowering educators, defining responsibilities, and encouraging collaborative professional cultures, DL improves TSE. Teachers' confidence in their ability to teach is increased by DL's strengthening of autonomy, trust, and organisational identity through their participation in professional learning communities and decision-making<sup>[3,39]</sup>.

This association is consistently supported by empirical evidence. Tian and Virtanen<sup>[43]</sup> showed that DL improves professional trust and collaboration in Chinese schools, while Bush and Ng and Mayan and Mansor discovered positive associations between DL and TSE<sup>[44,45]</sup>. The effects of DL on teachers' resilience, well-being, and inventiveness in a variety of settings have been supported by more recent research<sup>[17,34,46]</sup>. Furthermore, meta-analyses demonstrate that DL enhances TSE's cognitive and affective aspects, especially when role clarity and trust are involved<sup>[47]</sup>.

These results demonstrate our review's distinctive contribution, which is to synthesise the ways in which DL affects TSE in Mainland China, where participatory leadership techniques are progressively replacing hierarchical traditions.

# **3. Materials and methods**

## **3.1. Selection of papers**

### **3.1.1. Research design**

This systematic literature review was conducted in accordance with the PRISMA (Preferred Reporting Items for Systematic Reviews and Meta-Analyses) framework to ensure clarity, consistency, and reproducibility throughout the research process. Following the suggestions of the reviewers, we simplified the written explanation of the screening procedure and added a PRISMA 2020 flow diagram (**Figure 1**), which offers a concise visual summary of the steps taken to find, screen, and choose studies.

### **3.1.2. Data source and search strategy**

To ensure comprehensive and systematic coverage of relevant literature, a multi-database keyword search was conducted focusing on distributed leadership, teacher self-efficacy, and related constructs. The primary databases selected for this review were Web of Science (Social Sciences Citation Index, SSCI) and

Scopus, owing to their extensive indexing of peer-reviewed journals in the fields of education and psychology. To broaden the search scope and capture additional scholarly work beyond core journals, supplementary searches were carried out in ERIC, Wiley, Elsevier, and Google Scholar, which include a wide range of academic publications, including grey literature and non-indexed sources in education research.

The search strategy employed a set of carefully constructed English-language search strings, incorporating Boolean operators (AND, OR) and synonyms to ensure maximum retrieval. The main keyword clusters included: (a) "leadership" AND ("distributed leadership" OR "distributive leadership"); (b) "self-efficacy" AND ("teacher self-efficacy" OR "educator self-efficacy" OR "collaborative self-efficacy"); (c) "China" AND ("Chinese" OR "China context"); and (d) "effect" AND "impact" AND "influence" OR "effective." These terms were selected to reflect both the conceptual focus and the regional scope of the review.

Searches were restricted to literature published between 2019 and 2025, with the final search conducted on 27 July 2025. Filters were applied to include only relevant academic publications, and the search terms were refined iteratively to enhance sensitivity and specificity across databases.

In the first search, 8,742 records were found. Ten studies satisfied the qualifying standards after duplicates were eliminated and inclusion and exclusion criteria were applied. **Figure 1** shows the simplified selection process in a visual format (PRISMA 2020 flow diagram).

### 3.1.3. Inclusion and exclusion criteria

To guarantee the selection of studies that are both relevant and methodologically sound, a set of well-defined inclusion and exclusion criteria was developed. The criteria remain summarized in **Table 1** for clarity.

**Table 1.** Inclusion and exclusion criteria.

Criterion	Inclusion Criteria	Exclusion Criteria
<b>Document Type</b>	Articles categorized under the document type "article" were considered for inclusion, irrespective of their access status. This encompassed both open access (OA) and subscription-based (non-OA) publications.	Publications that did not fall under the category of journal articles, such as conference abstracts, book reviews, editorials, and similar formats, were excluded from the review.
<b>Publication Period</b>	Published between 2019 to 2025	Studies published before 2019
<b>Research Focus</b>	Studies focusing on distributed leadership and teacher self-efficacy	Studies that did not explicitly address the concepts of distributed leadership and teacher self-efficacy were excluded from the review.
<b>Research Methodology</b>	The review included empirical primary studies utilizing quantitative, qualitative, or mixed-methods research designs, as well as rigorous systematic reviews or meta-analyses based on such empirical investigations.	Studies employing research approaches outside of quantitative, qualitative, or mixed-methods designs, such as conceptual papers, theoretical commentaries, editorials, book reviews, or other non-empirical opinion pieces, were excluded from consideration.
<b>Peer Review</b>	Peer-reviewed studies	Non-peer-reviewed studies
<b>Publication Language</b>	Academic articles written in English	Articles published in languages other than English
<b>Research Context</b>	Studies conducted within the context of Mainland China	Research excluded the geographical and educational context of Mainland China

### 3.2. Quality assessment

The ten featured studies were all carried out in a Chinese context and were written by academics from Mainland China. The Critical Appraisal Skills Program (CASP) checklist was used to evaluate the

methodological quality. In order to improve transparency, we have categorised studies into three quality levels (high, medium, and low) using the CASP scores in **Table 2**.

