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(IJEPC)<https://gaexcellence.com/ijepe>TEACHER COMPETENCY IN EDUCATION:
A SYSTEMATIC LITERATURE REVIEW OF
DIMENSIONS AND DETERMINANTSNursyahida Sikri^{1*}, Nor Hasimah Ismail², Siti Noor Ismail³¹School of Education, Universiti Utara Malaysia, Kedah, Malaysia nuryahida_sikri@ahsgs.uum.edu.my <https://orcid.org/0009-0009-6330-4072>²School of Education, Universiti Utara Malaysia, Kedah, Malaysia nhsimah@uum.edu.my <https://orcid.org/0000-0002-2311-580X>³School of Education, Universiti Utara Malaysia, Kedah, Malaysia siti.noor@uum.edu.my <https://orcid.org/0000-0002-0156-5893>

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Abstract:

Teacher competency has become a critical area of educational research due to rapid technological advancement, evolving pedagogical demands, and increasing expectations for inclusive and learner-centred education. Despite extensive scholarly attention, the dimensions and determinants of teacher competency remain fragmented across different educational contexts and theoretical perspectives. Therefore, this study systematically reviews recent empirical evidence to identify the major dimensions and determinants shaping teacher competency in contemporary education. A Systematic Literature Review (SLR) was undertaken in accordance with the Preferred Reporting Items for Systematic Reviews and Meta Analyses (PRISMA) framework. Comprehensive searches were carried out within the Web of Science (WoS) as well as Scopus databases using the keywords “Teacher Competence”, “Professional Competence”, “Competency Dimensions”, and “Competency Determinants”. The search process was confined to journal articles published from 2024 to 2026. Following identification, screening, eligibility, and quality assessment procedures, 35 articles were retained for the final analysis. The results highlighted three predominant themes. The first theme, Digital, AI, and Technology-Enhanced Teacher Competence, highlights the growing importance of digital literacy, artificial intelligence readiness, online teaching competency, technological pedagogical knowledge, and technology integration as essential determinants of teacher effectiveness. The second theme, Pedagogical, Disciplinary, as well as

Professional Competency Frameworks, emphasizes pedagogical expertise, disciplinary knowledge, professional identity, self-efficacy, leadership, and sustainability-oriented competencies as core dimensions of teacher development. The third theme, Inclusive, Relational, and Learner-Centred Teaching Competence, underscores the significance of inclusive practices, teacher–student relationships, socio-emotional competence, learner engagement, and responsiveness to diverse learning needs. Collectively, the reviewed studies demonstrate that teacher competency refers to a multifaceted construct influenced by pedagogical, technological, relational, professional, as well as contextual dimensions. The study contributes a contemporary synthesis of teacher competency literature and presents an extensive framework to inform future investigations, teacher preparation programmes, as well as educational policy development in increasingly complex learning environments.

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Keyword:

Competency Determinants, Competency Dimensions,
Professional Competence, Teacher Competency



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Introduction

Teacher competency has emerged as a fundamental concept in debates surrounding educational equity, quality, as well as the capacity of education systems to respond to twenty-first century challenges. Teachers are now required not only to possess strong expertise in subject matter and pedagogical practices, but also to integrate digital technologies, address learner diversity, promote inclusion, and support lifelong learning (Caena & Redecker, 2019; Masoumi & Noroozi, 2023; Moreira et al., 2022; Sulaiman & Ismail, 2020). Professional competence, commonly conceptualized as a combination of knowledge, skills, attitudes, and personal dispositions, has been associated with effective teaching practices, improved student outcomes, as well as the achievement of educational goals such as SDG 4 (Hermoso & Brobo, 2023; Kurgambekov et al., 2025; Martono et al., 2025; Mazilov & Slepko, 2024). Recent studies highlight multidimensional competency frameworks that encompass pedagogical expertise, disciplinary knowledge, digital literacy, assessment competence, and socio-emotional and ethical dimensions (Carvajal et al., 2025; Mazilov & Slepko, 2024). At the same time, competence development is influenced by multiple determinants, including professional development, school leadership, organizational climate, mentoring, institutional culture, resources, self-efficacy, and personal characteristics (Murkatik et al., 2020; Nidhom et al., 2025; Sprott, 2019). Despite growing scholarly attention, evidence regarding the interaction between competency dimensions and their determinants remains fragmented and context dependent (Mcgarr, 2024; Szucs et al., 2021).

Several gaps justify a systematic review focusing on the dimensions and determinants of teacher competency. Existing frameworks often provide partial classifications of competencies and insufficiently integrate cognitive, affective, sociocultural, and ethical elements into a coherent structure (Li et al., 2025; Mazilov & Slepko, 2024; Szucs et al., 2021). Furthermore, previous reviews are frequently limited to specific sectors or contexts, reducing the comparability and transferability of findings (Kurgambekov et al., 2025; Moriera et al., 2022; Nidhom et al., 2025; Szucs et al., 2021). Empirical evidence on cultural competence, inclusive teaching, leadership, supervision, and professional development remains dispersed across diverse educational settings (Martono et al., 2025); Masoumi & Noroozi, 2023; Nidhom et al., 2025; Sprott, 2019). Cross-national differences further suggest that competency priorities vary according to contextual needs and educational traditions (Nidhom et al., 2025; Wang et al., 2024). Therefore, this review systematically synthesizes current evidence on teacher competency dimensions and determinants to establish a more holistic understanding of the factors shaping teacher competence and to inform future framework development, policy improvement, and professional learning initiatives (Caena & Redecker, 2019; Mazilov & Slepko, 2024; Nidhom et al., 2025).

