

Dimensions of Teaching Quality: A Systematic Review and Thematic Synthesis of Empirical Studies

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Abstract – Teaching quality is a fundamental focus in educational research, underscoring its crucial impact on student learning outcomes and institutional efficacy. Despite numerous studies on teacher performance and instructional effectiveness, ambiguity persists in defining, measuring, and contextualizing "teaching quality" across various educational levels and cultural contexts. This study intends to systematically review empirical research on teaching quality published from 2020 to 2025, concentrating on conceptual frameworks, measurement instruments, determinants, and outcomes associated with teaching quality. In accordance with the PRISMA 2020 protocol, 130 peer-reviewed articles were obtained from the Scopus and Web of Science databases utilizing specified keywords including "teaching quality," "instructional quality," "teacher performance," and "pedagogical competence." The thematic analysis was used to examine data, revealing publication trends, key authors, prominent journals and thematic clusters. The results indicate four predominant research themes: (1) pedagogical and instructional proficiency, (2) professional development and educator training, (3) evaluation and assessment of teaching quality and (4) the impact of technology and innovation on improving instructional practices. This review identifies critical research deficiencies, especially in the creation of standardized measurement instruments and the incorporation of digital pedagogical competencies into teaching quality frameworks. The study advances theory and practice by proposing a conceptual framework for future research and highlighting the necessity of interdisciplinary approaches to enhance teaching quality in the digital learning era.

Keywords – Teaching quality, instructional efficacy, professional competence, educator performance, systematic literature review, bibliometric analysis, PRISMA

I. INTRODUCTION

Teaching quality has emerged as a major concern in international education discussions, given its direct impact on student learning outcomes and institutional efficacy. The effectiveness of teaching is a critical factor in both the success of curriculum implementation and the overall performance of an educational system (Hattie, 2022; Darling-Hammond, 2017). The demand for accountability, innovation, and evidence-based practices in the twenty-first century has positioned teaching quality as central to education reform and policy initiatives (Cochran-Smith et al., 2020). Effective teaching integrates pedagogical knowledge, instructional design, assessment literacy, and interpersonal skills, collectively fostering learning environments that align with Sustainable Development Goal 4 regarding quality education (UNESCO, 2023).

However, teaching quality is a multidimensional construct encompassing not only pedagogical expertise and subject mastery but also affective, reflective, and interpersonal dimensions that influence student engagement and achievement (Kyriakides et al., 2020). In this evolving landscape, educators are expected to integrate evidence-based practices, digital pedagogies, and data-informed decision-making into their teaching processes to meet diverse learner needs and institutional expectations (Cochran-Smith et al., 2020). This global shift towards accountability, innovation, and inclusivity highlights the need for deeper understanding of what constitutes "quality" in teaching and how it can be effectively assessed and enhanced.

II. PROBLEM STATEMENT

Despite its importance, the conceptualization and operationalization of teaching quality are inconsistent across various contexts, levels, and disciplines. Researchers used various frameworks, ranging from teacher effectiveness models to student-perceived quality scales, leading to disjointed interpretations and ambiguous conclusions (Kyriakides et al., 2020; Nguyen et al., 2021). Furthermore, most of the current research emphasizes discrete elements such as instructional leadership, teacher proficiency, or student satisfaction, rather than synthesizing these aspects into a holistic framework of teaching quality. As a result, there is an absence of systematic synthesis that describes evolution, principal trends, and research patterns in this field, especially regarding higher and pre-university education.

A systematic literature review (SLR) provides a structured and transparent method for synthesizing existing knowledge, effectively reducing researcher bias (Liberati et al., 2009). In contrast to conventional narrative reviews, a systematic literature review facilitates the identification of prevailing themes, conceptual frameworks, and methodological progressions over time. Conducting a review of teaching quality is crucial for consolidating fragmented evidence, identifying underexplored features and determining future research directions. Moreover, as new educational paradigms such as digital pedagogy, data-driven teaching, and competency-based learning reshape instructional practices, it is essential to reevaluate the definitions and measurements of "quality" in teaching within contemporary research (Rahman et al., 2024). This review seeks to systematically examine scholarly publications on teaching quality, offering an in-depth analysis of research trends, dimensions, and emerging directions. This study focuses on the following research questions:

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1. What are the primary trends and thematic advancements in the study of teaching quality?
2. Which dimensions and measurement frameworks are typically employed to evaluate teaching quality?
3. What gaps have been identified in recent studies, and what future research directions are suggested?