**Table 2.** CASP scores of the studies reviewed.

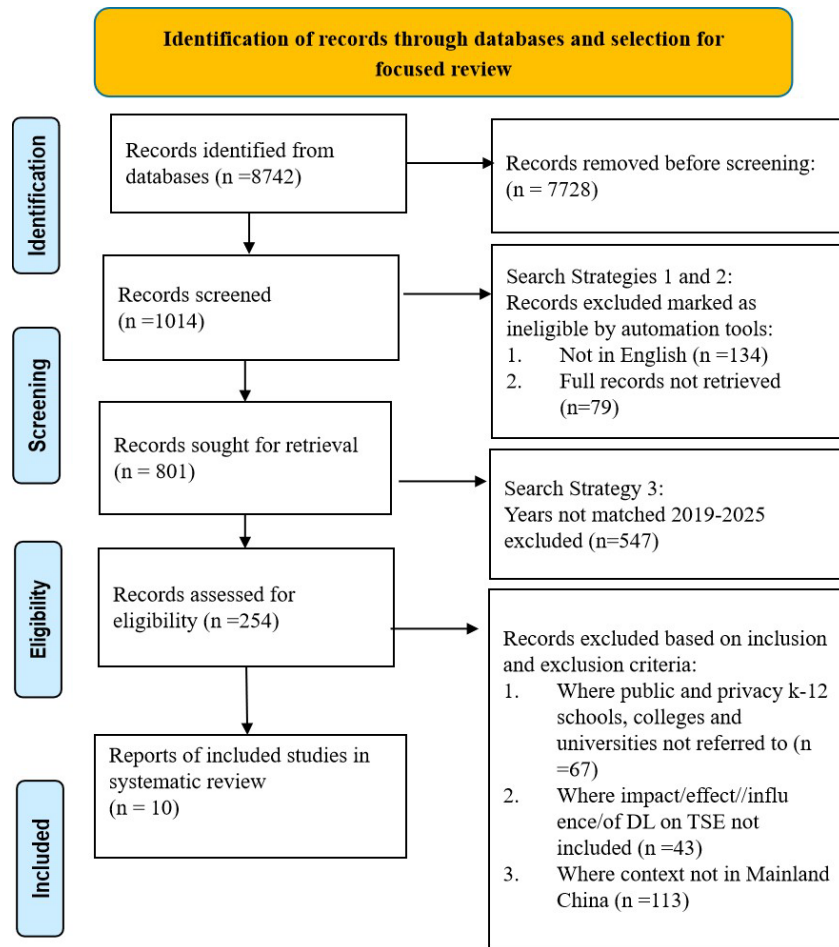
Author(s) & Year	Title	Score(10)	Quality Level
Zheng et al. (2019) <sup>[47]</sup>	“The relationship between distributed leadership and teacher efficacy in China: The mediation of satisfaction and trust. The Asia-Pacific Education Researcher”	7	Medium
Wang et al. (2022) <sup>[48]</sup>	“More leadership, more efficacy for inclusive practices? Exploring the relationships between distributed leadership, teacher leadership, and self-efficacy among inclusive education teachers in China”	8	High
Cai et al. (2023) <sup>[49]</sup>	“Distributed leadership and teacher work engagement: The mediating role of teacher efficacy and the moderating role of interpersonal trust”	8	High
Liu et al. (2023) <sup>[17]</sup>	“Distributed leadership, self-efficacy and wellbeing in schools: A study of relations among teachers in Shanghai”	9	High
Zheng et al. (2023) <sup>[50]</sup>	“Uncovering the complex relationships among distributed leadership, departmental teacher leadership, and professional learning community in Chinese schools”	8	High
Li et al. (2024) <sup>[51]</sup>	“How distributed leadership affects social and emotional competence in adolescents: The chain mediating role of student-centered instructional practices and teacher self-efficacy”	9	High
Teng et al. (2024) <sup>[52]</sup>	“How can an innovative teaching force be developed? The empowering role of distributed leadership”	7	Medium
Wang and Bai (2025) <sup>[53]</sup>	“Harnessing the power of distributed leadership: Promoting Chinese teachers' ICT use in instruction through a chain-mediated model of teacher collaboration and ICT self-efficacy”	9	High
Wang et al. (2025) <sup>[54]</sup>	“The effect of teacher collaboration on teachers' career well-being in China: A moderated mediation model of teacher self-efficacy and distributed leadership”	9	High
Fan and Chu (2025) <sup>[55]</sup>	“The Influence of Distributed Leadership on Chinese Teachers' Job Satisfaction: The Chain Mediation of Teacher Collaboration and Teacher Self-Efficacy”	7	Medium