Literature Review

Teacher competency is a multidimensional construct comprising diverse aspects and influencing factors, which serves a pivotal function in facilitating effective teaching practices as well as learning processes. The literature highlights diverse frameworks and models that define and assess teacher competencies, emphasizing their importance in professional development and educational outcomes.

Teacher competencies are often categorized into multiple dimensions. A general framework identifies nine dimensions, namely, research skills, field knowledge, lifelong learning, curriculum design, emotional intelligence, socio-cultural awareness, communication, ICT skills, and environmental awareness (Selvi, 2010). Similarly, other studies propose models with fewer but overlapping dimensions, such as teaching strategies, communication skills, and fostering independent thinking (Phor et al., 2025). In multicultural education, competencies are further refined into attitudes, knowledge, and critical thinking, underscoring the role of individual autonomy and training in shaping this skill (Wu et al., 2022). These dimensions collectively influence teachers' values, behaviors, and practices, thereby enhancing the teaching-learning process (Selvi, 2010).

Determinants of teacher competency include both intrinsic and extrinsic factors. A sense of educational mission, for instance, has been identified as a central driver of competency, reflecting the importance of internal belief systems alongside explicit skills (Ju, 2025). Professional development is another critical determinant, with elements like active learning, content focus, and collective participation significantly predicting teacher competence (Ithnain & Saidin, 2021). Additionally, digital competence has increasingly become a pivotal element within modern educational landscape, with frameworks emphasizing system knowledge, pedagogical innovation, and skill application to meet the demands of education informatization (Lin, 2024). These determinants highlight the complex interaction between professional training, personal attributes, as well as contextual factors in the development of teacher competencies.

Assessment and evaluation of teacher competencies are essential for continuous improvement. Various tools and frameworks have been developed to measure competencies, such as the Perceived Teacher's Competency Scale, which evaluates dimensions like teaching strategies and communication skills based on student feedback (Phor et al., 2025). Similarly, competency inventories and self-assessment tools have been validated to assess pedagogical and technical skills, providing actionable insights for professional development (Kang et al., 2020; Ludwikowska, 2022). These instruments not only help identify competency gaps but also guide targeted interventions to enhance teaching effectiveness.

In conclusion, teacher competency is a complex construct influenced by multiple dimensions and determinants. Effective frameworks and assessment tools are crucial for promoting professional development and enhancing educational results. By considering both internal and external factors that shape competencies, educators and policymakers are able to establish enabling environments that support teachers in achieving high levels of performance in their professional roles.

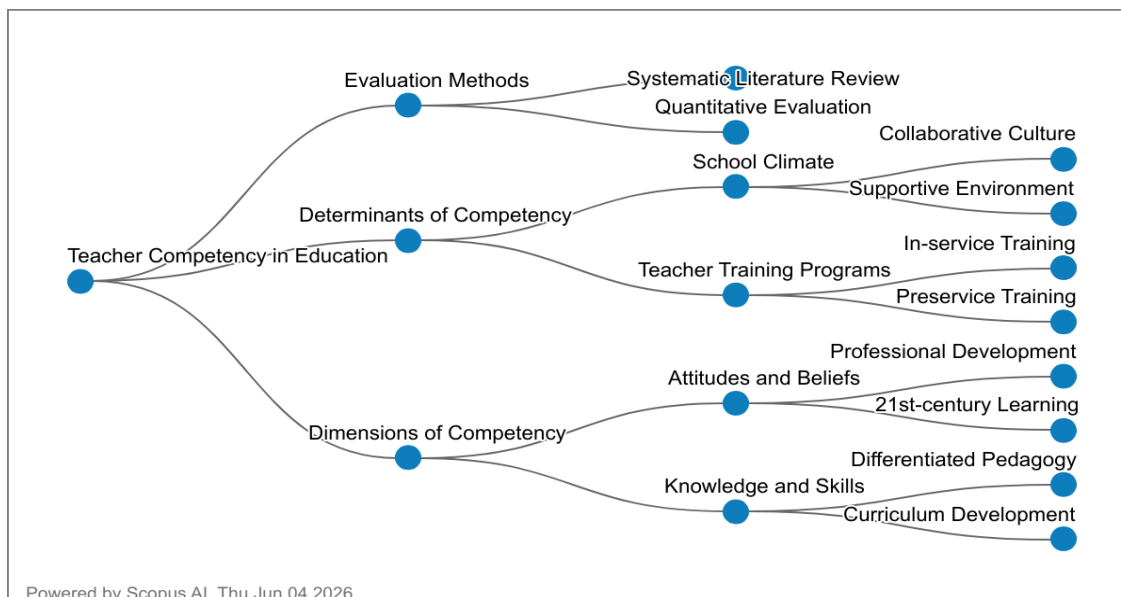


Figure 1. Conceptual Overview of Teacher Competency in Education: Dimensions, Determinants, and Evaluation Methods

Figure 1 illustrates a conceptual map that integrates existing literature on teacher competency in education, highlighting two major thematic domains: dimensions of competency and determinants of competency, alongside the evaluation methods used to investigate the construct. The dimensions of competency are primarily reflected through teachers' knowledge and skills as well as attitudes and beliefs, which contribute to effective practices such as differentiated pedagogy, curriculum development, professional development, and 21st-century learning. Meanwhile, the determinants of competency emphasize the influence of contextual and developmental factors, including school climate, supportive environments, collaborative culture, and teacher training programs encompassing both preservice and in-service training. The concept map also indicates that existing studies predominantly employ systematic literature reviews and quantitative evaluation approaches to examine teacher competency. Overall, the literature suggests that teacher competency defines a multifaceted construct formed through the interplay between individual characteristics as well as organisational

influences, underscoring the importance of continuous professional learning, supportive school environments, and structured training initiatives in fostering competent and effective educators.

