Self-Efficacy among Higher Vocational Education College Educators: A Systematic Literature Review

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ABSTRACT

Teacher self-efficacy is a core topic in psychology and education, but relevant research in higher vocational education remains scarce, leaving a significant research gap. Literature focusing on vocational education teachers is particularly limited. Methods: This paper uses a systematic literature review to comprehensively review the literature on teacher self-efficacy in higher vocational education, focusing on conceptualization, research content, cultural context, measurement tools, research methods (quantitative, qualitative, intervention, and mixed methods), and study types (cross-sectional, longitudinal, and intervention studies). Furthermore, we summarize key themes and core findings of each study and analyze publication year and research location to explore the temporal and spatial distribution of this field. Conclusion: The 20 studies included reveal that most research on teacher self-efficacy focuses on teaching contexts, particularly in specialized fields such as technical subjects and writing self-efficacy. These studies use diverse methods and tools but lack systematicity and depth. Asia is the primary focus of research, where the cultural context reflects regional characteristics. Empirical research in higher vocational education remains limited, and future studies should explore cross-cultural variations to support targeted professional development and improve vocational education quality.

Keywords: teacher self-efficacy, higher vocational education, TVET, systematic literature review
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1. Introduction

Teacher-related psychological resources play a crucial role in shaping the effectiveness of higher vocational education (HVE), particularly in contexts characterized by rapid technological change, diverse student needs, and strong alignment with labor market demands (OECD, 2021; UNESCO, 2022). Among these resources, teacher self-efficacy (TSE), grounded in Albert Bandura's social cognitive theory, has been widely recognized as a central construct influencing teachers' instructional practices, persistence, and adaptability (Bandura, 1997; Tschannen-Moran & Hoy, 2001). TSE refers to teachers' beliefs in their capability to organize and execute the actions required to accomplish specific teaching tasks (Bandura, 1997). Empirical studies have consistently shown that higher levels of TSE are associated with improved teaching effectiveness, greater student engagement, and enhanced learning outcomes (Holzberger et al., 2013; Klassen & Tze, 2014). In vocational education settings, where teaching often involves integrating theoretical knowledge with practical skills and responding to industry-oriented expectations, strong self-efficacy beliefs are particularly important for maintaining teaching quality and fostering student learning outcomes (Cai & Lin, 2021; OECD, 2021).

Despite the well-established importance of TSE in general education research, its application in higher vocational education remains relatively underexplored and fragmented (Klassen et al., 2011; Zee & Koomen, 2016). Existing studies in HVE contexts have primarily focused on specific domains such as technology integration, academic writing, or subject-specific teaching efficacy, rather than providing a comprehensive understanding of TSE as a multidimensional construct (Fackler & Malmberg, 2016; Perera et al., 2019). Moreover, several unresolved issues persist in the literature. First, there is considerable variation in how TSE is conceptualized and measured, with studies employing both general scales (e.g., Teacher Self-Efficacy Scale) and task-specific instruments, leading to inconsistencies in findings (Tschannen-Moran & Hoy, 2001; Klassen et al., 2011). Second, most studies adopt cross-sectional designs, limiting insights into the dynamic development of self-efficacy over time (Zee & Koomen, 2016). Third, research is geographically concentrated in certain regions—particularly in Asia—raising concerns about the cross-cultural generalizability of results (Klassen et al., 2009; Vieluf et al., 2013). Finally, the unique contextual features of vocational education, such as its strong emphasis on practice-oriented teaching and industry collaboration, have not been sufficiently theorized in relation to TSE, leaving important context-specific mechanisms underexplored (Lucas et al., 2012; Wheelahan, 2015).

Although previous reviews have examined teacher self-efficacy in broader educational contexts, few have focused specifically on higher vocational education, and even fewer have systematically analyzed the conceptualization, measurement approaches, and contextual characteristics of TSE within this domain (Zee & Koomen, 2016; Klassen et al., 2011). As a result, the current body of knowledge lacks an integrated and critical synthesis that can clarify research trends, methodological patterns, and key gaps in the field. To address this limitation, the present study conducts a systematic literature review of empirical research on teacher self-efficacy in higher vocational education, following established guidelines for systematic reviews (David Moher et al., 2009; Page et al., 2021). By synthesizing evidence across studies, this review aims to provide a comprehensive overview of how TSE is conceptualized and operationalized, identify major research themes and influencing factors, examine methodological characteristics, and highlight directions for future research. In doing so, the study contributes to a more coherent understanding of TSE in vocational education and offers evidence-based insights for enhancing teacher development and educational quality in HVE contexts.

1.1. Teacher Self-efficacy

Self-efficacy is a core construct in Bandura's social cognitive theory, defined as "the belief in one's ability to organize and execute a course of action necessary to achieve achievement" (Bandura, 1997). Teacher self-efficacy (TSE) is a specific concept in educational contexts, understood as a teacher's belief in their ability to complete all tasks necessary to promote effective teaching (Holzberger et al., 2013; Tschannen-Moran et al., 1998). In disciplines such as mathematics and science teaching, TSE has been

extensively researched for decades and is even considered "nearly mature" (Tschannen-Moran et al., 1998). In contrast, research in this area of vocational education has lagged significantly, and systematic discussion remains limited. Na and Isa (2024) emphasize the critical importance of TSE in higher vocational education; they found that teachers with higher self-efficacy tend to achieve higher-quality teaching outcomes, which in turn directly improves student performance. This conclusion is consistent with their research on the relationship between self-efficacy and teaching quality. Yang et al. (2024) further suggested that improving teachers' knowledge, particularly when teaching sustainable development-related content in higher vocational education, can positively promote their self-efficacy. This finding not only expands the connection between self-efficacy and teaching preparation but also provides new directions for future research. Furthermore, Kholifah et al. (2023) confirmed the close relationship between self-efficacy and teaching quality among vocational teachers by linking psychological well-being with teaching performance. Andersson et al. called for further exploration of the multiple factors influencing TSE, particularly in the context of professional development within the vocational education context. Overall, the existing literature not only emphasizes the importance of self-efficacy in higher vocational education but also reveals significant research gaps in this area. A comprehensive study of the unique factors influencing vocational education teachers' self-efficacy will facilitate the development of more targeted professional development strategies and improve student learning outcomes in vocational courses.

2. Theoretical and Conceptual Framework

This study is grounded in the social cognitive theory proposed by Albert Bandura (1997), which conceptualizes self-efficacy as individuals' beliefs in their capabilities to organize and execute the actions required to achieve specific outcomes. Within this framework, teacher self-efficacy (TSE) is understood as teachers' beliefs in their ability to effectively perform teaching-related tasks. Social cognitive theory emphasizes the dynamic interaction among personal, behavioral, and environmental factors—referred to as reciprocal determinism—suggesting that self-efficacy is continuously shaped through experience and context rather than being a fixed personal trait.