III. LITERATURE REVIEW

Trends in Teaching Quality

Research has shown that pedagogical innovation, technological integration and professional competency development shape teaching quality. The effective transmission of subject knowledge and classroom management skills became the focus of earlier research, but recent studies from 2020 to 2025 have expanded this understanding by including adaptive, student centered and context responsive practices. König et al. (2023) observed that good teaching in hybrid or technology supported learning environments requires digital fluency, emotional resilience and reflective capacity post pandemic. In higher education, Guo and Xu (2024) found that teachers' continuous professional learning and instructional adaptability improve students' learning quality.

Teaching quality has become recognized as a fluid construct that changes with technological, pedagogical, and sociocultural changes. To improve learner engagement and achievement, meta-analyses by van der Lans et al. (2023) and Rahman et al. (2024) show that effective teaching must integrate cognitive knowledge delivery, assessment literacy and affective such as motivation and empathy dimensions. These results suggest that teaching quality research has shifted from examining "what teachers do" to "how teachers think, adapt, and innovate" in complex educational contexts.

Dimension and Measurement of Teaching Quality

Literature describes teaching quality as a multidimensional structure that includes instructional design, classroom interaction, feedback practices and teacher reflection (Kyriakides et al., 2020; Nguyen, 2021). Recent frameworks like the Framework for Teaching (Danielson, 2013) and the Dynamic Model of Educational Effectiveness have guided empirical efforts to operationalize teaching quality through measurable indicators. Empirical differences remain a problem. Jiang et al. (2024) noted that student evaluation surveys may introduce gender, course type and cultural biases, while observer-based assessments are more objective but resource-intensive.

Emerging literature emphasizes data-driven and AI-supported teaching quality evaluation. Zhang and Chan (2025) suggested combining student feedback, learning analytics and peer evaluation to better assess instructional effectiveness. However, differences in instruments, measurement levels and institutional priorities create comparison. Learning centered pedagogy and continuous professional learning align with instructional clarity, meaningful feedback and reflective teaching, which a

recent meta review by Frontiers in Education (2024) found to predict high teaching quality regardless of methodological diversity.

Emerging Research Directions

Recent trends show that teaching quality discourse is becoming systemic, collaborative and innovative. Rahman et al. (2024) and Tan & Lim (2023) agree that institutional leadership, professional learning communities and organizational culture can shape teaching quality. Research on instructional leadership and teaching quality especially in higher education has grown (Hallinger & Hosseingholizadeh, 2022). Researchers are also studying how digital transformation, blended learning and Artificial Intelligent (AI) are changing quality teaching in diverse educational settings (UNESCO, 2023; Wang & Chen, 2024).

To change amid global educational disruptions, scholars need more longitudinal and cross-cultural studies. Understanding teaching quality now requires integrating micro level classroom practices with macro level policy and leadership as state from Lehtinen and Niemi (2024). In the future, this multi-layered approach will help educators and policymakers create more responsive, equitable and sustainable frameworks for improving teaching and learning.

IV. METHOD

This review was conducted using the Preferred Reporting Items for Systematic Reviews and Meta-Analyses (PRISMA) framework, a globally recognized standard for enhancing the transparency and rigor of systematic reviews (Moher et al., 2009; Page et al., 2021). PRISMA outlines four sequential phases, identification, screening, eligibility, and inclusion. By following this protocol, the review ensured transparency and replicability, allowing readers to trace the selection process from the initial search to the final set of studies (see Table 1).

Identification

The identification of relevant research is an essential phase in executing a systematic literature review (SLR) on Teaching Quality. A total of 3540 articles indexed in Scopus and 1785 articles indexed in Web of Science (WOS) were retrieved, facilitating a thorough examination of the topic. The selection process adhered to established inclusion and exclusion criteria, highlighting peer-reviewed journal articles published within a specified timeframe to reflect recent trends and developments. The selected articles examine multiple facets of teaching quality, focusing on its impact on student achievement, teacher development, school effectiveness, and the overall learning environment.

Literature includes studies performed across various educational contexts, from primary and secondary schools to institutions of higher education. The geographical

distribution of the research is diverse, encompassing contributions from both developed and developing educational systems, thereby offering a comprehensive perspective on teaching quality.

Key themes identified include the role of school principals as instructional leaders, leadership styles affecting teaching practices, professional development strategies, and policy implications.

The identification phase establishes a basis for a comprehensive analysis of the chosen studies, enabling a systematic synthesis of empirical evidence and theoretical viewpoints concerning instructional leadership among educators. The following sections of this review will further examine these themes, offering insights into best practices and challenges in instructional leadership across various educational contexts.