Materials and Methods

This systematic review followed the Preferred Reporting Items for Systematic Reviews and Meta-Analyses (PRISMA) guidelines (Page et al., 2021).

Identification

The identification stage constitutes the first phase of the PRISMA framework and functions as a crucial basis for guaranteeing the completeness of a systematic literature review. In this research, a systematic search approach was implemented through two globally acknowledged databases, Web of Science (WoS) as well as Scopus, to capture the broadest possible body of literature related to teacher competency. The search was performed using four primary keywords: *teacher competency*, *education*, *competency dimensions*, and *competency determinants*. As a result, 1,540 records were retrieved from Scopus, while 552 records were identified from WoS, resulting in an overall aggregate of 2,092 records. The substantial number of records retrieved demonstrates the extensive scholarly attention devoted to teacher competency and its associated dimensions and determinants within educational settings. In addition, employing a range of keywords facilitated a broad search coverage, minimising the chance of missing pertinent studies and strengthening the overall comprehensiveness of the review process.

The higher number of records obtained from Scopus compared to WoS can be attributed to Scopus's broader journal coverage, including a larger collection of education-related publications, conference proceedings, and interdisciplinary sources. Nevertheless, the inclusion of both databases was essential to maximize retrieval accuracy and minimize publication bias, as each database indexes unique journals and research outputs. The combined dataset of 2,092 records reflects the richness and diversity of the existing literature on teacher competency, providing a solid basis for the ensuing screening as well as eligibility assessment stages. This thorough identification procedure enhances the methodological robustness of the review by guaranteeing that the evidence pool is sufficiently extensive, representative, and capable of supporting reliable conclusions regarding the dimensions and determinants of teacher competency in educational settings. The search strategy employed in this systematic literature review is presented in Table 1. The search strings were developed separately for the Scopus and WoS databases using equivalent keywords and Boolean operators to ensure comprehensive retrieval of relevant literature on teacher competency.

Table 1: Search Strategy Used in Scopus and Web of Science

Scopus	TITLE-ABS-KEY(("teacher competency" OR "teacher competence" OR "teaching competency" OR "teaching competence" OR "professional competence") AND ("dimensions" OR "domains" OR "components" OR "framework") AND ("determinants" OR "factors" OR "predictors" OR "antecedents" OR "influences")) AND PUBYEAR > 2023 AND DOCTYPE(ar) AND LANGUAGE(English) AND SRCTYPE(j) AND PUBSTAGE(final) AND SUBJAREA(SOCI) AND OA(publisherfullgold)
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	Date of Access: June 2026
Web of Science (WoS)	TS=("teacher competency" OR "teacher competence" OR "teaching competency" OR "teaching competence" OR "professional competence") AND ("dimensions" OR "domains" OR "components" OR "framework") AND ("determinants" OR "factors" OR "predictors" OR "antecedents" OR "influences")) Refined by: DOCUMENT TYPES=(ARTICLE) AND LANGUAGES=(ENGLISH) AND WEB OF SCIENCE CATEGORIES=(EDUCATION EDUCATIONAL RESEARCH OR SOCIAL SCIENCES INTERDISCIPLINARY). Date of Access: June 2026

After the identification phase, a thorough screening procedure was conducted to refine the dataset and ensure consistency with the aims of this review. The eligibility filters eliminated non-English studies, publications dated prior to 2024, books, conference papers, articles in press, as well as review articles. Furthermore, records not situated within the Social Sciences domain and non-Gold Open Access publications were removed. To enhance topical relevance, studies that did not focus on key themes related to teacher competency development, including professional competence, higher education, teacher training, teaching, teacher competencies, competence, learning, professional development, teacher professional development, and educational innovation, were also excluded. Consequently, 1,992 records were excluded from the initial dataset, with 72 records retained from Scopus and 28 from WoS, culminating in a final screened sample comprising 100 studies.

To further improve the quality as well as accuracy of the review, a duplication analysis was subsequently conducted across both databases. This process identified 11 duplicate records that appeared in both Scopus and WoS and were therefore removed. The elimination of duplicate studies is essential for preventing redundancy, reducing potential bias, and guarantee that each individual study adds distinct value to the evidence base. Following this procedure, 89 unique records remained for the subsequent eligibility assessment, providing a focused, relevant, and methodologically robust dataset for subsequent analysis. The inclusion and exclusion criteria applied during the screening process are summarised in Table 2. These criteria were established to ensure that only relevant, high-quality journal articles were retained for the subsequent stages of the review.

Table 2: Inclusion and Exclusion Criteria

Criterion	Inclusion	Exclusion
Language	English	Non-English
Timeline	2024 – 2026	< 2024
Literature type	Journal (Article)	Conference, Review Book

Publication Stage	Final publication	In Press
Subject Area	Social Science	Besides Social Science
Open Access	Gold	Besides Gold
Keyword	Professional Competence, Higher Education, Education, Teacher Training, Teaching , Teacher Competencies, Competence, Learning, Professional Development, Teacher Professional Development, Educational Innovation	Besides Professional Competence, Higher Education, Education, Teacher Training, Teaching , Teacher Competencies, Competence, Learning, Professional Development, Teacher Professional Development, Educational Innovation

Eligibility

The eligibility phase comprised a comprehensive full-text examination to evaluate the relevance as well as appropriateness of the screened studies for inclusion in the review. After eliminating duplicate records, a total of 89 articles underwent detailed appraisal according to the established eligibility criteria. In this stage, 55 studies were removed for various reasons, such as being beyond the scope of the research domain, possessing titles that insufficiently represented the focus on teacher competency, abstracts that were inconsistent with the research objectives, and lack of access to full-text versions. These exclusion parameters were crucial to ensure that only studies with a direct and meaningful contribution to the research topic were retained for further analysis.