According to this theory, self-efficacy beliefs are developed through four primary sources: mastery experiences, vicarious experiences, social persuasion, and physiological and emotional states (Bandura, 1997). Mastery experiences, which refer to individuals' direct experiences of success, are considered the most influential source. In higher vocational education (HVE), successful instructional practices, effective classroom management, and positive student outcomes contribute to strengthening teachers' efficacy beliefs. Vicarious experiences arise from observing others' performance, such as through peer collaboration, classroom observation, and professional training, which are particularly relevant in practice-oriented teaching environments. Social persuasion includes feedback and support from school leaders, colleagues, and institutional structures, which can enhance teachers' confidence in their instructional abilities. In addition, physiological and emotional states, such as stress or emotional well-being, influence how teachers interpret their competence and cope with teaching demands.

In the context of higher vocational education, teacher self-efficacy demonstrates strong contextual specificity. Compared with general education, vocational education places greater emphasis on practice-oriented instruction, the integration of theoretical knowledge with technical skills, and alignment with labor market demands. These characteristics require teachers to adapt to rapidly evolving technologies, engage in hands-on teaching, and address diverse and task-specific instructional challenges. As a result, TSE in HVE is inherently multidimensional, encompassing not only general teaching efficacy but also efficacy beliefs related to specific tasks and technology-enhanced teaching contexts. This multidimensionality reflects the varied demands placed on teachers across different instructional situations.

Based on this theoretical foundation, the present study adopts social cognitive theory as a guiding lens to synthesize existing research on teacher self-efficacy in higher vocational education. This framework provides a coherent basis for interpreting how TSE is conceptualized, what factors influence its

development, and how it manifests across different contexts. By grounding the review in a well-established theoretical perspective, the study enhances the overall coherence and explanatory strength of the literature synthesis.

3. Objectives

This systematic literature review aims to comprehensively review the current status of research on teacher self-efficacy in the field of vocational education. Specific objectives include: (1) analyzing the temporal and regional distribution characteristics of relevant literature; (2) comprehensively summarizing the definition and conceptual connotation of teacher self-efficacy in the context of vocational education; (3) identifying and summarizing the measurement tools used in various studies; (4) sorting out the topics related to teacher self-efficacy and their influencing factors; and (5) integrating the main empirical findings of the selected literature. The specific research questions are as follows:

1. RQ1: How is TSE conceptualised and measured in HVE research?
2. RQ2: What factors influence TSE in HVE contexts?
3. RQ3: What methodological patterns exist in TSE research?
4. RQ4: What research gaps and future directions emerge?

4. Prior Review Evidence

Although teacher self-efficacy (TSE) has received extensive attention in educational research, existing review studies have primarily focused on general education contexts, particularly in primary and secondary education. For instance, prior reviews have systematically examined the conceptualization, measurement, and outcomes of TSE, highlighting its significant role in enhancing teaching effectiveness, promoting student engagement, and improving instructional practices (Klassen et al., 2011; Zee & Koomen, 2016).

However, systematic reviews that specifically address teacher self-efficacy in higher vocational education (HVE) remain limited. Existing studies in vocational education tend to be fragmented, often focusing on specific aspects such as technological self-efficacy or task-specific teaching efficacy, rather than providing a comprehensive synthesis of TSE within this context (Watt & Richardson, 2008; Fives & Gill, 2015). As a result, there is still a lack of systematic understanding regarding the conceptualization, measurement, and underlying mechanisms of TSE in HVE settings.

In addition, previous review studies have identified several ongoing challenges in TSE research, including inconsistencies in measurement approaches, the dominance of cross-sectional designs, and insufficient attention to contextual and cultural variations (Klassen et al., 2011; Zee & Koomen, 2016). These issues are particularly salient in vocational education, where teaching is closely linked to practice-based instruction, industry collaboration, and skill-oriented training, making its educational context distinct from that of general education (Fuller & Unwin, 2011).

In response to these gaps, the present study conducts a systematic literature review focusing specifically on teacher self-efficacy in higher vocational education. By synthesizing empirical studies in this domain, this review aims to provide a more comprehensive and context-sensitive understanding of TSE in HVE, thereby extending existing review literature and contributing to the advancement of vocational education research.

4. Methodology

This study employed a systematic literature review (SLR) approach. A systematic review is considered a research strategy for identifying and synthesizing existing research evidence of sufficient quality on a specific topic (Victor, 2008). To answer our research questions, we searched and evaluated preliminary data from databases relevant to our research topic. During the literature selection and analysis process,

we strictly adhered to the PRISMA checklist (Page et al., 2021). The PRISMA flow chart (Figure 1) illustrates the various stages of this systematic review, including the number of references initially identified, the number of excluded studies, and the final number of studies included in the analysis.

4.1 Search Strategy

We searched for literature through Scopus, Web of Science, and Google Scholar electronic databases. The starting year of 2010 was selected to capture research conducted in the context of recent developments in vocational education, including increased emphasis on skills-based training and internationalization.The purpose of this study was to summarize the psychological problems and influencing factors of teachers in the field of vocational education by including articles on the self-efficacy of vocational education teachers. Boolean logic operators AND or OR were used to connect keywords. The specific main keywords of this study include (1) teacher self-efficacy and (2) vocational education. The specific research strategy is as follows:

("self-efficacy" OR "teacher efficacy" OR "teaching efficacy") AND ("vocational education" OR "technical education" OR "vocational and technical education" OR "VET" OR "TVET" OR "career and technical education" OR "vocational teachers" OR "technical teachers" OR "vocational school teachers")

4.1.1. Scopus

The search was conducted in August 2025 from Mainland China, using institutional access to Scopus, on 12 August 2025 (China Standard Time, UTC+8). The following fields were exported for subsequent screening and analysis: authors, publication year, article title, abstract, author keywords, source title, DOI, author affiliations, and cited references.

The Scopus database was searched using the following exact search string:

TITLE-ABS-KEY ("self-efficacy" OR "teacher efficacy" OR "teaching efficacy") AND TITLE-ABS-KEY ("vocational education" OR "technical education" OR "vocational and technical education" OR "VET" OR "TVET" OR "career and technical education" OR "vocational teachers" OR "technical teachers" OR "vocational school teachers")

4.1.2. Web of Science

The search was performed in August 2025 from Mainland China, using institutional access, on 12 August 2025 (China Standard Time, UTC+8). Records were exported with full records and cited references, including authors, publication year, article title, abstract, author keywords, source title, DOI, author affiliations, and cited references, for subsequent screening and analysis.