### 3.3. Screening and selection process

Instead of giving a detailed account of the screening phases, we now use **Figure 1** (PRISMA 2020 flow diagram) to show the procedure. In order to maintain openness and cut down on textual repetition, this figure displays the quantity of records that were found, screened, excluded, and included. A rising body of empirical research highlighting the beneficial effects of distributed leadership on teacher self-efficacy in China is reflected in the last batch of ten studies.

The comprehensive search across four electronic databases initially identified 8,742 records relevant to the topic of distributed leadership and teacher self-efficacy). These records were imported into an EndNote library, after which 7,728 duplicates were identified and removed, leaving 1,014 unique titles for subsequent screening.

In the first-level screening, abstracts were independently reviewed based on two key inclusion criteria: (a) availability of full-text articles, and (b) articles published in English. This screening step narrowed the eligible records down to 801 titles. Subsequently, a second-level screening was conducted applying the third criterion, focusing specifically on publication years (2019–2025). This step resulted in the exclusion of an additional 547 articles, leaving 254 articles for the next eligibility assessment.



**Figure 1.** PRISMA flow diagram of the study.

During the final eligibility assessment stage, six clearly defined inclusion and exclusion criteria were systematically applied, resulting in the exclusion of 293 articles. Of these, 67 articles were excluded due to their irrelevance to public or private K-12 schools or higher education contexts. An additional 43 articles were excluded because their content did not specifically focus on the effects or outcomes of distributed leadership on teacher self-efficacy. Furthermore, 113 articles were excluded because their research contexts were outside of Mainland China.

This rigorous screening procedure led to the identification of 31 relevant records addressing the relationship between distributed leadership and teacher self-efficacy in the Chinese educational context. These 31 records were further categorized into three distinct levels based on the following criteria: (a) content relevance and alignment with distributed leadership, (b) methodological rigor and research quality, (c) depth of theoretical and empirical engagement, and (d) explicit focus on teacher self-efficacy outcomes. Consequently, 10 records meeting all these criteria were categorized as Level 1, representing a robust relevance and complete alignment with the research objectives; 12 records were classified as Level 2, indicating strong relevance but only partial focus; and nine records were categorized as Level 3 due to relatively weaker relevance or peripheral engagement with the central research objectives.

Ultimately, the 10 Level-1 articles fully satisfying all inclusion criteria were selected for detailed analysis and systematic synthesis in this review. The detailed results of the synthesis are comprehensively presented in Section 4.

## 4. Results

### 4.1. Characteristics of included studies

The final set of studies on distributed leadership and teacher self-efficacy revealed both methodological richness and contextual diversity, reflecting the growing scholarly interest in how leadership models affect teacher outcomes in Mainland China. A total of 10 empirical studies, published between 2019 and 2025, were included in this systematic review. All studies were conducted within school settings across different regions in Mainland China, ranging from metropolitan cities such as Shanghai, Beijing, and Shenzhen to provincial areas like Chongqing and South China.

Methodologically, most studies adopted cross-sectional structural equation modeling (SEM) approaches, while a few employed multilevel SEM to account for nested data structures (e.g., teachers within departments or schools). These analytical models were instrumental in exploring both the direct effects of distributed leadership (DL) on teacher self-efficacy (TSE) and the mediated or moderated pathways through which this relationship occurs.

Despite their shared national context, the studies exhibit significant diversity in terms of sample sizes, measurement tools (e.g., TSES, TALIS, OECD SSES), and theoretical orientations, including social cognitive theory and conservation of resources theory. The heterogeneity of the selected studies adds analytical depth to the synthesis and enables nuanced understanding of the mechanisms by which DL operates within Chinese school systems.

The characteristics and key findings of the included studies are systematically summarized in **Table 3**, which presents essential details such as region, sample size, research design, instruments used, and mediating/moderating constructs. This synthesis ensures transparency and reproducibility of the review process and lays the foundation for cross-study comparisons in the subsequent discussion section.