Following the eligibility evaluation, a total of 35 studies satisfied all predefined inclusion criteria and were therefore retained for qualitative synthesis. The substantial reduction from 89 to 35 articles reflects the rigorous nature of the eligibility process and demonstrates the commitment to maintaining methodological quality and thematic relevance. By including only studies that closely addressed teacher competency, its dimensions, and determinants within educational contexts, the final dataset establishes a strong and dependable evidential foundation for qualitative analysis. This stringent selection procedure strengthens the validity, credibility, as well as trustworthiness of the review outcomes, while also ensuring that the resulting conclusions are grounded in highly relevant scholarly evidence.

Data Abstraction and Analysis

A comprehensive integrative analysis framework was utilized in this study to methodically scrutinize, interpret, and consolidate evidence obtained from various qualitative research designs. This analytical procedure primarily aimed to uncover recurring patterns, overarching themes, as well as subthemes associated with teacher competency, its dimensions, and its determinants within educational settings. The thematic development process began with an extensive data extraction phase, in which the researchers systematically examined and

structured pertinent information drawn from the 35 studies included in the qualitative synthesis. As shown in Figure 2, every publication was critically analyzed to determine principal findings, concepts, and evidence that enhanced a more in-depth comprehension of the research focus.

Subsequently, the selected studies were critically evaluated to explore their methodological approaches, research contexts, and principal findings related to teacher competency, education, competency dimensions, and competency determinants. Through an iterative process of comparison and interpretation, the authors collaboratively generated themes and subthemes grounded in the empirical evidence extracted from the literature. Across the analysis, an audit trail was consistently upheld to record interpretative decisions, developing insights, analytical reflections, and emergent understandings, thereby reinforcing the transparency and dependability of the review process. To safeguard analytical rigor, the derived themes were repeatedly cross-checked among the included studies to detect both convergences and divergences. Where interpretive variations arose, these were deliberated collectively within the research team until agreement was reached, consequently enhancing the trustworthiness as well as credibility of the thematic framework developed from the reviewed literature. The characteristics of the primary studies included in the qualitative synthesis are presented in Table 3. The table summarises the authors, publication year, article title, source title, and database indexing for each selected study.

Table 3: Characteristics of the Selected Primary Studies

No	Authors	Title	Year	Source Title	Scopus	WoS
1	Okada et al.	Fostering Transversal Skills through Open Schooling with the CARE-KNOW-DO Framework for Sustainable Education	2024	Sustainability (Switzerland)	/	/
2	P. Li et al.	Current status and associated factors of digital literacy among academic nurse educators: a cross-sectional study	2025	BMC Medical Education	/	
3	Gallego-Jiménez et al.	DocenTEA: Development and Validation of a Questionnaire to Assess Inclusive Teaching Competence Toward Students with Autism Spectrum Disorder (ASD)	2025	Education Sciences	/	/
4	Zeng et al.	Islamic Pedagogical Competencies For Sustainable Hospitality Education	2025	Jurnal Pendidikan Islam	/	
5	Khalil et al.	Teachers' perceptions of teaching mathematics topics based on STEM	2024	STEM Education	/	

		educational philosophy: A sequential explanatory design				
6	Navarrete et al.	Assessment of digital competence in future educators: an exploratory analysis in higher education; [Evaluación de la competencia digital en futuros docentes: un análisis exploratorio en educación superior]	2025	Edutec	/	
7	S. Li et al.	The conceptualization of mathematics teachers' professional competence in project-based learning contexts	2025	Eurasia Journal of Mathematics, Science and Technology Education	/	
8	Sartor-Harada & Gomes	AI-ED-SAT: design and validation of a questionnaire for self-assessment of teaching skills in educational AI; [AI-ED-SAT: diseño y validación de un cuestionario para autoevaluar competencias docentes en IA educativa]	2026	RIED-Revista Iberoamericana de Educacion a Distancia	/	
9	Roopsuwankun & Woraphiphat	Entrepreneurship education for sustainable development: A design-driven approach	2024	Kasetsart Journal of Social Sciences	/	
10	Nisa et al.	Increasing teacher professionalism through the implementation of digital academic supervision in Indonesian secondary school: Personal learning networks as mediator	2024	Journal of Infrastructure, Policy and Development	/	
11	Azizah et al.	Investigation of Content Validity and Exploratory Factor Analysis of Students' Pedagogical Knowledge of Science	2026	Human Research in Rehabilitation	/	
12	Lin et al.	Teacher Adaptability and Student Development in Online Teaching	2025	Behavioral Sciences	/	