The Web of Science Core Collection was searched using the following exact query:
TS = ("self-efficacy" OR "teacher efficacy" OR "teaching efficacy") AND TS = ("vocational education" OR "technical education" OR "vocational and technical education" OR "VET" OR "TVET" OR "career and technical education" OR "vocational teachers" OR "technical teachers" OR "vocational school teachers")

4.1.3. Google Scholar

Google Scholar was searched as a supplementary source to identify relevant studies not indexed in Scopus or Web of Science. Searches were conducted using Publish or Perish, which enables structured retrieval of Google Scholar records with a maximum export limit of 1,000 records per query. All Google Scholar records were merged with results from Scopus and Web of Science, and duplicate records were identified and removed using Zotero based on title, author, and publication year. During the screening

process, potentially relevant records, including those not indexed in major databases, were manually reviewed to ensure that no high-value studies were overlooked.

The search was conducted in August 2025 from Mainland China, on 13 August 2025 at (China Standard Time, UTC+8). Google Scholar results are ranked by relevance by default; therefore, all 1,000 retrievable records were exported and screened. Exported fields included authors, publication year, title, source, abstract, and citation count. All Google Scholar records were merged with Scopus and Web of Science results prior to deduplication. Duplicate records were identified and removed using Zotero, based on title, author, and publication year.

The following search terms were applied:

"self-efficacy" OR "teacher efficacy" OR "teaching efficacy" AND
"vocational education" OR "technical education" OR "vocational and technical education" OR "VET" OR "TVET" OR "career and technical education" OR "vocational teachers" OR "technical teachers" OR "vocational school teachers"

4.2. Inclusion and exclusion criteria

This study established clear screening criteria based on the research objectives and conducted a systematic literature review using inclusion and exclusion criteria.
Inclusion criteria are as follows:

1. Articles must contain the following core keywords: teacher self-efficacy, self-efficacy, vocational education;
2. The publication language must be English;
3. Research methods are not limited to quantitative research, qualitative research, or mixed research, and all are included in the analysis.
4. Studies published between 2010 and 2025.

Exclusion criteria are as follows:

1. Literature whose research subjects are not vocational education teachers (e.g., research on primary and secondary school teachers is not included);
2. Literature whose research topics are not related to vocational education or teacher self-efficacy;
3. Non-empirical research, such as reviews, comments, editorials, and theoretical discussions;
4. Research materials for which the full text is unavailable.

4.3. Data extraction

During the identification phase, the researchers conducted a systematic search across multiple databases, identifying 2,069 records, including 647 from Web of Science, 422 from Scopus, and 1,000 from Google Scholar. Before formal screening, 190 duplicate records were removed, leaving 1,879 for preliminary screening. Subsequently, a preliminary review of titles and abstracts excluded 1,835 articles that did not meet the inclusion criteria, primarily because they were unrelated to the research topic, focused on non-educational contexts, targeted different populations, or did not address the core variables of interest. 44 full-text articles were retained, of which two were excluded due to unavailable original texts. Detailed reasons for study exclusion are reported in Supplementary Table S1. Ultimately, 42 articles entered the full-text evaluation phase. Following strict inclusion and exclusion criteria, 22 articles were further excluded for the following reasons: seven articles were not in the field of vocational education, two articles focused solely on students rather than teachers, three were review articles, and 10 were informal publications such as books, conference papers, and reports. A total of 20 eligible articles were included for subsequent systematic analysis and information extraction. The screening

process is detailed in Figure 1 (PRISMA flow chart). Document management and data processing were completed using Microsoft Office Excel and Zotero, respectively. Detailed findings and quality assessment are provided in Supplementary Table S2.