**Table 3.** Results found in the systematic review.

Author(s)& Year	Region	Sample	Research Design	Measurement Tool	Mediator/Moderator	Key Findings
<b>Zheng et al. (2019)</b> <sup>[47]</sup>	South China	570	Cross-sectional SEM	TSES	Job Satisfaction, Trust in Principal	DL indirectly enhances TSE through job satisfaction and trust in principal.
<b>Wang et al. (2022)</b> <sup>[48]</sup>	Beijing/Shenzhen	893	Cross-sectional SEM	TSES	Teacher Leadership	DL significantly enhances TSE through teacher leadership.
<b>Cai et al. (2023)</b> <sup>[49]</sup>	National	577	Cross-sectional SEM	TSES	Interpersonal Trust	TSE significantly mediates the relationship between DL and work engagement; interpersonal trust is a key moderator.
<b>Liu et al. (2023)</b> <sup>[17]</sup>	Shanghai	3799	Cross-sectional SEM	TALIS	Teacher Well-being	TSE mediates the relationship between DL and teacher well-being.
<b>Zheng et al. (2023)</b> <sup>[50]</sup>	Chongqing	602	Cross-sectional SEM	TSES	Departmental TL, PLC	DL indirectly enhances TSE through departmental leadership and PLC.
<b>Li et al. (2024)</b> <sup>[51]</sup>	National	7246	Multilevel SEM	OECD SSES	Student-Centered Instruction	DL enhances TSE through a chain mediation of student-centered instruction.
<b>Teng et al. (2024)</b> <sup>[52]</sup>	Shanghai	TALIS	Cross-sectional SEM	TALIS	Teacher Collaboration, Innovation	DL influences teacher innovation efficacy via chain mediation of collaboration and innovation.



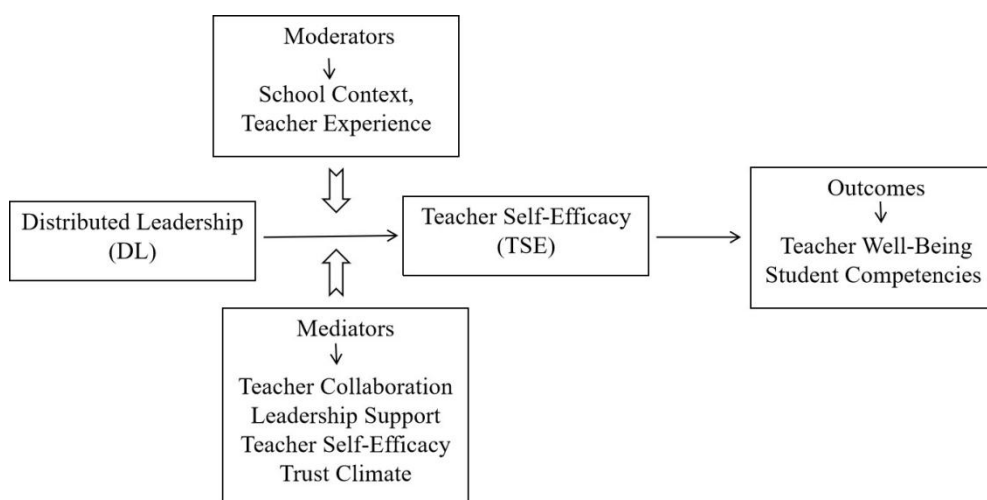
Author(s)& Year	Region	Sample	Research Design	Measurement Tool	Mediator/Moderator	Key Findings
<b>Wang and Bai (2025)</b> <sup>[53]</sup>	Shanghai	2977	Cross-sectional SEM	TALIS	ICT Self-Efficacy, Teacher Collaboration	DL significantly enhances TSE via ICT self-efficacy and collaboration.
<b>Wang et al. (2025)</b> <sup>[54]</sup>	Shanghai	3159	Cross-sectional SEM	TALIS	Teacher Collaboration, Career Well-being	DL enhances career well-being via teacher collaboration and TSE.
<b>Fan and Chu (2025)</b> <sup>[55]</sup>	Shanghai	TALIS	Cross-sectional SEM	TALIS	Teacher Collaboration	DL improves job satisfaction through chain mediation of collaboration and TSE.

**Table 3.** (Continued)

## 4.2. Synthesis of findings

The included studies generally indicate a positive association between distributed leadership and teacher self-efficacy, with many studies reporting statistically significant effects. Variables such as teacher collaboration, perceived leadership support, technological self-efficacy, trust climate, and teacher leadership are frequently identified as important mediators in this relationship. At the same time, some studies have also revealed that school cultural characteristics, organizational hierarchy, and regional institutional differences can moderate the actual effects of distributed leadership.