This study employed essential steps of the systematic review process to collect a significant body of relevant literature. The process began with keyword selection, subsequently involving the search for related terms through dictionaries, thesauri, encyclopedias, and previous research. All pertinent terms were identified, and search strings were developed from Web of Science and Scopus databases (see Table 1). The initial phase of the systematic review identified 5325 publications relevant to the study topic across the two databases.

TABLE 1: THE SEARCH STRING

Scopus	TITLE-ABS-KEY ("quality" OR "excellence" OR "standard" OR "effectiveness") AND ("teaching" OR "instruction" OR "education" OR "pedagogy") AND ("level" OR "stage" OR "grade" OR "tier") AND ("assessment" OR "evaluation" OR "measurement" OR "feedback") AND ("student" OR "learner" OR "pupil" OR "participant") AND ("engagement" OR "participation" OR "involvement" OR "motivation") AND PUBYEAR > 2014 AND PUBYEAR < 2026 AND PUBYEAR > 2020 AND PUBYEAR < 2026 AND (LIMIT-TO (SRCTYPE , "j")) AND (LIMIT-TO (PUBSTAGE , "final")) AND (LIMIT-TO (DOCTYPE , "art")) AND (LIMIT-TO (SUBJAREA , "ARTS")) AND (LIMIT-TO (LANGUAGE , "English")) AND (LIMIT-TO (EXACTSRCTITLE , "Sage Open") OR LIMIT-TO (EXACTSRCTITLE , "Humanities and Social Sciences Communications")) Date of Access: 8 November 2025
Wos	TITLE-ABS-KEY ("quality" OR "excellence" OR "standard" OR "effectiveness") AND ("teaching" OR "instruction" OR "education" OR "pedagogy") AND ("level" OR "stage" OR "grade" OR "tier") AND ("assessment" OR "evaluation" OR "measurement" OR "feedback") AND ("student" OR "learner" OR "pupil" OR "participant") AND ("engagement" OR "participation" OR "involvement" OR "motivation") Date of Access: 8 November 2025

Screening

During the screening step, potentially relevant research items are evaluated to ensure they align with the predefined research question(s). This phase often involves selecting research items based on the teaching quality. Duplicate papers are removed at this stage. Initially, 5194 publications were excluded, leaving 131 papers for further examination based on specific inclusion and exclusion criteria (see Table 2). The first criterion was literature, as it is the main source of practical recommendations, including reviews, meta-syntheses, meta-analyses, books,

book series, chapters, and conference proceedings not covered in the most recent study. The review was limited to English-language publications from 2015 to 2025. Overall, fourteen publications were rejected due to duplication.

TABLE 2: THE SELECTION CRITERION IS SEARCHING

Criterion	Inclusion	Exclusion
Language	English	Non-English
Timeline	2015 – 2025	< 2010
Literature type	Journal (Article)	Conference, Book, Review, Close access article
Publication Stage	Final	In Press
Subject	Social science	Beside Social science

Eligibility

In the third step, known as the eligibility phase, 117 articles were prepared for review. During this stage, the titles and key content of all articles were carefully examined to ensure they met the inclusion criteria and aligned with the current research objectives. Consequently, 67 articles were excluded as they did not qualify as due to the out of field, title not significantly, abstract not related on the objective of the study and no full text access founded on empirical evidence. As a result, a total of 50 articles remains for the upcoming review.

Data Abstraction and Analysis

This study employed an integrative analysis as a methodological approach to evaluate and consolidate various research designs utilizing quantitative methods. The purpose of the competent study was to identify pertinent topics and subtopics. The first step in creating the theme was to collect data. Figure 2 shows the authors' thorough examination of a collection of 50 publications for assertions or content pertinent to the subjects of the present study. The authors subsequently assessed the prevailing significant studies pertaining to teaching quality. Researchers are looking into both the methods used in all of the studies and the results. Then, the author worked with other co-authors to come up with themes based on the evidence in this study's context. During the data analysis, a log was kept writing down any analyses, opinions, puzzles, or other thoughts that were relevant to the interpretation of the data. Finally, the authors looked at the results to see if there were any problems with the way the theme was designed. It is important to note that the authors talk about any differences of opinion they may have about the concepts.