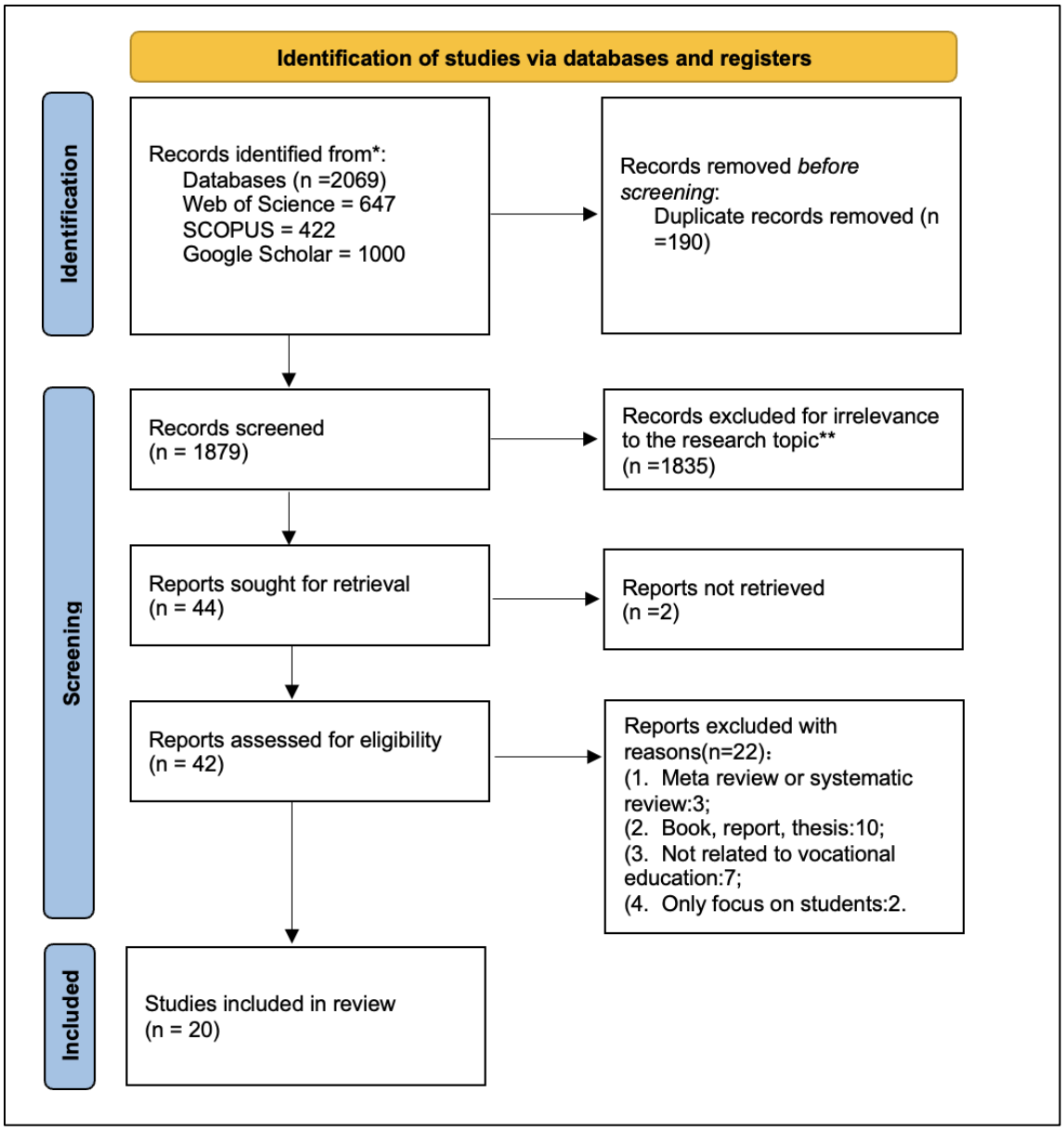

Figure 1. PRISMA Flow Diagram

4.4. Quality Assessment

To evaluate the methodological quality of the included studies, the Crowe Critical Appraisal Tool (CCAT) was utilized. The CCAT is suitable for appraising various research designs—including mixed-methods, quantitative, and qualitative approaches—making it an appropriate choice for the diverse methodologies present in the selected literature. Each study was assessed across eight domains, with scores assigned on a 0–5 scale for each domain. Scores for each domain were summed to produce a total score ranging from 0 to 40, which was then classified into three quality categories: High (≥30), Moderate (20–29), and Low (<20). Detailed CCAT domain scores for all included studies are provided in Supplementary Table S3. Study quality was assessed using the CCAT and informed the narrative synthesis and interpretation of findings. To ensure the reliability of the study selection process, two reviewers independently screened the titles, abstracts, and full texts of all retrieved studies based on predefined inclusion and exclusion criteria. The level of agreement between the two reviewers was

high (Above 85%) throughout the screening process. Any discrepancies were discussed and resolved through consultation with a third reviewer to reach a final consensus. Although no statistical weighting or quantitative sensitivity analysis was conducted, greater interpretive emphasis was placed on evidence from studies with higher methodological quality. Key themes and conclusions were examined for consistency across studies of varying quality to ensure the robustness of the synthesis. This structured and transparent approach ensured consistent evaluation of methodological rigor, thereby enhancing the reliability and validity of the review's conclusions. The CCAT scores and attributes for each of the 20 studies are presented in Table 1. Specifically, studies with higher CCAT scores were given greater interpretive emphasis in the synthesis, while findings from studies with relatively lower quality were interpreted with caution. In addition, consistency of key findings across studies with different quality levels was considered to enhance the robustness of the conclusions.

4. Results

4.1. Study Selection and Characteristics

Research on self-efficacy is quite mature, and the literature on teacher self-efficacy is also reflected in multiple research fields. This study focuses on teacher self-efficacy in vocational and technical education. Figure 2 shows the publication trends of related research from 2010 to 2025. In 2010, there was only one related publication, and the annual number of publications remained low from then until 2022. However, the number of related studies increased significantly in 2023, reaching six, and in 2024 and 2025, four and three articles, respectively. The overall trend shows that academic attention to this topic has increased significantly in recent years.

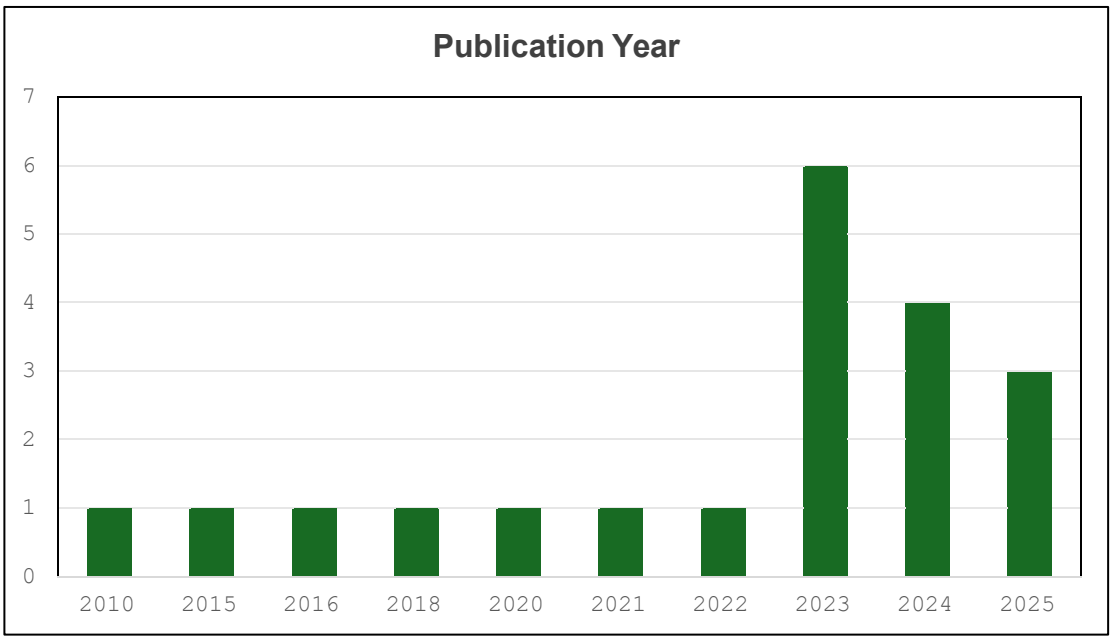

Figure 2. Distribution of Included Studies by Year of Publication

The pie chart in Figure 3 shows the distribution of publications on vocational education teacher self-efficacy by country. The results show that Asia dominates this research, contributing 64% of the research. Specifically, Indonesia leads with 32%, followed by China with 16%, Malaysia with 11%, and Thailand with 5%. Research from other regions primarily comes from the Netherlands (16%), Canada (10%), Switzerland (5%), and Nigeria (5%). This distribution highlights Asia's significant influence on this topic and reflects the field's internationalization.

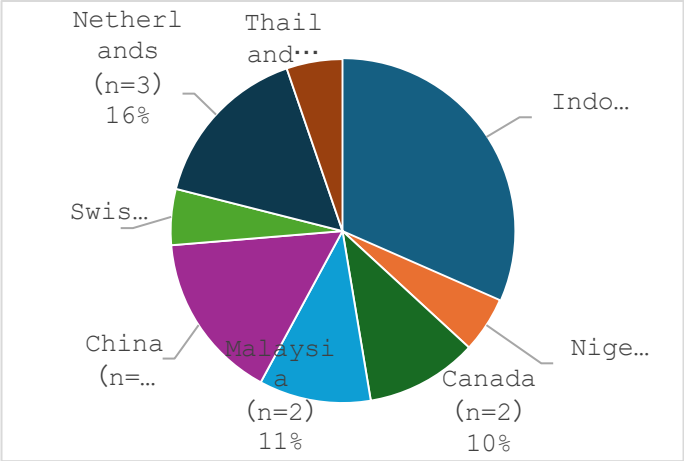

Figure 3. Regional Distribution of Vocational Education Publications

4.2. Conceptual Category

4.2.1. Definition of Teacher Self-efficacy

Across the reviewed literature, definitions of teacher self-efficacy consistently describe it as teachers' belief in their capability to successfully perform instructional tasks and influence student engagement and learning outcomes. Rooted predominantly in Bandura's self-efficacy theory (1997), these definitions highlight both the confidence and the judgment teachers hold regarding their teaching abilities in specific contexts, such as subject-specific instruction, vocational education, integration of educational technology, academic writing, and classroom management. Teacher self-efficacy is often conceptualized as multidimensional, encompassing domains such as instructional strategies, student engagement, and classroom management, and is closely linked to professional identity, resilience in the face of challenges, and the capacity to adopt innovative practices. This conceptual foundation underscores the importance of teacher self-efficacy as a critical determinant of teaching effectiveness and educational innovation.