Although the overall findings are consistent, methodological heterogeneity remains in the specific mechanisms, variable configurations, and measurement tools. These differences mainly stem from variations in sample regions, the complexity of research models, and the choice of assessment instruments. An integrative mechanism diagram that graphically depicts how distributed leadership affects teacher self-efficacy through these mediators and moderators, ultimately influencing outcomes like teacher well-being and student competence (**Figure 2**). Through theoretical comparison and empirical synthesis, this review reinforces the critical role of distributed leadership in fostering teachers' professional development, particularly in enhancing their instructional confidence, sense of professional belonging, and motivation at work.



**Figure 2.** Mechanism diagram illustrating how DL influences TSE.

This study categorizes and analyzes the mechanisms through which distributed leadership influences teacher self-efficacy across five key thematic areas, as also represented in the integrative mechanism diagram, which are discussed in detail in the following sections.

#### **4.2.1. Mediation mechanisms**

Existing studies consistently indicate that one of the core pathways through which distributed leadership enhances teacher self-efficacy is by fostering teacher collaboration and teacher leadership.

Zheng et al.<sup>[50]</sup> found that DL effectively strengthens collaborative interactions among teachers through departmental-level teacher leadership and professional learning communities (PLCs), thereby significantly improving TSE. Similarly, Wang et al.<sup>[46]</sup> emphasized that teacher leadership, as a key resource within distributed leadership, can activate teachers' leadership potential, enhance their sense of professional competence, and increase their perceived control over instructional tasks. The mechanism diagram illustrates the direct pathways from distributed leadership to improved TSE, highlighting the mediating roles of teacher cooperation and teacher leadership<sup>[46,50]</sup>.

In addition, ICT self-efficacy and instructional innovation have also been identified as significant mediators. Wang and Bai<sup>[53]</sup> demonstrated that DL contributes to increased TSE by encouraging the use of ICT in classroom practices and enhancing teachers' confidence in technology integration. Teng et al. further revealed a sequential mediation model, where teacher collaboration fosters innovation capacity, which in turn improves teachers' self-efficacy in implementing innovative instructional practices<sup>[52]</sup>. The graphic makes clear the path of influence from DL through intermediary processes to TSE by emphasising these consecutive mediations<sup>[52,53]</sup>.

#### **4.2.2. Moderation mechanisms**

Interpersonal trust, particularly the trust between teachers and school leaders, has been found to significantly moderate the relationship between DL and TSE. Cai et al.<sup>[49]</sup> showed that when trust levels between teachers and leaders are high, the positive effect of DL on TSE is significantly amplified. The mechanism diagram also shows this moderating impact, showing how contextual circumstances can boost or weaken the pathways from distributed leadership to TSE. Conversely, the absence of trust may undermine or even inhibit the impact of DL<sup>[49]</sup>. Similarly, Zheng et al.<sup>[47]</sup> emphasized that teachers' trust in principals indirectly influences the impact of DL on their self-efficacy, further underscoring the moderating role of trust in school leadership dynamics.

#### **4.2.3. Expansion of outcome variables**

Research has also extended the investigation beyond TSE itself to explore its broader mediating effects. Liu et al.<sup>[17]</sup> found that TSE significantly mediates the relationship between DL and teacher well-being, suggesting that increased self-efficacy leads to enhanced professional satisfaction and psychological well-being. In a similar vein, Wang et al.<sup>[54]</sup> reported that TSE, together with teacher collaboration, contributes to improved career well-being and job satisfaction among teachers. These result expansions are graphically represented in the diagram, which shows how initial DL impacts the cascade through TSE to impact student competencies and teacher well-being<sup>[17,54]</sup>. Further, Li et al.<sup>[51]</sup> extended the influence of TSE to student-level outcomes. Their study indicated that teachers with higher self-efficacy are more inclined to adopt student-centered teaching practices, which in turn positively influence students' social-emotional development. These findings suggest that DL benefits not only teachers' professional experiences but also indirectly promotes student growth through enhanced instructional practices<sup>[51]</sup>.