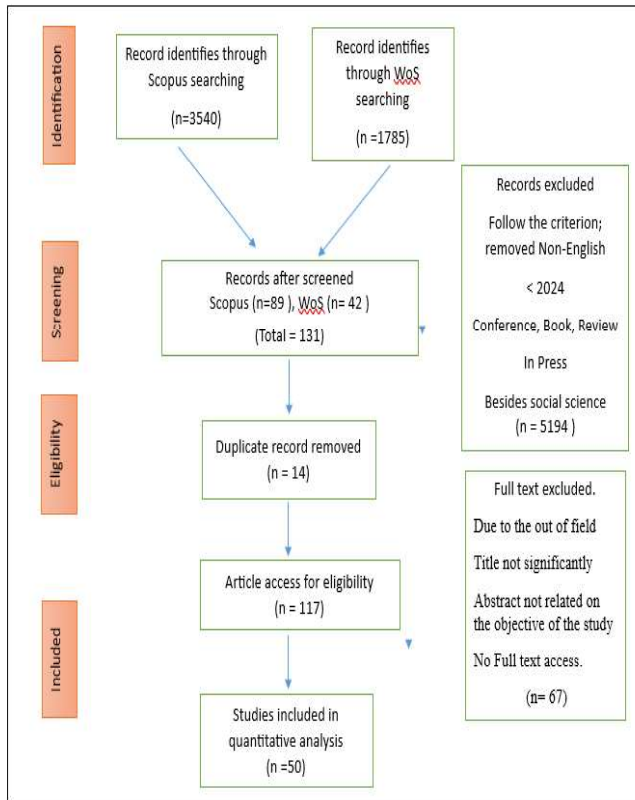


Figure 1. Flow Diagram Of The Proposed Searching Study Using Prisma (2020)

V. FINDINGS

From the 117 studies identified in the access eligibility, a refined subset of 50 articles were analyzed as they fullfill quantitative approach in their studies. This focused dataset provides a representative landscape of how structural and contextual conditions influence teaching quality within a ten years span (2015–2025). The findings can be divided into four themes; pedagogical and instructional proficiency, professional development and educator training, evaluation and assessment of teaching quality and the impact of technology and innovation on improving instructional practices. Table 4 below shows the first 10 studies on teaching quality included in this analysis.

TABLE 4: THE FIRST 10 STUDIES ON TEACHING QUALITY INCLUDED IN THIS ANALYSIS

Authors (Year)	Country /Context	Study Focus
Mantzicopoulos, Panayota; Patrick, Helen; Strati, Anna; Watson, Jesse S.(2018)	Kindergarden	Predicting Kindergarteners' Achievement and Motivation From Observational Measures of Teaching Effectiveness
Levinsson, Henrik; Nilsson, August; Martensson, Katarina; Persson, Stefan D. (2024)	Higher Education	Course design as a stronger predictor of student evaluation of quality and student engagement than teacher ratings
Husman, Bart; Saab, Nadira; Van Driel, Jan; Van Den Broek, Paul (2020)	High School	A questionnaire to assess students' beliefs about peer-feedback
Pereira, Diana; Flores, Maria Assuncao; Veiga Simao, Ana Margarida; Barros, Alexandra(2020)	Higher Education	Effectiveness and relevance of feedback in Higher Education: A study of undergraduate students
Keller, Melanie V.; Dresel, Markus; Daumiller, Martin (2024)	Higher Education	Do achievement goals and self-efficacy matter for feedback use?
Cents-Boonstra, Miriam; Lichtvarck-Aschoff, Anna; Dennesen, Eddie; Alterman, Nathalie; Haerens, Leen (2021)	High School	Fostering student engagement with motivating teaching: an observation study of teacher and student behaviours
Ngereja, Bertha; Hussein, Bassam; Andersen, Bjorn (2020)	High School	Does Project-Based Learning (PBL) Promote Student Learning? A Performance Evaluation
Olivier, Elizabeth; Galand, Benoit; Hospel, Virginie; Dellisse, Sebastien (2020)	High School	Understanding behavioural engagement and achievement: The roles of teaching practices and student sense of competence and task value
Gan, Zhengdong; An, Zhujun; Liu, Fulan (2021)	High School	Teacher Feedback Practices, Student Feedback Motivation, and Feedback Behavior: How Are They Associated With Learning Outcomes?
Rideout, Candice A. (2018)	Higher Education	Students' choices and achievement in large undergraduate classes using a novel flexible assessment approach

Pedagogical and instructional proficiency

The analysis indicates that many studies highlight instructional clarity, cognitive activation, and student-centered pedagogical strategies as fundamental components of teaching quality. Numerous quantitative studies indicate that the use of clear explanations, structured guidance, and well-sequenced instructional activities by teachers correlates with greater academic engagement and enhanced learning outcomes for students. Research in higher education shows that course design and instructional structure are more significant predictors of teaching quality ratings and student engagement than general teacher characteristics (Levinsson et al., 2024). This suggests that effective pedagogy is significantly dependent on the organization, presentation, and scaffolding of knowledge by teachers, rather than merely on their personal characteristics.