Table 1. Definition of Teacher Self-efficacy Included in the Study

No.	Author(s)	Definition	CCAT Score
1	Agustina et al., 2020	Teachers believe they can influence student engagement and learning outcomes, especially when they are free from external pressure and possess a strong commitment to teaching (Barni et al., 2019).	35
2	Chou et al., 2010	Teachers' confidence and judgment of their ability to use computers to complete tasks in the teaching environment are part of computer self-efficacy, based on Bandura's self-efficacy theory (Compeau & Higgins, 1995; Wilfong, 2006).	36
3	Adebagbo, 2025	An individual's belief in their ability to complete a specific task (Bandura, 1997).	37
4	Gagnon & Dubeau, 2023	An individual's judgment and belief about whether they possess the necessary action capabilities to achieve a specific goal (Bandura, 1977).	38
5	Yang et al., 2024	Teachers believe they can effectively plan and implement teaching objectives in a specific subject (Bandura, 1994).	35
6	Li, 2025	Teachers' belief in their ability to influence student learning outcomes is a crucial component of their professional identity (Sun et al., 2025).	34
7	Mulyono et al., 2023	Teachers' perceptions of and confidence in their own abilities during academic writing and publication (Mulyono et al., 2023).	35
8	Anwar et al., 2024	Teachers' beliefs about their ability to influence student learning through instructional activities (Anwar et al., 2024).	38
9	Ismail et al., 2025	Teachers' beliefs about their ability to successfully adopt educational technology, implement innovative teaching practices, and enhance	37

		student engagement (Prasetya et al., 2021).	
10	Lauermann & Berger, 2020	Teachers' judgments about their ability to effectively promote engagement and learning outcomes, even with struggling students (Tschannen-Moran & Woolfolk Hoy, 2001).	37
11	Jaedun et al., 2022	Teachers' confidence in their ability to complete specific instructional tasks (Jaedun et al., 2022).	38
12	Beverborg et al., 2015	Teachers' beliefs about their ability to successfully perform tasks in instructional activities stem from factors such as mastery and experience (Bandura, 1997).	38
13	Runhaar et al., 2016	Teachers' belief in their ability to cope with various challenges in their professional environment (Runhaar et al., 2016).	37
14	Preechawong et al., 2021	Teachers' beliefs about their ability to design instruction, manage the classroom, and interact with students (Bandura, 1994).	36
15	Klaeijsen et al., 2018	Teachers' judgments about their ability to effectively handle new tasks or future challenges are distinct from emotional experiences of competence (Bandura, 1982).	35
16	Code et al., 2023	Teachers' beliefs about their ability to influence student learning and sustain teaching in higher vocational education settings (Findeisen et al., 2022).	34
17	Fang & Qi, 2023	Teachers' confidence in their ability to influence teaching and student learning (Fang & Qi, 2023).	38
18	Siswanto et al., 2023	Teachers' confidence in their effectiveness in student engagement, teaching strategies, and classroom management in face-to-face and online teaching (Siswanto et al., 2023).	39
19	Kholifah et al., 2023	Teachers' beliefs about their ability to organize and execute teaching activities to achieve specific learning objectives (Bandura, 1994).	36
20	Jin et al., 2021	Teachers' confidence in effectively executing teaching tasks emphasizes its importance in knowledge management and educational innovation (Tschannen-Moran & Hoy, 2001).	34

4.2.2. Measurement Tool of Teacher Self-efficacy

Across the reviewed studies, a range of instruments was employed to assess teacher self-efficacy, reflecting both general conceptualizations and context-specific applications. Table 2. shows the specific content. General teacher self-efficacy was commonly measured using Bandura's Teacher Self-Efficacy Scale and the Teacher Self-Efficacy Scale (TSES), which evaluate multiple domains such as instructional strategies, classroom management, and student engagement. In technology-integrated contexts, instruments such as the Computer Self-Efficacy Scale, Technological Self-Efficacy, and the Teachers' AI Self-Efficacy Questionnaire (TASQ) were used to capture teachers' confidence in adopting and applying digital tools and artificial intelligence in educational settings. Task-specific instruments, including the Academic Creativity and Self-Efficacy Scale (ACSES) and the Situated Academic Writing Self-Efficacy Scale (SAWSES), focused on specialized competencies such as academic innovation and scholarly writing. Additionally, Occupational Self-Efficacy scales were applied to examine teachers' perceived capability to meet professional demands and adapt to workplace challenges. This diversity of measurement tools illustrates the multidimensional and context-dependent nature of teacher self-efficacy in vocational and technical education.

Table 2. Teacher Self-efficacy Measurement

Varibles	**Measurement**
Teacher self-efficacy	Bandura's Teacher Self-Efficacy Scale Computer Self-Efficacy Scale Teachers' AI Self-efficacy Questionnaire（TASQ） Teacher Self-Efficacy Scale(TSES) Academic Creativity and Self-Efficacy scale (ACSES) Situated Academic Writing Self-Efficacy Scale (SAWSES) Technological self-efficacy Occupational self-efficacy

4.2.3. Sub-category and Main Findings of Teacher Self-efficacy

An analysis of 20 included studies revealed that teacher self-efficacy (TSE) in vocational and technical education is closely related to multiple themes, exhibiting multidimensional and context-dependent characteristics. A thematic synthesis approach was used to organize the findings of the included studies. The themes were generated inductively based on the research focus and key variables reported in the literature, rather than through formal coding procedures. This approach allowed for a structured yet flexible synthesis of the existing evidence. Overall, these themes can be categorized into four main categories: professional practice and engagement. TSE is often associated with reflective practice, professional engagement, teaching effectiveness, and teaching quality, demonstrating its crucial role in improving teacher performance and maintaining motivation across diverse contexts, including face-to-face and online teaching. Second, organizational and contextual factors. Numerous studies have linked TSE to organizational climate, school leadership support, mentoring experience, and perceived organizational and innovative climates, demonstrating that supportive systems and environments contribute to enhancing teacher self-efficacy. Third, psychological and motivational dimensions. TSE is closely related to psychological capital, intrinsic motivation, professional adaptability, job satisfaction, and work engagement, highlighting the importance of psychological resources and motivational factors in supporting teachers' professional confidence. Fourth, the integration of technological competence and digitalization. Within the context of digitalization, TSE is closely linked to topics such as computer self-efficacy, technology acceptance, digital leadership, digital technology familiarity, and the continued use of e-learning, indicating that technology-related self-efficacy is becoming an integral part of the role of vocational college teachers. This thematic distribution (see word cloud, Figure 4) shows that TSE is not only related to teachers' professional identity and career development, but is also closely intertwined with organizational support and technology integration, highlighting its central role in enhancing the effectiveness and adaptability of vocational college teachers.