#### **4.2.4. Contextual differences**

At the implementation level, several studies have highlighted the significance of departmental and disciplinary differences in shaping the effectiveness of DL within the Chinese educational context. Zheng et al.<sup>[50]</sup>, based on data from Chongqing, observed that the efficacy of departmental-level teacher leadership and PLCs varies across departments. Teachers from different disciplines respond differently to DL practices, pointing to the necessity of tailoring leadership strategies to the specific departmental or subject-matter context in order to maximize effectiveness<sup>[50]</sup>. Moreover, regional disparities in institutional environments and resource availability also influence the implementation and outcomes of DL. Both Fan and Chu<sup>[55]</sup> and Wang and Bai<sup>[54]</sup> noted that in major metropolitan areas such as Shanghai, Beijing, and Shenzhen—where resources and policy support are more robust—DL is implemented more effectively and yields more immediate results. In contrast, regions with limited institutional support require additional structural investment to realize the full potential of distributed leadership<sup>[54,55]</sup>. The mechanism diagram incorporates these contextual variables to illustrate how environmental elements and modifiers influence the efficacy and results of distributed leadership.

### **5. Discussion**

This section provides a comprehensive and integrative discussion based on the synthesis of findings presented in section 4. Specifically, it explores in depth the mechanisms and contextual nuances through which distributed leadership (DL) impacts teacher self-efficacy (TSE) within the context of mainland China, highlights theoretical contributions to the educational leadership literature, and reflects upon methodological limitations and future research directions.

#### **5.1. Integrated mechanisms of distributed leadership on teacher self-efficacy**

The review clearly confirms the positive relationship between distributed leadership and teacher self-efficacy within Chinese schools. This positive influence is predominantly channeled through two principal pathways: teacher collaboration and teacher leadership, and the integration of ICT and innovation into instructional practices.

Firstly, several reviewed studies<sup>[50,54]</sup> demonstrate that DL enhances teacher self-efficacy by fostering an environment rich in teacher collaboration and leadership opportunities. This aligns with Spillane and Camburn's<sup>[23]</sup> seminal argument that distributed leadership emphasizes the collective agency and professional interactions of educators. Wang et al.<sup>[48]</sup>, for example, underscore that teacher leadership acts as an empowering mechanism, significantly enhancing teachers' confidence and capability to lead instructional innovations and respond adaptively to classroom challenges. Furthermore, Zheng et al.<sup>[50]</sup> illustrate how departmental teacher leadership and professional learning communities (PLCs) serve as structured platforms that enable teachers to share pedagogical strategies, solve instructional problems collaboratively, and thereby increase their self-efficacy beliefs.

Secondly, the advancement of ICT integration and innovation has been consistently shown as another essential mediator of the DL–TSE relationship. Wang and Bai<sup>[53]</sup> argue that distributed leadership promotes teachers' ICT self-efficacy by facilitating supportive and technology-rich environments, aligning with Harris and Jones's<sup>[56]</sup> assertion that leadership distribution significantly enhances teachers' confidence in utilizing innovative instructional technologies. Teng et al.<sup>[52]</sup> further identify a sequential mediation model, where teacher collaboration stimulates innovative practices that subsequently elevate teachers' self-efficacy in instructional innovation. These findings highlight a contemporary mechanism through which distributed

leadership contributes to teacher development, emphasizing the strategic importance of technological empowerment and pedagogical innovation within DL frameworks.

### **5.2. Contextual nuances of distributed leadership in the Chinese educational setting**

Given China's unique educational and sociocultural environment, characterized by high power distance and collectivist orientation, the implementation and effectiveness of distributed leadership face distinct contextual influences. Cai et al.<sup>[49]</sup> underscore the critical moderating role of interpersonal trust, particularly between teachers and leaders, in influencing DL outcomes. Their findings indicate that DL practices are significantly more effective in enhancing teacher self-efficacy when there exists a robust trust-based relational climate. This assertion resonates with Bryk and Schneider's<sup>[57]</sup> theory of relational trust, which emphasizes trust as foundational for the effective implementation of collaborative and distributed leadership practices in education.

Additionally, Zheng et al.<sup>[50]</sup> highlight significant differences across disciplinary and departmental contexts in Chinese schools, which considerably shape how DL is received and enacted. This observation aligns with previous international findings<sup>[5]</sup> suggesting the need for differentiated leadership strategies tailored to the unique requirements of various disciplinary teams. Furthermore, regional differences in policy support and resource availability, as indicated by Fan and Chu<sup>[55]</sup> and Wang and Bai<sup>[53]</sup>, suggest that metropolitan areas such as Beijing, Shanghai, and Shenzhen offer a comparatively more supportive environment for effective DL implementation than less resource-rich regions. Thus, contextualized, culturally sensitive, and resource-aware approaches are crucial for maximizing DL effectiveness across diverse Chinese school contexts.