A second significant pattern refers to the influence of instructional behaviors on fostering motivation, engagement, and learner autonomy. Research in pre-service and educational environments demonstrates that educators who offer cognitive support, autonomy support, and constructive feedback that directs student thought processes are likely to enhance learners' motivation for deeper learning and build their self-efficacy (Carvalho et al., 2016; Cents-Boonstra et al., 2021). A study conducted in Cambodia indicated that instructional clarity, support, feedback, and cooperative learning strategies significantly correlated with pre-service teachers' intrinsic motivation

and teaching self-efficacy. This reinforces the theory that effective pedagogy encompasses emotionally supportive and intellectually stimulating teaching practices (Anonymous, 2023). The findings match previous research on learner-centered teaching, indicating that instructional behaviors are essential precursors to student engagement and performance.

The review presents substantial evidence that effective classroom environments, characterized by organization, behavioral regulation, and positive teacher-student interactions, significantly enhance teaching proficiency. This is in accordance with the CLASS framework, which defines high-quality instruction as comprising emotional support, classroom organization, and instructional support (Pianta et al., 2012). Research employing observational or perception-based measures consistently demonstrates that classrooms with structured routines and supportive teacher interactions produce improved engagement and behavioral outcomes. These findings underscore that pedagogical proficiency extends beyond content delivery to encompass the creation of learning environments in which students experience safety, support, and cognitive challenge.

A consistent finding in various studies is the significant relationship between pedagogical proficiency and the implementation of creative, adaptive teaching strategies. Calasang et al. (2025) found that teachers who incorporate creative assessments and innovative instructional methods display increased adaptability, reflective thinking, and readiness, which are essential indicators of pedagogical competence. Research indicates that educators who effectively manage group dynamics and foster mastery-oriented objectives substantially improve student engagement and achievement in collaborative learning environments (Giel et al., 2021). These findings indicate that pedagogical and instructional proficiency is complex, necessitating clarity, structure, cognitive challenge, emotional support, and innovative instructional decision-making.

Professional Development and Educator Training

The analysis revealed a significant aggregation of studies centered on professional development (PD) and educator training, showing that ongoing professional learning is a vital determinant of teaching quality. About 5 studies analysed this theme. Research consistently demonstrates that well-organized professional development initiate to the continuing, reflective or technologically enhanced or significantly support teachers' instructional competencies, reflective abilities and preparedness to address varied classroom challenges. Worku et al. (2021) demonstrated that effective continuous professional development (CPD) practices significantly enhanced instructional quality among secondary school teachers. Their findings emphasize that systematic implementation of CPD, accompanied by explicit objectives and administrative backing, leads to increased teacher competency, confidence, and classroom effectiveness.

Reflective practice has also become a fundamental mechanism for professional development. Rokhman Purnama et al. (2025) established that educators participating in prolonged reflective practices—encompassing interpersonal reflection, intrapersonal awareness, and critical assessment of their instructional choices—exhibited significant enhancements in their teaching efficacy. The study underscored that reflective practice is insufficient in isolation; educational institutions must offer organized professional development programs and collaborative learning environments to facilitate the translation of reflection into enhanced instructional efficacy. This underscores that teacher learning is continuous and necessitates sustained institutional support.

Extensive PD models were also apparent in the examined literature. Cohen and Wiseman (2023) analyzed the LEAP professional learning program, which engaged more than 3,000 educators in the District of Columbia Public Schools. Their findings indicated that increased participation in coaching sessions and team seminars enhanced teachers' perceptions of peer collaboration and professional culture. Despite the modest impact on student achievement and instructional practices during the initial implementation phase, the study underscores that professional learning communities (PLCs) and coaching foster positive professional norms and enhance teacher retention—both critical factors for sustained improvement in teaching quality.

The review highlighted studies that underscore the significance of pre-service training and teacher preparedness, alongside in-service training. Wang (2022) examined methods to fortify pre-service teacher education within the framework of smart city development, emphasizing the role of technology-enhanced training systems in improving teacher readiness and pedagogical proficiency. Calasang et al. (2025) similarly discovered that teacher readiness—especially in creative thinking, reflective capacity, and adaptive instructional behaviors—was significantly impacted by professional development initiatives and exposure to innovative teaching strategies. These findings collectively indicate that teacher preparation, both prior to and during service, is essential in influencing teaching quality.

