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Contribution of Teacher Professionalism to Elementary School Quality in the Era of Educational Transformation: A Systematic Review

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ABSTRACT

Purpose – To examine how the literature relates teacher professionalism to elementary school quality in the context of educational transformation.

Methods – A systematic literature review following PRISMA 2020 reporting guidance searched Google Scholar, Scopus, ERIC, Dimensions, and Crossref for publications from 2015 to 2025. Of 87 records identified, 69 remained after duplicate removal, 28 underwent full-text assessment, and ten were included in the qualitative synthesis.

Findings – The synthesis identified professional development, instructional competence, leadership support, collaborative culture, digital competence, and adaptability as recurring themes. The included evidence was methodologically diverse and did not provide a pooled effect estimate or establish a causal contribution to school quality. Supplementary literature informed the discussion but was separate from the screened corpus.

Research implications – Sustained professional learning, mentoring, supportive leadership, and digital competence development may support school improvement. Conclusions remain limited by the heterogeneous evidence and incomplete reporting of quality appraisal.

Originality – The review integrates professional, organizational, and technological dimensions of teacher professionalism relevant to elementary education.

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INTRODUCTION

The quality of elementary schools remains one of the most critical indicators of educational success in the 21st century. Educational quality is not only reflected in students' academic achievement but also in the effectiveness of learning processes, school management, teacher performance, and the ability of schools to adapt to societal and technological changes. In the era of educational transformation, schools are expected to continuously improve their quality to respond to the challenges of globalization, digitalization, and rapidly changing educational demands [1], [2].

The ongoing transformation of education has significantly altered how teaching and learning activities are designed and implemented. Digital technologies, artificial intelligence, online learning platforms, augmented reality, and other emerging technologies have increasingly become integral components of educational systems worldwide. These technological advancements have expanded learning opportunities, enhanced instructional flexibility, and enabled more personalized learning experiences [1]. At the same time, educational institutions are required to adapt their pedagogical practices, curriculum structures, and organizational cultures to align with the demands of digital transformation [3].

Within this context, teachers play a pivotal role as the primary agents of educational change. Regardless of technological developments, the effectiveness of educational transformation largely depends on teachers' ability to integrate innovations into instructional practices while maintaining meaningful learning experiences for students. Teacher professionalism has therefore become a fundamental determinant of educational quality and school improvement. Professional teachers possess the pedagogical, professional, social, and personal competencies necessary to facilitate effective learning, support student development, and respond to evolving educational challenges [4].

Teacher professionalism refers to the continuous development of knowledge, skills, attitudes, and competencies that enable teachers to perform their professional responsibilities effectively. Professionalism encompasses not only mastery of subject matter and pedagogical expertise but also commitment to lifelong learning, ethical conduct, collaboration, innovation, and reflective practice. According to Salmerón Aroca, teacher professional development serves as a crucial mechanism for improving educational quality because it strengthens teachers' competencies and enhances their capacity to address emerging educational demands. Continuous professional development also enables teachers to adapt to changing learning environments and technological innovations [5].

Previous studies have consistently emphasized the significant contribution of teacher professionalism to educational effectiveness. Professional teachers are more likely to implement innovative teaching strategies, utilize appropriate learning technologies, create positive classroom environments, and improve student learning outcomes [6]. Furthermore, professional development activities contribute to instructional improvement by enhancing teachers' pedagogical competence, fostering collaboration among educators, and supporting the implementation of educational policies and reforms [7]. As educational systems continue to evolve, teacher professionalism remains a key factor influencing both instructional quality and institutional performance.

At the elementary school level, teacher professionalism becomes particularly important because primary education serves as the foundation for students' cognitive, social, emotional, and moral development. Elementary school teachers are responsible for establishing essential learning experiences that influence students' future academic trajectories. Therefore, deficiencies in teacher competence and professionalism may directly affect learning quality, student achievement, and overall school performance. Conversely, schools that invest in teacher professional development tend to demonstrate higher instructional quality and improved educational outcomes [5].

In addition to individual teacher competencies, organizational factors also influence the development of teacher professionalism. School leadership, professional learning communities, training opportunities, and institutional support play important roles in strengthening teachers' professional capacities. Research conducted by Akram demonstrates that leadership practices and training significantly contribute to teachers' professional development [6]. Similarly, Ayumi and Nasution found that effective school leadership supports continuous professional growth, instructional

improvement, and enhanced learning quality [8]. These findings suggest that professional development should be viewed as a collaborative and systemic effort rather than an individual responsibility alone.

The emergence of digital transformation has further expanded the scope of teacher professionalism. Contemporary teachers are increasingly expected to demonstrate digital literacy, technological competence, and the ability to integrate digital tools into teaching practices effectively. The rapid development of artificial intelligence and generative AI technologies has also introduced new challenges and opportunities for educators. Teachers are now required to redefine their professional roles as facilitators, collaborators, and innovators within technology-enhanced learning environments [9]. Consequently, professional competence in the digital era extends beyond traditional pedagogical skills to include technological adaptability and digital pedagogical expertise.