### **5.3. Theoretical contributions**

This systematic review makes several critical theoretical contributions by integrating insights from social cognitive theory<sup>[58]</sup> and conservation of resources theory (COR)<sup>[59]</sup>. Bandura's social cognitive theory highlights self-efficacy as a core personal resource that strongly predicts professional behaviors and attitudes. In parallel, COR theor argues that the acquisition and maintenance of resources (including collaborative environments, leadership support, and technological capabilities) play a crucial role in enhancing individual psychological capacities, such as self-efficacy.

Building upon these theoretical frameworks, this review proposes a comprehensive model illustrating how distributed leadership facilitates the transformation of organizational-level resources (teacher collaboration, leadership structure, ICT infrastructure) into individual psychological resources (teacher self-efficacy). This integrated theoretical model expands and enriches the existing literature by illuminating how structural and contextual resources collectively bolster teachers' psychological states, further supporting their professional growth and instructional effectiveness<sup>[4,60]</sup>.

### **5.4. Limitations**

Despite the robustness of the findings synthesized, several methodological limitations merit attention. Most included studies employ cross-sectional quantitative methods, predominantly structural equation modeling (SEM), limiting causal interpretations and temporal insights. This reliance on cross-sectional design inherently restricts understanding of dynamic developmental processes and longitudinal effects of distributed leadership on teacher self-efficacy. Furthermore, out of the initial pool of 8,742 research, only 10 were eventually included, which raises questions regarding representativeness. The possibility that results might not accurately represent the larger body of literature is increased by the tiny body of data.

Language bias may have been introduced by excluding pertinent Chinese-language research due to the restriction to English-language publications. It is also impossible to completely rule out the possibility of publication bias because studies with null or negative results are less likely to be included in indexed sources. All of these limitations restrict how far our findings can be applied, especially outside of the unique institutional and cultural setting of Mainland China.

### **5.5. Future research directions**

Future research should incorporate longitudinal designs and qualitative or mixed-methods approaches to gain deeper insights into how DL is operationalized in daily practices and sustained over time. Qualitative methodologies, such as case studies or narrative inquiries, could effectively capture the nuanced experiences of educators and school leaders, providing rich, contextually grounded interpretations<sup>[61]</sup>. Furthermore, comparative longitudinal studies across varied regional contexts within China could illuminate how evolving policy environments, resource allocations, and sociocultural factors shape DL's implementation and effectiveness over extended periods.

Additionally, future research could explore cross-cultural comparative studies to better understand the cultural specificities and universalities of distributed leadership mechanisms. Expanding beyond the Chinese context and integrating international perspectives may yield valuable insights into generalizable leadership practices and contextually specific adaptations necessary for effective educational leadership worldwide<sup>[56]</sup>.

### **5.6. Extended discussion and implications**

#### **5.6.1. Practical implications and recommendations in the chinese context**

Drawing from the integrated evidence, several practical recommendations for DL implementation in Chinese schools are proposed: Establish structured professional learning communities (PLCs) guided by distributed leadership principles, where teachers collaboratively engage in pedagogical reflection, mutual support, and leadership roles, directly enhancing their collective and individual self-efficacy<sup>[58]</sup>. Considering China's high power-distance and collectivist culture, intentional efforts should be made to cultivate relational trust within schools. Transparent, dialogic leadership practices are recommended to reduce hierarchical barriers, thus maximizing DL's positive effects on TSE<sup>[57]</sup>. Recognizing differences in resources, disciplinary cultures, and local institutional frameworks, school leaders should employ context-sensitive DL strategies, adapting their leadership practices to best align with local needs, thereby effectively enhancing teacher self-efficacy<sup>[5,50]</sup>. Schools should embed ICT competency development within their distributed leadership practices, equipping teachers with necessary technological resources and professional development opportunities. Such strategic technological empowerment directly strengthens teachers' confidence and instructional effectiveness<sup>[53,62]</sup>.

#### **5.6.2. Methodological limitations and directions for future research**

Despite the robust findings, certain methodological limitations were noted, primarily due to the cross-sectional nature of the studies reviewed. Future studies should utilize longitudinal and mixed-methods designs to capture the dynamic, evolving processes of DL and its sustained impacts on TSE. Qualitative methods, such as case studies, ethnographies, or narrative inquiries, could provide deeper insights into teachers' lived experiences and organizational complexities related to distributed leadership. Furthermore, comparative cross-regional and international studies are recommended to explore the universality and specificity of DL mechanisms, contributing valuable cross-cultural perspectives that enrich the theoretical frameworks and practical guidelines for educational leadership globally<sup>[56]</sup>.