Comprehensive results from the 20 included studies indicate that teacher self-efficacy in vocational and technical education plays a central role in multiple aspects, including teaching, technology application, organizational support, and professional development. It not only directly influences teachers' teaching effectiveness, student learning outcomes, and innovative teaching behaviors, but also indirectly promotes teachers' professional practice and continuous development through mediating or moderating effects on factors such as principal digital leadership, organizational innovation climate, work engagement, professional motivation, and psychological well-being. Research indicates that teacher self-efficacy is influenced by a variety of factors, including mastery experience, vicarious experience, social persuasion, emotional state, career goal orientation, task dependency, mentorship, peer relationships, and support from school leadership. Furthermore, technological self-efficacy plays a key role in digital teaching and the sustained use of technology, enhancing teachers' innovative abilities and classroom teaching quality. Overall, teacher self-efficacy is not only a crucial psychological resource for teachers' professional competence but also a crucial bridge connecting personal traits, organizational environment, and educational outcomes. Details are shown in Table 3.

Table 3. Sub-category and Main Findings of TSE Research in higher vocational education

No.	Author(s)	Sub-category	Main findings
1	Agustina et al.,2020	TSE & Teacher's Reflective Practice & Work Engagement & Teacher Trust & Digital Leadership	Teacher self-efficacy plays a key mediating role between principals' digital leadership and teachers' reflective practices. Teacher self-efficacy, in turn, significantly influences their work engagement, which in turn influences their reflective teaching practices.
2	Chou et al.,2010	TCSE & Perceived Organizational & Innovative Climate & Computer Self-Efficacy & Continuous Use of E-Teaching	Teachers' computer self-efficacy mediates the relationship between organizational innovation climate and continued intention to use e-learning. An organizational innovation culture can indirectly promote the sustainability of technology-based teaching by enhancing

			teachers' efficacy.
3	Adebagbo, 2025	TSE & Mastery Experience & Vicarious Experience & Social Persuasion & Physiological and Emotional States	Teacher self-efficacy intrinsically influences teachers' teaching performance through various mechanisms, such as mastery experience, vicarious experience, social persuasion, and emotional state.
4	Gagnon & Dubeau,2023	TSE & Teachers' professional identity & Training and support mechanisms & Their coping strategies when facing professional challenges	Teacher self-efficacy is closely related to multiple factors, including professional support, teachers' self-perception, and classroom performance.
5	Yang et al.,2024	TSE & Teachers' sustainability knowledge & Teaching readiness	A significant relationship exists between teachers' sustainability knowledge, learning readiness, and self-efficacy.
6	Li,2025	TSE & Organizational climate	The importance of fostering a favorable organizational climate for enhancing teacher self-efficacy is highlighted, and a significant positive correlation is found between this self-efficacy and teachers' recognition and understanding of VET. Specifically, mediation analysis indicates that teacher self-efficacy moderates the relationship between organizational climate and teachers' perceptions of VET.
7	Mulyono et al.,2023	TSE & Academic writing skills	Teachers who participated in the workshop showed significant improvements in their academic writing self-efficacy.
8	Anwar et al.,2024	TTSE & Teaching effectiveness	There is a positive correlation between teachers' technological self-efficacy and teaching effectiveness, and this increased self-efficacy may promote teaching innovation and student learning outcomes. Furthermore, digital technology use may directly influence teachers' self-efficacy.
9	Ismail et al.,2025	TSE & Satisfaction & Technology acceptance	Increased teacher self-efficacy not only influences educators' use of digital tools but is also directly related to the effectiveness of educational practice and improved student learning outcomes.
10	Lauermann & Berger,2020	TSE & Teachers' intrinsic motivation & Work engagement & Students' learning motivation and engagement	Teacher self-efficacy plays a significant role in teachers' autonomy-supportive teaching behaviors.
11	Jaedun et al.,2022	TSE & Teaching Effectiveness	The path coefficient between self-efficacy and teaching effectiveness was estimated to be 0.344 and highly significant ($p < 0.001$).
12	Beverborg et al.,2015	TSE & Psychological capital & Teachers' teaching experience & School leadership support	With the support of school leaders, teacher self-efficacy plays a significant mediating role in teachers' participation in professional learning activities.
13	Runhaar et al.,2016	TSE & Career goal orientation & Task interdependence	Teachers' professional self-efficacy is positively correlated with innovative behavior, and this relationship is moderated by career goal orientation and task interdependence.
14	Preechawong et al.,2021	TSE & Career satisfaction & Work experience & Mentoring experience	Mentoring and coaching experiences positively influence teacher self-efficacy and are significantly correlated with job satisfaction.
15	Klaeijsen et al.,2018	Career motivation & Work engagement & Organizational support	Teachers' self-efficacy can mediate the relationship between their work engagement and their innovative behavior.

16	Code et al.,2023	TSE & Career adaptability	Teachers' self-efficacy has a positive impact on their participation in professional learning activities and their ability to cope with teaching changes.
17	Fang & Qi,2023	TSE & School Climate & Teacher Job Satisfaction	Teachers' self-efficacy is significantly positively correlated with job satisfaction. Furthermore, teachers' perceived support from the school and good relationships with colleagues significantly enhance their self-efficacy, which in turn improves their professional identity and work engagement.
18	Siswanto et al.,2023	TSE & leadership & Psychological security climate & Knowledge management & Innovation capability	Self-efficacy has a significant positive impact on teachers' knowledge management and innovative abilities.
19	Kholifah et al.,2023	TSE & Digital Technology Intimacy & Psychological Well-being & Instructional Quality	Self-efficacy has a significant positive impact on digital technology familiarity and psychological well-being, both of which positively predict teaching quality. There is a significant positive correlation between teachers' self-efficacy and teaching quality.
20	Jin et al.,2021	TSE & Professional engagement	Through the implementation of the teacher development program, teachers have significantly improved their self-efficacy in classroom management, self-taught teaching strategies, and student engagement.