The professional development literature consistently concludes that effective PD is continuous, collaborative, reflective, and strongly supported by institutional frameworks. Evidence indicates that educator training directly and indirectly impacts teaching quality by improving pedagogical competence, reflective judgment, and adaptive decision-making. This theme offers robust empirical evidence that enhancing teaching quality necessitates continuous investment in both pre-service and in-service teacher education.

Evaluation and assessment of teaching quality

The review emphasizes that evaluation and assessment practices are increasingly acknowledged as vital tools for enhancing and monitoring teaching quality. It is about 10 articles related to this theme Numerous

studies underscore that structured evaluation systems—such as output monitoring, peer review, and formal performance assessments are important in influencing teachers' professional performance. Mbabazi et al. (2025) found that output monitoring and output review are significant correlates of teacher job performance in Ugandan secondary schools. Their analysis indicated that educators who obtained regular, systematic feedback via periodic assessments exhibited enhanced engagement, greater instructional quality, and increased motivation. These findings emphasize that evaluation serves not only as an accountability mechanism but also as a crucial support tool for improving teaching effectiveness.

Moreover, numerous studies underscore the significance of feedback quality in facilitating effective teaching. Carvalho et al. (2016) discovered that student perceptions of teacher feedback, encompassing clarity, fairness, and individualized feedback, were significantly correlated with a higher level of school identification, engagement, and the quality of classroom interaction. This indicates that assessment extends beyond formal evaluation methods; student perspectives constitute an essential aspect of evaluating teaching quality. Effective feedback from teachers enhances students' academic motivation and behavioral engagement, underscoring the reciprocal relationship between teaching and learning assessment.

Moreover, instructional evaluation frameworks are progressively integrating structural equation modeling (SEM) and advanced psychometric methodologies to authenticate the constructs of teaching quality. Calasang et al. (2025) utilized PLS-SEM to investigate teacher readiness, revealing that creative assessments and instructional quality function as predictive variables within a comprehensive evaluative framework. This illustrates a wider trend in modern research: the quality of teaching is now assessed using multidimensional indicators that encompass cognitive, behavioral, and affective dimensions of the teaching-learning process. These methodological approaches enhance the accuracy and validity of teaching quality evaluations across various educational contexts.

The review indicates that the efficacy of evaluation systems depends on clarity, consistency, and alignment with professional development. Mbabazi et al. (2025) underscored that evaluation systems are most effective when educational institutions implement transparent criteria, consistent monitoring cycles, and digital performance tracking instruments. These components augment teacher accountability while facilitating instructional enhancement. The evidence indicates that evaluation and assessment fulfill two primary roles: enhancing teaching quality and offering diagnostic insights that guide professional development and policy reforms.

The Impact of Technology and Innovation on Improving Instructional Practices

The reviewed articles indicate that technology is progressively becoming a crucial factor in improving

instructional methodologies and elevating teaching quality, especially within rapidly changing educational settings. It is about 36 articles reviewed according to this theme. Technology-oriented innovations such as Internet of Things (IoT) systems, artificial intelligence tools and digital learning platforms are often employed to assist educators in making instructional decisions and to enhance efficiency in classroom administration. For instance, Wang (2022) illustrated how IoT-enabled preservice teacher training substantially enhanced data analysis, instructional planning, and pedagogical decision-making, underscoring that digital ecosystems have the potential to elevate the standards of teacher education. These findings underscore a significant trend: the incorporation of intelligent technologies into instructional practices improves both educator effectiveness and student engagement.

Furthermore, technology facilitates more personalized, interactive, and engaging educational settings. Research suggests that educators who utilize digital tools for feedback, collaboration, and assessment are more effectively equipped to deliver prompt, tailored instruction that meets students' individual learning requirements. Sa'idah et al. (2024) demonstrated that AI-assisted instruction enhanced the quality of teacher-student interactions, allowing educators to provide more precise feedback and sustain greater instructional clarity. These insights correspond with extensive evidence indicating that digital technologies improve the depth, responsiveness, and flexibility of instruction when employed strategically and accompanied by appropriate training.

Furthermore, multiple studies demonstrate that technology enhances teacher preparedness and fosters innovative pedagogical approaches. Calasang et al. (2025) illustrate those creative assessments many of which incorporate technological elements substantially forecast reflective thinking, adaptability, and preparedness for teaching among pre-service educators. This demonstrates that technology extends beyond merely delivering content; it actively influences educators' thinking and pedagogical decision-making. When educators utilize digital creative tools, they foster greater flexibility and innovation, resulting in improved instructional quality and increased student engagement.