### **5.6.3. Innovative philosophical integration for enhancing DL and TSE: Insights from western and eastern contexts**

In pursuit of innovative theoretical enrichment tailored explicitly to the Chinese educational landscape, insights from Wittgenstein's phenomenology<sup>[63]</sup> of language and Wang Yangming's philosophy of mind<sup>[64]</sup> offer novel strategies directly relevant to distributed leadership and teacher self-efficacy. Wittgenstein<sup>[63]</sup> argues that meaning arises through practical linguistic interactions within shared professional contexts. Applying this idea, distributed leadership should emphasize meaningful dialogues and reflective conversations among teachers and leaders. Such dialogic communication structures, embedded in collaborative leadership practices, foster deeper understanding, reduce misunderstandings, and build shared professional purposes, directly strengthening teachers' professional clarity and self-efficacy. In order to put this concept into practice, distributed leadership should incorporate dialogic communication into professional learning communities (PLCs), where leaders and instructors have organised discussions, jointly create meanings for instructional objectives, and discuss difficulties as a group. Teachers' professional clarity and self-efficacy are directly strengthened by these PLC-based dialogic techniques, which also promote deeper understanding, lessen misconceptions, and create shared professional purposes.

Wang Yangming's concept of "unity of knowing and acting" ("Zhi Xing He Yi") emphasizes the intrinsic alignment between teachers' ethical values, professional knowledge, and daily instructional actions. Distributed leadership initiatives should promote moral reflection sessions in PLCs or professional training programs to put this into practice. During these sessions, teachers should discuss their ethical goals, connect them to instructional strategies, and consider how their personal values influence decisions in the classroom. Teachers can combine professional action with moral purpose by incorporating such reflection cycles into collaborative frameworks. This increases their intrinsic drive and strengthens their feeling of professional competence.

### **5.6.4. Integrated and innovative recommendations aligned with Chinese contexts**

Integrating these philosophical perspectives with existing findings, this review proposes the establishment of a reflective, morally aware distributed leadership culture in Chinese schools. Such a culture promotes structured dialogue, ethical reflection, and collaborative decision-making, embedding leadership practices within culturally resonant frameworks of mutual trust and intrinsic motivation.

Educational policymakers and practitioners are thus encouraged to: (1) create and implement dialogic PLC sessions in which leaders and teachers discuss classroom practices, work together to solve problems, and co-create professional meaning; (2) include structured moral reflection exercises based on Wang Yangming's philosophy in PLC agendas and professional development workshops; (3) create school-wide trust-building mechanisms that specifically address the hierarchical barriers that are typical in Chinese institutions; and (4) promote an intrinsic, morally motivated approach to distributed leadership that boosts teacher self-efficacy and has a strong connection to China's cultural and educational legacy.

## **6. Conclusion**

This systematic review offers convincing proof that, in Chinese educational situations, distributed leadership greatly raises teacher self-efficacy. ICT integration and innovation, as well as possibilities for teacher collaboration and leadership, are important pathways. Cultural considerations, contextual variations, and trust were found to be important moderators. Practical ramifications emphasise the value of context-sensitive tactics, leadership development, and integrating ethical and dialogic reflection into professional learning communities (PLCs). Teachers' confidence, professional health, and inventiveness in the classroom

are all enhanced by such approaches. To address representativeness and lessen bias, future studies should include mixed-methods and longitudinal designs, cross-regional and cross-cultural comparisons, including non-English and grey literature. In conclusion, when included into collaborative, reflective, and culturally relevant practices, distributed leadership not only promotes teacher development but also all-encompassing educational improvement.

## **Author contributions**

Conceptualization, Cheng Zhang, Bity Salwana Alias, and Mohd Norazmi Nordin; Methodology, Cheng Zhang; Software, Cheng Zhang; Validation, Cheng Zhang, Bity Salwana Alias, and Mohd Norazmi Nordin; Formal Analysis, Cheng Zhang; Investigation, Cheng Zhang; Resources, Cheng Zhang; Data Curation, Cheng Zhang; Writing—Original Draft Preparation, Cheng Zhang; Writing—Review & Editing, Cheng Zhang; Visualization, Cheng Zhang; Supervision, Bity Salwana Alias and Mohd Norazmi Nordin; Project Administration, Bity Salwana Alias and Mohd Norazmi Nordin.

## **Funding**

This research did not receive any financial support.

## **Acknowledgments**

The authors would like to thank all contributors for their valuable contributions to this study.

## **Conflict of interest**

The authors declare no conflicts of interest.

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