		Environments: A Survey of Teachers of Chinese Mathematics Competitions for Gifted Students				
13	Pozo-Sánchez et al.	AI competency levels and teaching profiles: a multivariate analysis in the field of Music education; [Nivel competencial y perfiles docentes ante la Inteligencia Artificial: un análisis multivariante en el área de Música]	2026	International Journal of Educational Research and Innovation	/	
14	Merghani et al.	Development and application of a learning enjoyment scale for pedagogical activities	2024	F1000Research	/	
15	Chen & Zeng	Development of clinical teaching competency framework and scale for physician teachers in China: an exploratory sequential mixed methods study	2025	Medical Education Online	/	/
16	Tian & Tian	Modeling K12 Teachers' Online Teaching Competency and Its Predictive Relationship with Performance—A Mixed-Methods Study Based on Behavioral Event Interviews	2025	Behavioral Sciences	/	
17	Dávila-Villavicencio et al.	Design and Psychometric Properties of the Student Perception of Teacher Care Scale in University Students	2024	Education Sciences	/	/
18	Zakaria et al.	Analysis of factors in integrated internship models for preservice Islamic education teachers using exploratory factor analysis	2026	International Journal of Evaluation and Research in Education	/	
19	Garzón-González et al.	Digital teaching skills: Key to innovation and quality in Higher Education; [Competencias digitales docentes: Clave para la	2025	Revista de Ciencias Sociales	/	

		innovación y la calidad en la Educación Superior]				
20	Runtić et al.	Validation of the TPACK Instrument in the Croatian Primary School Context	2025	Journal of Information and Organizational Sciences	/	
21	Buyse et al.	Supporting teacher-student relationships in secondary education: a comprehensive framework and tool for teacher professional development	2026	Frontiers in Education	/	
22	Sharhun et al.	Lexical Approach and Terminology in Developing Professional Competence: A Case Study in Ukrainian Higher Education	2026	Journal of Education and Training Studies	/	
23	Nabayra et al.	Pre-Service Teachers' Sense of Efficacy, 3D Competencies (Skills, Character, and Meta Learning), and Teaching Performance	2025	International Journal of Information and Education Technology	/	
24	Le et al.	STEM teaching competency framework for pre-service teacher: a study in Vietnam	2025	International Journal of Evaluation and Research in Education	/	
25	Morgado et al.	Rethinking teacher training from an inclusive and community dialogical perspective	2024	Journal of Education and e-Learning Research	/	
26	Cong et al.	Interdisciplinary Teaching in STEM Education: A Systematic Synthesis of Teachers' Competencies at Lower and Upper Secondary Levels	2025	International Journal of Learning, Teaching and Educational Research	/	
27	Muslihah et al.	Prophetic Leadership and Teacher Competence: A Quantitative Study in Indonesian Secondary Islamic and Public Schools	2025	Munaddhomah	/	

28	Medina-García et al.	Educating for Inclusion: PERKIN, the Scale That Measures Future Teachers' Perceptions	2025	SAGE Open	/	
29	Huang & Musah	The influence of augmented reality on creativity, student behavior, and pedagogical strategies in technology-infused education management	2024	Journal of Pedagogical Research	/	
30	Borbélyová et al.	Teachers' Readiness to Deliver State-Language Instruction to Dual Language Learners in Hungarian-Medium Kindergartens in Slovakia: Latent Profile and Mediation Analyses	2026	Education Sciences	/	
31	Ábalos-Aguilera et al.	Digital competence of primary school teachers in Andalusia (Spain): A multidimensional analysis based on self-perceptions	2026	Social Sciences and Humanities Open	/	
32	Truong & Tran	Factors Influencing STEAM Teaching at Private Schools in Vietnam: A Case Study of Ho Chi Minh City	2025	Educational Process: International Journal	/	
33	Regassa & Desissa	TPACK competency status among TVET instructors in Sheger City, Ethiopia	2026	Discover Sustainability	/	
34	Hussien et al.	Contextualizing Teaching Professional Practice: Psychometric Validation of Danielson Model Instruments in a New Context	2026	Education Sciences	/	/
35	Vasilev	Assessment of Factors Influencing Educational Effectiveness in Higher Educational Institutions	2024	Sustainability (Switzerland)	/	

Quality of Appraisal

Following the guidelines set out by Kitchenham and Charters (Kitchenham, 2007), once the primary studies have been identified, it becomes necessary to assess the quality of the selected research and perform a quantitative comparison of their methodological strength. In this work,

the quality assessment framework introduced by Anas Abouzahra et al. (Abouzahra et al., 2020) was employed, which consists of six quality assessment (QA) criteria tailored for systematic literature reviews. Each criterion was assessed through a three-level scoring system, comprising “Yes” (Y), which was awarded 1 point when the criterion was completely met; “Partly” (P), which was given 0.5 points when the criterion was only partially achieved and showed some limitations or shortcomings; and “No” (N), which received a score of 0 when the criterion was not fulfilled at all.

- QA1. Is the purpose of the study clearly stated?
- QA2. Is the interest and the usefulness of the work clearly presented?
- QA3. Is the study methodology clearly established?
- QA4. Are the concepts of the approach clearly defined?
- QA5. Is the work compared and measured with other similar work?
- QA6. Are the limitations of the work clearly mentioned?

The table outlines the quality assessment (QA) process employed to appraise the methodological rigor and relevance of the studies that were selected. This evaluation was carried out separately by three domain experts, each applying a predetermined set of quality criteria. For every criterion, responses were classified as “Yes” (Y), “Partly” (P), or “No” (N), which were then translated into numerical values of 1, 0.5, and 0, respectively. After completing the independent assessments, the individual scores from the three experts were combined to produce a composite quality score for each study. In order to guarantee that only robust evidence was included, studies were retained for further review stages only when their total score exceeded 3.0. This threshold was established to ensure that the selected studies met the minimum quality requirements and contributed reliable findings to the systematic literature review.