Despite its potential, the findings indicate that the advantages of digital innovation rely on sufficient training, infrastructure, and institutional backing. Rokhman Purnama et al. (2025) identified that although technology-based reflection tools can improve reflective practice, educators continue to encounter obstacles including limited time, insufficient digital literacy, and inconsistent institutional support. These challenges demonstrate that technology by itself cannot enhance teaching quality without continuous investment in developing teachers' skills and capacities. Ultimately, the incorporation of technology into instruction is most effective when it aligns with pedagogical objectives, is supported by ongoing professional development, and is embedded within a nurturing school environment.

VI. DISCUSSION

The findings of this systematic review reaffirm that teaching quality is a multidimensional construct shaped by four interrelated themes: pedagogical proficiency, ongoing professional development, assessment literacy, and technology-mediated instructional practices. Together, these themes point to a clear global transition from traditional, teacher-centred paradigms toward more holistic and evidence-based models of teaching effectiveness. The alignment of these themes with international frameworks such as CLASS (Pianta et al., 2012), Danielson's Framework for Teaching, and OECD's TALIS indicators illustrates how contemporary scholarship increasingly adopts integrated perspectives that capture the behavioural, cognitive, and emotional dimensions of instruction. In doing so, the review directly addresses research question 1 ; what are the primary trends and thematic advancements in the study of teaching quality? by showing that recent work has moved beyond narrow, single-factor conceptualisations toward richer, multi-domain and framework-aligned understandings of teaching quality.

A key insight emerging from the review is the central role of pedagogical and instructional proficiency in driving student engagement and learning outcomes. Across the included studies, instructional clarity, cognitive activation and supportive teacher–student interactions consistently appear as core indicators of high-quality teaching. These patterns mirror the findings of Cents-Boonstra et al. (2021), who demonstrated that motivating and autonomy supportive teaching practices exert substantial effects on student engagement and are further supported by Levinsson et al. (2024), who reported that course design and instructional structure often have a greater impact on students' learning experiences than teacher personality traits.

Within many of the reviewed frameworks, these elements are operationalized as observable behavioural indicators and scale-based dimensions (e.g., classroom organisation, instructional support, emotional support), reinforcing the idea that pedagogical quality is conceptualised as a dynamic behavioural competency rather than a fixed personal characteristic. Collectively, this body of evidence provides a clear response to research question 2; which dimensions and measurement frameworks are typically employed to evaluate teaching quality? by identifying recurring dimensions such as clarity of instruction, cognitive challenge, relational support and structured learning environments embedded within established observational and survey-based measurement frameworks.

Regarding professional development and educator training, the review underscores that sustained, collaborative, and reflective professional development (PD) initiatives play a critical role in enhancing teaching quality. Studies such as Worku et al. (2021) and Rokhman Purnama et al. (2025) indicate that teachers benefit most when PD is embedded within ongoing cycles of reflection, coaching, and peer collaboration rather than delivered as one-off workshops. These insights are consistent with

Darling-Hammond et al. (2020), who argue that meaningful teacher learning requires continuity, coherence, and strong alignment with classroom practice.

At the same time, the review reveals a notable methodological gap: relatively few studies employ longitudinal or multi-wave designs to track how PD related competencies are sustained and translated into actual classroom practice over time. This limitation raises questions about durability, scalability and contextual transfer of PD outcomes and signals the need for future research that incorporates longitudinal impact studies, mixed-method designs and cross-context comparisons. In this way, the review responds explicitly to research question 3 ; What gaps have been identified in recent studies and what future research directions are suggested? by highlighting the under use of longitudinal designs, the limited integration of student outcome measures and the need for more robust, context-sensitive evaluations of PD and teaching quality interventions.

VII. CONCLUSION

Overall, the synthesis of these findings demonstrates that the present systematic review has comprehensively addressed all three research questions by mapping the dominant trends and thematic advancements in teaching quality research, clarifying the key dimensions and measurement frameworks used to evaluate teaching quality, and identifying critical gaps that point to future research directions. The review shows that contemporary scholarship is converging toward multidimensional and framework-informed conceptualisations of teaching quality, grounded in observable pedagogical practices, structured learning environments, and emotionally supportive teacher–student interactions.

At the same time, the persistent methodological limitations, particularly the scarcity of longitudinal, impact-oriented, and context-sensitive designs indicate that the field has not yet fully captured how teaching quality is developed, sustained, and translated into improved student outcomes over time. Consequently, this review not only consolidates current empirical evidence on teaching quality but also provides a strategic agenda for future studies to adopt more rigorous designs, integrate multiple data sources, and situate teaching quality within diverse educational contexts, especially in pre-university and higher education settings.