Figure 4. Word Cloud Map of Themes Included in the Study

4.2.3.1. Professional practice and engagement

The relationship between teacher self-efficacy and professional practice outcomes was reported in eight studies. Most of these studies employed cross-sectional survey designs (n = 6), while two studies adopted intervention or program-based designs. Across these studies, higher levels of teacher self-efficacy were consistently associated with reflective practice, professional engagement, teaching effectiveness, and instructional quality. Several studies further reported mediating or indirect roles of self-efficacy in linking leadership, professional learning, and work engagement. Although findings were

largely consistent, the predominance of cross-sectional evidence limits causal interpretation. Overall, the strength of evidence supporting this theme is therefore moderate.

4.2.3.2. Organizational and contextual factors

Associations between teacher self-efficacy and organizational or contextual variables were reported in six studies, all of which relied on cross-sectional survey designs. These studies highlighted the importance of school climate, organizational support, leadership practices, mentoring experiences, and innovative organizational environments in shaping teachers' self-efficacy beliefs. In several cases, teacher self-efficacy functioned as a mediator or moderator between organizational conditions and outcomes such as job satisfaction, professional identity, and innovative behavior. While the evidence base is coherent, it is methodologically limited by its observational nature. Accordingly, the overall strength of evidence for this theme is assessed as moderate.

4.2.3.3. Psychological and motivational dimensions

A total of five studies examined teacher self-efficacy in relation to psychological and motivational factors, including intrinsic motivation, psychological capital, career adaptability, job satisfaction, and well-being. All studies within this theme used cross-sectional designs, reporting positive and statistically significant relationships between self-efficacy and key psychological resources. These findings suggest that teacher self-efficacy plays an important role in sustaining motivation and psychological resilience among vocational educators. However, given the relatively small number of studies and the absence of longitudinal or experimental evidence, the strength of evidence supporting this theme is considered moderate.

4.2.3.4. Technological competence and digitalization

The integration of technological competence and digitalization into teacher self-efficacy research was addressed in seven studies, including five cross-sectional surveys and two intervention-based or training-focused studies. These studies consistently reported positive relationships between technological or digital self-efficacy and outcomes such as technology adoption, sustained use of e-learning systems, teaching innovation, and instructional quality. Compared with other themes, this area includes a limited but notable presence of intervention evidence, suggesting emerging causal insights. As a result, the overall strength of evidence for this theme is evaluated as moderate to strong.

5. Discussion

This systematic literature review focuses on the current state of research on teacher self-efficacy (TSE) in higher vocational education. Through a systematic analysis of 20 relevant papers, this article explores the definition of TSE, related topics, and key findings. It also examines the publication time and regional distribution of these studies and discusses future research directions in this area. The study found that the number of related studies peaked in 2023. Although it declined between 2023 and 2025, it remained high overall, reflecting the increasing interest in the psychological well-being of vocational education teachers in recent years, in line with global economic development trends. In terms of regional distribution, research is most concentrated in Asia, particularly in Indonesia, followed by China and Malaysia. This phenomenon may be closely related to Presidential Decree No. 68 and the National TVET Reform Strategy, issued by the Indonesian government in 2022. These strategies promote quality improvement in higher vocational education, teacher training, and industry-education integration. For example, the SMK-Center of Excellence Program (SMK-PK) promotes industry-education integration through the teaching factory model (World Economic Forum, 2025). In contrast, research in this area is relatively limited in developed countries with advanced vocational education, such as Germany. Different cultural and national backgrounds lead to significant variations in the function and impact of teachers' self-efficacy beliefs (Bandura, 2002). From a cross-cultural perspective, this regional distribution may also help explain variations in how teacher self-efficacy is conceptualized and reported

across studies. In many Asian contexts, educational systems are often characterized by stronger policy-driven reforms, centralized governance, and a growing emphasis on workforce development. These structural features may place greater expectations on teachers' performance and adaptability, thereby increasing the relevance of self-efficacy as a psychological resource. For example, national initiatives aimed at strengthening technical and vocational education and training (TVET) systems may indirectly promote research on teacher capacity and professional confidence. In contrast, countries with more established vocational education systems, such as those in Europe, may place greater emphasis on institutional stability, apprenticeship traditions, and well-developed training frameworks. In such contexts, teacher self-efficacy may be shaped less by rapid reform pressures and more by professional autonomy and long-standing pedagogical practices. As a result, the function and significance of self-efficacy may differ across cultural and institutional settings. Furthermore, cultural factors such as collectivist versus individualist orientations may also influence how self-efficacy is expressed and measured. In collectivist contexts, teachers' beliefs may be more closely linked to social expectations, institutional norms, and collaborative practices, whereas in more individualistic contexts, self-efficacy may be more strongly associated with personal agency and individual competence. These differences suggest that the interpretation of TSE findings should be situated within specific cultural and educational contexts. Overall, the concentration of studies in Asia not only reflects regional research priorities but also indicates that current findings may be context-dependent. Therefore, future research should adopt more explicit cross-cultural comparative approaches to better understand how cultural, institutional, and policy environments shape teacher self-efficacy in higher vocational education. Therefore, expanding TSE research from a cross-cultural perspective is particularly necessary.

Bandura's (1994) definition of self-efficacy has served as the theoretical foundation for the vast majority of research in this field. Most literature explores self-efficacy within specific teaching contexts, such as technology use (Ismail et al., 2025) and academic writing (Mulyono et al., 2023), focusing on teachers' beliefs and confidence in completing specific teaching tasks and influencing student learning outcomes. Methodologically, research generally relies on the Teacher Self-Efficacy Scale (Tschannen-Moran & Hoy, 2001). However, this scale is a general instrument covering the dimensions of student engagement, classroom management, and teaching strategies, and may not fully capture the characteristics of self-efficacy in specific tasks and fields within higher vocational education (Morris et al., 2017). This limitation is particularly evident in vocational education contexts, where teaching is closely linked to hands-on practice, industry collaboration, and rapidly evolving technical skills. As a result, the use of a generalized instrument such as TSES may overlook task-specific efficacy beliefs that are critical for vocational educators. Furthermore, the continued reliance on TSES across diverse contexts may also contribute to inconsistencies in research findings, as the scale may not adequately reflect contextual variations in teaching environments. This raises questions regarding the construct validity of TSES when applied to specialized educational settings such as higher vocational education. Notably, some studies have begun to adopt more context-appropriate scales, such as the Teacher Artificial Intelligence Self-Efficacy Questionnaire (TASQ), the Computer Self-Efficacy Scale, the Technology Self-Efficacy Scale, and the Academic Creativity and Self-Efficacy Scale (ACSES). These are all based on Bandura's self-efficacy theory and emphasize task-specificity and context-dependence. This shift suggests an emerging trend toward more nuanced and context-sensitive measurement approaches, which may provide more accurate insights into teachers' efficacy beliefs in vocational education settings. Regarding research topics, the literature primarily focuses on TSE and contextual aspects of teaching, such as reflective practice, professional engagement, teaching effectiveness, and teaching quality. It also examines the role of external factors, such as school climate and organizational support, in promoting teacher self-efficacy, as well as psychological factors and motivation. A systematic review shows that teacher self-efficacy has a significant positive impact on improving teaching effectiveness, student engagement, teaching innovation, knowledge management, and psychological well-being, and plays a mediating or moderating role in the relationships between multiple variables. For example, teacher self-efficacy serves as a bridge between principal digital leadership and teacher reflective practice, and between organizational innovation climate and sustained use of e-learning. It also serves as a key link between professional engagement, job satisfaction, and innovative behavior. Furthermore, by enhancing technological self-efficacy, it promotes the adoption of digital tools and improves teaching quality. In summary, this review not only reveals the multi-level influencing paths of teacher self-efficacy, but also