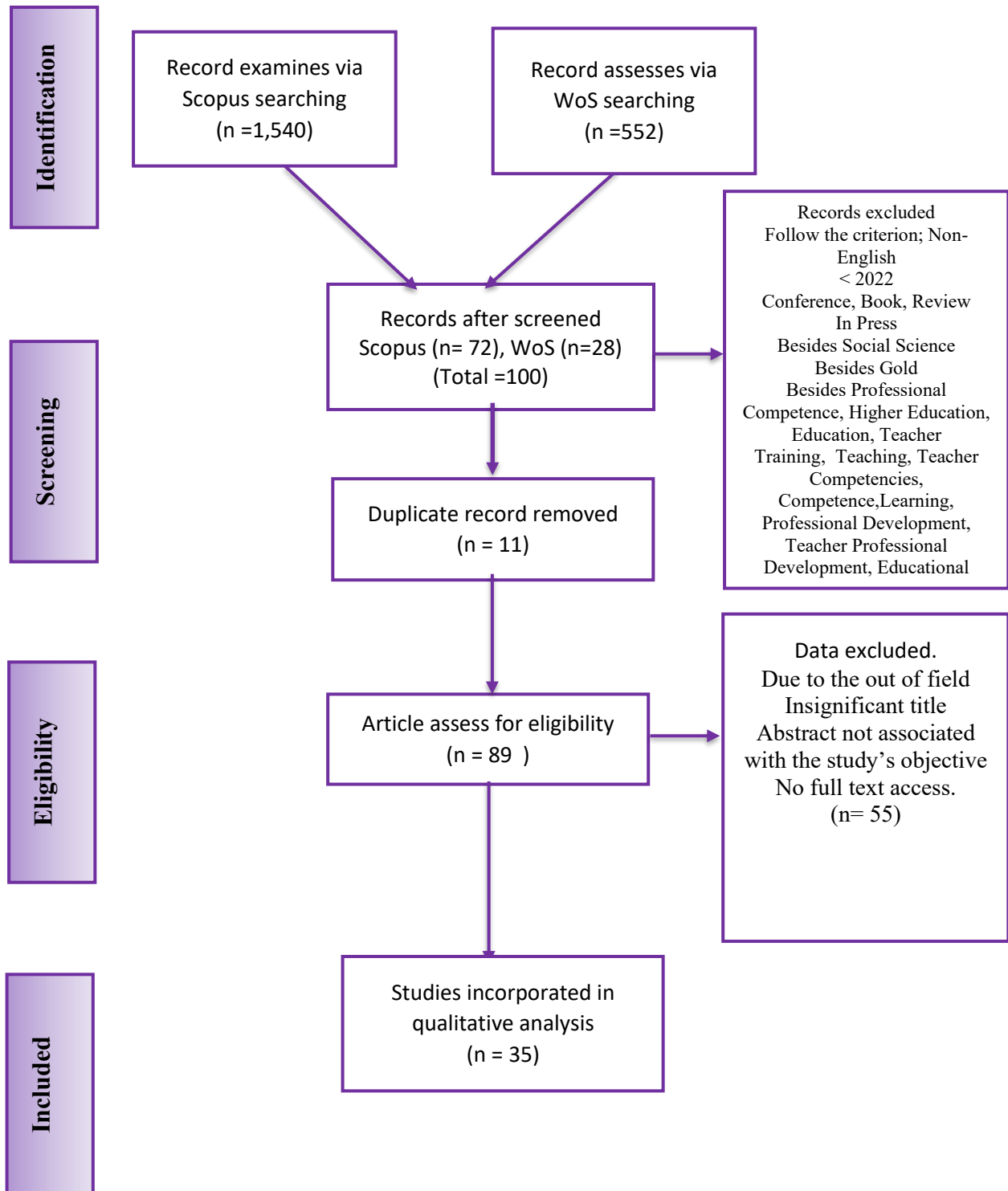


Figure 2. Flow Diagram Of The Proposed Searching Study

Result and Discussion

Quality Assessment Analysis

The quality assessment results indicate that the selected studies generally demonstrated a satisfactory to high level of methodological quality. Most studies clearly articulated their research objectives, highlighted the significance and relevance of the investigation, and provided well-defined methodological procedures, resulting in strong performance across QA1, QA2, and QA3. Furthermore, the majority of studies adequately described the key concepts, frameworks, or dimensions underpinning their research, reflecting a sound theoretical foundation. However, several studies showed limitations in relation to QA5 and QA6, as comparisons with similar studies and explicit discussions of research limitations were not consistently reported, particularly within the abstracts. Despite these shortcomings, the overall quality scores exceeded the predetermined acceptance threshold, indicating that the selected studies provide credible and reliable evidence for inclusion in the systematic literature review. Consequently, the findings derived from these studies can be considered sufficiently robust to support the synthesis of current knowledge on teacher competency in educational settings.