The discussion on evaluation and assessment of teaching quality reveals a strong reliance on student evaluations, teacher self-assessments, and perception-based instruments. While such measures remain valuable diagnostic tools, overreliance on them may compromise measurement validity. Marsh and Roche (1993) caution that student evaluations alone cannot fully capture the complexity of teaching behaviours. The limited use of triangulated assessment—combining student ratings, classroom observations, and objective learning outcomes—highlights an ongoing gap in teaching quality research. Nonetheless, studies adopting SEM-based analytical frameworks (e.g., Calasang et al., 2025) indicate promising progress toward more nuanced,

multidimensional evaluations capable of capturing interactions among teaching behaviours, teacher readiness, and student outcomes.

Technology's role in shaping teaching quality has grown significantly in recent years, as reflected in the theme technology and innovation in instructional practices. Studies such as Sa'idah et al. (2024) and Wang (2022) demonstrate that technology-enhanced instruction can strengthen feedback processes, personalise learning pathways, and improve instructional clarity. However, the review also reveals that technological integration is often uneven, with many teachers reporting challenges related to digital literacy, limited training, or inadequate infrastructure. These findings echo international concerns that technology, while powerful, cannot enhance teaching quality unless paired with adequate institutional support and professional development.

A cross-theme analysis highlights several overarching gaps. First, most studies employ cross-sectional designs, limiting the ability to infer causal relationships between teaching practices and student outcomes. The absence of longitudinal or experimental designs reduces the field's capacity to understand changes in teacher quality over time. Second, the geographical distribution of the studies indicates an overrepresentation of Western contexts, with limited evidence from Southeast Asia, Africa, and other developing regions. This creates a contextual bias that limits the generalisability of findings, particularly for countries like Malaysia where cultural expectations, curriculum structures, and teacher training systems differ significantly.

Another notable gap concerns the weak link between teaching quality and measurable student outcomes. Although several studies explore student engagement or self-reported learning, few examine actual academic achievement, higher-order competencies, or long-term educational trajectories. This finding reinforces Goe and Stickler's (2008) argument that teaching quality research must progress beyond perceptual indicators and align more strongly with learning outcomes. The lack of outcome-based analyses represents a significant opportunity for future investigations to deepen the field's understanding of teaching effectiveness.

The review also reveals important theoretical implications. Existing frameworks often treat pedagogical proficiency, assessment literacy, professional development, and digital competence as separate domains. However, the convergence of findings suggests the need for more integrated theoretical models that position teaching quality as a holistic interaction between teacher knowledge, pedagogical behaviour, and contextual factors. Such models should incorporate technological readiness and reflective practice as integral—rather than peripheral—components of teaching quality.

From a practical perspective, the findings emphasise the urgent need for institutions to adopt structured PD programmes, standardised teaching quality rubrics, and data-informed evaluation systems. Digital tools should be integrated in ways that meaningfully align with established pedagogical goals rather than serving as add-ons. Additionally, teacher education programmes should place

greater emphasis on reflective practice, assessment literacy, and digital pedagogy to prepare future educators for dynamic classroom environments.

In conclusion, this systematic review highlights that teaching quality is evolving toward a more holistic, evidence-based, and technology-enhanced paradigm. The field has made substantial progress in articulating key dimensions of teaching quality, yet significant gaps persist in methodological rigour, contextual representation, and long-term outcome studies. Addressing these gaps is essential for advancing a robust understanding of teaching quality and supporting educational systems in improving student learning outcomes globally.

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APPENDIX
TABLE 5 : SUMMARY OF TEACHING QUALITY
IN BASED ON THE THEMES FOR 10 FIRST
ARTICLES (N=10)

Themes/Articles	Ma ntz ico po ulo s,et .al(201 8)	Lev inss on, et.al (202 4)	H ui s m a n et .a l (2 0 2 0)	P e r i t .l , (2 0 2 0 0)	K e r et .a l, (2 0 2 0 4)	C e le nt s- B o o n st r a et .a l, (2 0 2 0 4)	Ng ere ja et. al, (20 20)	Oli vie r et. al (20 20)	Ga n et. al (20 21)	Ri de out , Ca ndi ce A. (20 18)
Pedagogical and instructional proficiency	X							X	X	
Evaluation and assessment of teaching quality			X							X
The impact of technology and innovation on improving instructional practices					X	X				
Professional Development and Educator Training		X		X			X			