highlights its core position in higher vocational education reform and teacher professional development, and further emphasizes the urgent need for more in-depth cross-cultural and cross-disciplinary research in this field.

6. Implication

In addition to the general implications identified in this review, it is important to translate these findings into more actionable recommendations for higher vocational education institutions. First, institutions should design targeted professional development programs that focus on enhancing teachers' self-efficacy through mastery experiences, such as hands-on teaching practice, industry-based training, and teaching innovation projects. These initiatives can help teachers build confidence in applying both pedagogical and technical skills in real-world contexts. Second, institutional support mechanisms should be strengthened by fostering a positive school climate, including collaborative teaching cultures, mentoring systems, and supportive leadership. Such environments can provide both social persuasion and vicarious learning opportunities, which are essential sources of self-efficacy. Third, vocational institutions should promote the integration of digital tools and emerging technologies into teaching practice, accompanied by structured training and technical support. Enhancing teachers' technological self-efficacy is particularly important in the context of rapidly evolving industry demands. Finally, policymakers and institutional leaders should consider developing context-specific evaluation and support frameworks that reflect the unique characteristics of vocational education, rather than relying solely on general teaching standards. This would allow for more accurate assessment and targeted enhancement of teacher self-efficacy in practice-oriented educational settings.

7. Study limitations

This review also has several limitations. First, we restricted our analysis to empirical studies published in English, excluding books, book chapters, theses, conference papers, and non-English publications. This decision may have introduced language bias and resulted in the omission of relevant studies published in local languages, particularly in regions where vocational and technical education research is frequently disseminated through national journals or institutional outlets. As a consequence, the geographical and cultural coverage of the evidence base may be incomplete.

Second, the exclusion of grey literature, such as policy reports, government documents, institutional evaluations, and doctoral dissertations, may have limited the inclusion of practice-oriented and policy-relevant evidence. Given the applied nature of higher vocational education, important insights into teacher self-efficacy may exist outside peer-reviewed journals and were therefore not captured in this review.

Third, reliance on peer-reviewed journal articles raises the possibility of publication bias, as studies reporting statistically significant or positive findings are more likely to be published than studies with null or negative results. As a result, the strength and consistency of the reported associations between teacher self-efficacy and related outcomes may be overstated.

Fourth, the scope of the review was explicitly focused on teacher self-efficacy in higher vocational education and did not include related psychological constructs such as psychological capital, resilience, or emotional regulation. This focused approach may have constrained the breadth of the theoretical interpretation.

Fifth, this review did not examine demographic or identity-related factors, such as gender, professional rank, disciplinary background, or years of teaching experience, which may moderate the development and effects of teacher self-efficacy. The absence of such analyses limits the depth of contextual interpretation.

Sixth, the use of Google Scholar as a supplementary data source may have introduced potential

sampling bias. Due to the export limitations of Publish or Perish and the non-transparent ranking algorithm of Google Scholar, only the top 1,000 records could be retrieved and screened. As a result, relevant studies that met the inclusion criteria but were ranked beyond this threshold may have been excluded. This truncation may have led to a degree of selection bias. However, this limitation was partially mitigated through comprehensive searches conducted in Scopus and Web of Science, which ensured broader coverage of peer-reviewed literature.

Finally, this study relied on descriptive and thematic synthesis rather than meta-analytic techniques. While this approach is appropriate for mapping research themes and identifying patterns in an emerging field, it does not allow for quantitative estimation of effect sizes or causal inference. Consequently, the findings should be interpreted as indicative of trends and relationships reported in the existing literature, rather than as definitive evidence of effectiveness or causal impact.

8. Conclusion

The primary purpose of this systematic literature review was to explore and synthesize existing research on teacher self-efficacy in the context of higher vocational education. Through a descriptive analysis of 20 studies, this review demonstrates that teacher self-efficacy is a salient psychological construct in vocational education and has received increasing scholarly attention in recent years. The temporal and regional distribution of the literature indicates a growing research focus, particularly in Asian contexts, while evidence from other regions remains relatively limited.

This review addresses an important gap in the literature by foregrounding teacher psychological factors within higher vocational education. The synthesis of findings reveals that teacher self-efficacy in vocational settings is predominantly situated within specific teaching contexts and is closely associated with professional practice, organizational support, and technology integration. In particular, teachers' perceived support from schools and collegial relationships consistently emerge as key factors enhancing self-efficacy, which in turn is linked to stronger professional identity, work engagement, innovative behavior, and teaching quality.

Overall, the findings underscore the importance of strengthening teacher self-efficacy as a strategic lever for improving teaching effectiveness and supporting teachers in adapting to changing instructional models. At the same time, the largely cross-sectional and descriptive nature of the existing evidence highlights important directions for future research. Specifically, future studies should employ more robust designs, such as pre-registered randomized controlled trials or well-designed quasi-experiments, to evaluate the causal impact of targeted professional development interventions on teacher self-efficacy. Longitudinal cohort studies tracking vocational teachers across key career stages would further clarify the developmental trajectories and temporal dynamics of self-efficacy. In addition, cross-cultural research is needed to validate commonly used self-efficacy instruments and establish measurement invariance across regions, thereby improving the comparability and generalizability of findings. Together, these directions can strengthen the empirical foundation of research on teacher self-efficacy and better inform evidence-based policy and practice in vocational education.

Data Availability Statement

The data supporting the findings of this study, including the CCAT quality appraisal file, the literature extraction table for the 20 included studies, and the full-text screening log with reasons for exclusion, are openly available in Zenodo at **https://doi.org/10.5281/zenodo.18288355**

Declaration of AI Use

Artificial intelligence–based tools were used during the preparation of this manuscript to assist with language polishing and structural refinement. All academic judgments, data interpretation, theoretical

framing, and final content decisions were made by the authors. The authors take full responsibility for the integrity and originality of the manuscript.

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