Table 4: Quality Assessment Scores of the Selected Primary Studies

PS	QA1	QA2	QA3	QA4	QA5	QA6	Total Mark	Percentage (%)
PS1	1	1	1	1	1	0	5	83.33
PS2	1	1	1	1	1	0	5	83.33
PS3	1	1	1	1	1	0	5	83.33
PS4	1	1	1	1	1	0	5	83.33
PS5	0.5	0.5	1	1	0.5	1	4.5	75
PS6	1	0.5	1	1	0.5	0	4	66.67
PS7	1	0.5	0.5	1	1	0	4	66.67
PS8	1	1	1	1	1	0	5	83.33
PS9	1	0.5	1	1	0.5	0	4	66.67
PS10	1	1	1	1	1	0	5	83.33
PS11	1	1	1	1	1	0	5	83.33
PS12	1	0.5	1	1	1	0	4.5	75
PS13	0.5	0.5	1	1	1	0	4	66.67
PS14	1	0.5	1	1	1	0	4.5	75
PS15	1	0.5	1	1	1	0	4.5	75
PS16	1	1	1	1	1	0	5	83.33
PS17	1	1	0.5	1	1	0	4.5	75
PS18	1	0.5	1	1	1	0	4.5	75
PS19	1	0.5	0.5	1	0.5	0	3.5	58.33
PS20	1	1	1	1	0.5	0	4.5	75
PS21	1	1	1	1	0.5	0	4.5	75
PS22	0.5	1	1	1	0.5	0	4	66.67
PS23	1	1	1	1	0.5	0	4.5	75
PS24	1	1	1	1	1	0	5	83.33

PS25	1	1	1	1	0.5	0	4.5	75
PS26	0.5	0.5	1	1	0.5	0	3.5	58.33
PS27	1	1	1	1	0.5	0	4.5	75
PS28	1	1	1	1	1	0	5	83.33
PS29	1	1	1	1	0.5	0	4.5	75
PS30	1	1	1	1	1	0	5	83.33
PS31	1	1	1	1	0.5	0	4.5	75
PS32	1	0.5	1	1	1	0	4.5	75
PS33	1	1	1	1	1	0	5	83.33
PS34	1	0.5	1	1	1	0	4.5	75
PS35	1	0.5	1	0.5	0.5	0	3.5	58.33

Thematic Analysis

To synthesize the findings of the selected studies, a thematic analysis was conducted following the screening and eligibility phases of the PRISMA-guided systematic literature review. The analysis involved a comprehensive examination of the titles, abstracts, research objectives, methodologies, findings, and conclusions of the 35 selected articles. Through an iterative coding and categorization process, recurring concepts, dominant research interests, methodological patterns, and emerging issues related to teacher competency were identified and grouped into broader thematic categories. The analysis revealed three major themes that collectively represent the current landscape of teacher competency research. These themes are: (1) Digital, AI, and Technology-Enhanced Teacher Competence, which emphasizes teachers' readiness and capability to integrate emerging technologies into educational practice; (2) Pedagogical, Disciplinary, and Professional Competency Frameworks, which focuses on the development and application of competency models across various educational disciplines and professional contexts; and (3) Inclusive, Relational, and Learner-Centred Teaching Competence, which highlights the competencies required to address learner diversity, foster inclusive educational environments, and strengthen teacher–student relationships. Together, these themes provide a comprehensive understanding of the multidimensional nature of teacher competency and serve as the foundation for the subsequent discussion of the review findings.

Table 5: Theme Development Summary

Theme	Focus Area	Main Research Direction
Theme 1: Digital, AI, and Technology- Enhanced Teacher Competence	Digital literacy, AI competency, online teaching, TPACK, augmented reality, digital supervision, and technology-integrated pedagogy	This theme focuses on how teachers develop and apply digital, AI-related, and technology-enhanced competencies to improve instructional quality, innovation, adaptability, and professional performance in contemporary educational settings.
Theme 2: Pedagogical, Disciplinary, and Professional	STEM/STEAM education, mathematics, science, Islamic education, clinical teaching, sustainable education, professional competence,	This theme examines the development, validation, and application of teacher competency frameworks across subject-specific, interdisciplinary, professional, and institutional contexts. It highlights

Theme	Focus Area	Main Research Direction
Competency Frameworks	leadership, internship, and competency model validation	how pedagogical knowledge, disciplinary expertise, leadership, and professional preparation contribute to effective teaching practice.
Theme 3: Inclusive, Relational, and Learner-Centred Teaching Competence	Inclusive education, autism spectrum disorder, disability inclusion, teacher care, teacher–student relationships, bilingual readiness, and community-dialogical teacher training	This theme addresses teacher competencies required to support diverse learners, strengthen inclusive practice, enhance relational teaching, and promote equitable, responsive, and learner-centred education.

Digital, AI, and Technology-Enhanced Teacher Competence

The reviewed studies indicate that digital, AI, and technology-enhanced teacher competence has evolved into a multidimensional construct comprising digital literacy, technological knowledge, pedagogical integration, ethical awareness, and professional adaptability. P. Li et al. (2025) found that educators demonstrated stronger competency in digital application and social responsibility than in digital technology knowledge and skills. Similarly, Pozo-Sánchez et al. (2026) reported higher competency in ethical and inclusive AI use than in classroom implementation, while Garzón-González et al. (2025) showed that although many educators achieved advanced levels of digital competence, they were less effective in developing students' digital competence. These findings suggest that digital competence extends beyond technical skills to the effective pedagogical application of technology.

The increasing adoption of artificial intelligence has expanded teacher competency to include pedagogical, ethical, and curricular applications of AI. Sartor-Harada and Gomes (2026) developed the AI-ED-SAT framework, which incorporates conceptual understanding, pedagogical application, ethical reflection, and curriculum integration. Consistent with this, Pozo-Sánchez et al. (2026) identified a gap between teachers' ethical commitment to AI and their technical ability to integrate it effectively, while Lin et al. (2025) reported that familiarity with AI tools was associated with higher digital literacy. Together, these findings indicate that AI competency requires balanced development of technical, pedagogical, and ethical capabilities.

The reviewed studies further demonstrate that technology-enhanced competence improves instructional quality and student outcomes when supported by effective pedagogy. Lin et al. (2025) found that online teaching efficacy positively influenced student development, with teaching engagement acting as a mediating factor. Similarly, Tian and Tian (2025) identified instructional and management competencies as strong predictors of teaching performance, whereas Huang and Musah (2024) reported that augmented reality enhanced creativity, student behaviour, and pedagogical strategies when supported by teacher competence. These findings suggest that technology contributes to educational effectiveness only when integrated with sound pedagogical practice.

Technology integration frameworks also provide a comprehensive basis for understanding teacher competence. Runtić et al. (2025) validated a contextualised TPACK model, while Regassa and Desissa (2026) confirmed positive relationships between technological knowledge and overall TPACK competency. Likewise, Tian and Tian (2025) emphasised that effective online teaching combines explicit competencies, including technical and instructional skills, with implicit attributes such as achievement orientation and personal characteristics. Collectively, these studies reinforce digital competence as an integrated combination of technological, pedagogical, content, and professional knowledge.

Finally, the reviewed evidence highlights the importance of institutional support, collaboration, and professional networks in strengthening technology-enhanced teacher competence. Nisa et al. (2024) demonstrated that digital academic supervision improved teacher professionalism through personal learning networks. Similar findings were reported by Garzón-González et al., (2025), while Ábalos-Aguilera et al. (2026) and Regassa and Desissa (2026) emphasised that continuous professional development, organisational support, and collaborative partnerships are essential for advancing digital competence. Overall, the evidence indicates that digital, AI, and technology-enhanced teacher competence integrates digital literacy, AI readiness, pedagogical innovation, technology integration, adaptability, and institutional support, making these competencies strategic determinants of teaching effectiveness, professional growth, and sustainable educational innovation (Garzón-González et al., 2025; P. Li et al., 2025; Regassa & Desissa, 2026).

Conclusion

This systematic literature review was conducted to investigate and integrate the various determinants and dimensions associated with teacher competency in educational settings. Following the PRISMA framework, the review methodically examined empirical studies indexed in the Scopus and Web of Science databases, covering publications from 2024 through 2026. Using predefined inclusion and exclusion criteria, 35 high-quality journal articles were selected for qualitative synthesis. The review aimed to address three core research questions related to the impact of digital and technology-enhanced competencies, the key pedagogical and professional competency dimensions, and the competencies required to support inclusive and learner centred educational practices.

The findings demonstrate that teacher competency refers to a multifaceted construct influenced by the interplay of pedagogical, technological, relational, professional, as well as contextual dimensions. The analysis revealed three primary themes. The first theme, Digital, AI, and Technology-Enhanced Teacher Competence, highlights the increasing importance of digital literacy, artificial intelligence readiness, online teaching capability, technology integration, and adaptive professional learning. The second theme, Pedagogical, Disciplinary, and Professional Competency Frameworks, emphasizes the significance of pedagogical knowledge, disciplinary expertise, self-efficacy, leadership, sustainability-oriented competencies, and professional identity in supporting effective teaching practice. The third theme, Inclusive, Relational, and Learner Centred Teaching Competence, highlights the essential importance of inclusive pedagogical approaches, the quality of teacher student relationships, socio-emotional competencies, learner engagement, and responsiveness to diverse educational needs. Across the reviewed studies, mixed-method, quantitative, and validation-based research designs were frequently employed, reflecting a growing emphasis on competency measurement, framework development, and evidence-based educational practice.

This review advances the field by integrating dispersed evidence across multiple educational contexts into a comprehensive and contemporary understanding of teacher competency. The synthesis extends existing knowledge by integrating technological, pedagogical, professional, and relational perspectives within a unified framework. Furthermore, the identification of three overarching themes provides a structured lens for understanding how competency dimensions and determinants interact in contemporary educational environments. The review also highlights the growing convergence between digital transformation, inclusive education, and professional development as key drivers of teacher effectiveness.

The findings carry several practical implications for educational stakeholders. Teacher education institutions may utilise the identified competency dimensions to strengthen pre-service and in-service training programmes. Educational leaders and policymakers may employ the synthesized evidence to develop competency standards, professional development initiatives, and teacher evaluation systems that are responsive to emerging educational challenges. The findings further suggest that effective teacher development requires a balanced emphasis on technological competence, pedagogical expertise, professional identity, and inclusive practice to support high-quality learning outcomes.

A number of limitations warrant recognition. This review was confined to English-language publications indexed in Web of Science as well as Scopus and limited to the period from 2024 to 2026. In addition, only Gold Open Access journal articles within the Social Sciences domain were included, which may have resulted in the omission of pertinent research available in other databases, academic disciplines, languages, or alternative publication types. Subsequent studies ought to broaden the scope of the review by integrating a wider range of databases, broader publication periods, and conducting comparative analyses across different educational tiers, geographical settings, and cultural environments. In addition, more inquiry is required to assess the sustained influence of artificial intelligence, digital transformation, and inclusive pedagogical practices on the progression of teacher competency development.

In conclusion, the evidence confirms that teacher competency remains a dynamic and evolving construct that extends beyond traditional pedagogical knowledge to encompass technological readiness, professional growth, relational capacity, and inclusive educational practice. Systematic literature reviews provide an essential mechanism for synthesising dispersed evidence, identifying emerging trends, and informing evidence-based decision-making. The present review offers a comprehensive basis for subsequent theoretical advancement, empirical inquiry, as well as the formulation of educational policy aimed at strengthening teacher competency in increasingly complex and diverse learning environments.

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