Despite the growing body of literature concerning teacher professionalism, educational transformation, and school quality, previous studies have generally examined these topics separately. Some studies focus primarily on teacher professional development [5], while others emphasize educational transformation driven by digital technologies [2]. Additionally, several studies investigate leadership, teacher competence, and professional autonomy as isolated factors affecting educational outcomes [10]. However, there remains limited comprehensive evidence synthesizing how teacher professionalism contributes to elementary school quality within the broader context of educational transformation.

This gap is particularly relevant because educational transformation requires schools to simultaneously improve instructional quality, organizational effectiveness, and technological readiness. Understanding how teacher professionalism contributes to these dimensions is essential for developing effective educational policies and professional development programs. A systematic synthesis of existing literature can provide valuable insights into the mechanisms through which professional teachers influence school quality and support educational transformation.

Therefore, this study aims to systematically review and synthesize existing literature regarding the contribution of teacher professionalism to elementary school quality in the era of educational transformation. Specifically, this study seeks to identify the dimensions of teacher professionalism that influence school quality, examine the role of professional development in supporting educational transformation, and analyze the challenges and opportunities associated with strengthening teacher professionalism in contemporary elementary education contexts.

METHOD

This study employed a qualitative approach using library research combined with a systematic literature review (SLR) design. Library research is a method that relies on various scientific literature sources as the primary data to obtain comprehensive understanding and interpretation of a particular phenomenon [11], [12]. Through this approach, researchers systematically collect, evaluate, analyze, and synthesize relevant scientific findings related to teacher professionalism and elementary school quality in the era of educational transformation.

According to Creswell and Creswell, qualitative research aims to explore and understand the meaning individuals or groups attribute to social or human problems. In line with this perspective, this study seeks to explore and synthesize scientific evidence regarding how teacher professionalism contributes to improving elementary school quality amidst ongoing educational transformation [13]. Furthermore, library research enables researchers to investigate theories, concepts, empirical findings, and policy developments from various scholarly sources without direct field involvement [14].

The systematic literature review organized the identification, selection, and synthesis of relevant research. The selection process was reported using the PRISMA 2020 framework [15]. PRISMA supports transparent reporting; the credibility of the synthesis also depends on the search coverage, eligibility decisions, and appraisal of the included studies.

The literature search was conducted from January to June 2025 using several academic databases, including Google Scholar, Scopus, ERIC, Dimensions, and Crossref. The search process employed combinations of keywords such as "teacher professionalism," "teacher professional development," "teacher competence," "school quality," "educational quality," "elementary school," "primary education," "digital transformation in education," and "educational transformation." The search focused on publications published between 2015 and 2025 to ensure the relevance of findings to contemporary educational developments.

The inclusion criteria consisted of: (1) articles discussing teacher professionalism, teacher competence, or teacher professional development; (2) studies examining educational quality, school quality, or elementary school improvement; (3) publications focusing on educational transformation, digital transformation, or technological changes in education; (4) peer-reviewed journal articles indexed in reputable databases; (5) articles published between 2015 and 2025; and (6) publications written in English or Indonesian. Meanwhile, the exclusion criteria included duplicate articles, conference abstracts without full texts, non-scientific publications, opinion articles, and studies that did not directly address the relationship between teacher professionalism and school quality.

Table 1. Inclusion and Exclusion Criteria

Inclusion Criteria	Exclusion Criteria
Teacher professionalism	Duplicate articles
School quality	Irrelevant topics
Elementary school	Non-peer reviewed
2015-2025	Conference abstracts
English/Indonesian	Incomplete articles

The selection process comprised identification, screening, full-text eligibility assessment, and inclusion, as summarized in the PRISMA 2020 flow diagram [15].

During the identification stage, a total of 87 records were retrieved from several academic databases, including Google Scholar, Scopus, ERIC, Dimensions, and Crossref using predetermined search keywords related to teacher professionalism, teacher competence, school quality, elementary education, and educational transformation. After removing 18 duplicate records, 69 articles remained for the screening process.

In the screening stage, titles and abstracts were reviewed to assess their relevance to the research objectives. A total of 41 articles were excluded because they did not directly address teacher professionalism, school quality, or educational transformation within elementary education contexts. Consequently, 28 articles proceeded to the eligibility assessment stage.

The eligibility stage involved a full-text review of the remaining articles. During this process, 18 articles were excluded due to insufficient methodological information, lack of relevance to elementary school settings, or failure to discuss the contribution of teacher professionalism to school quality. Finally, 10 articles met all inclusion criteria and were included in the qualitative synthesis.

The final corpus of literature consisted of empirical studies, systematic reviews, and conceptual analyses published between 2022 and 2025, providing comprehensive evidence regarding the contribution of teacher professionalism to elementary school quality in the era of educational transformation.

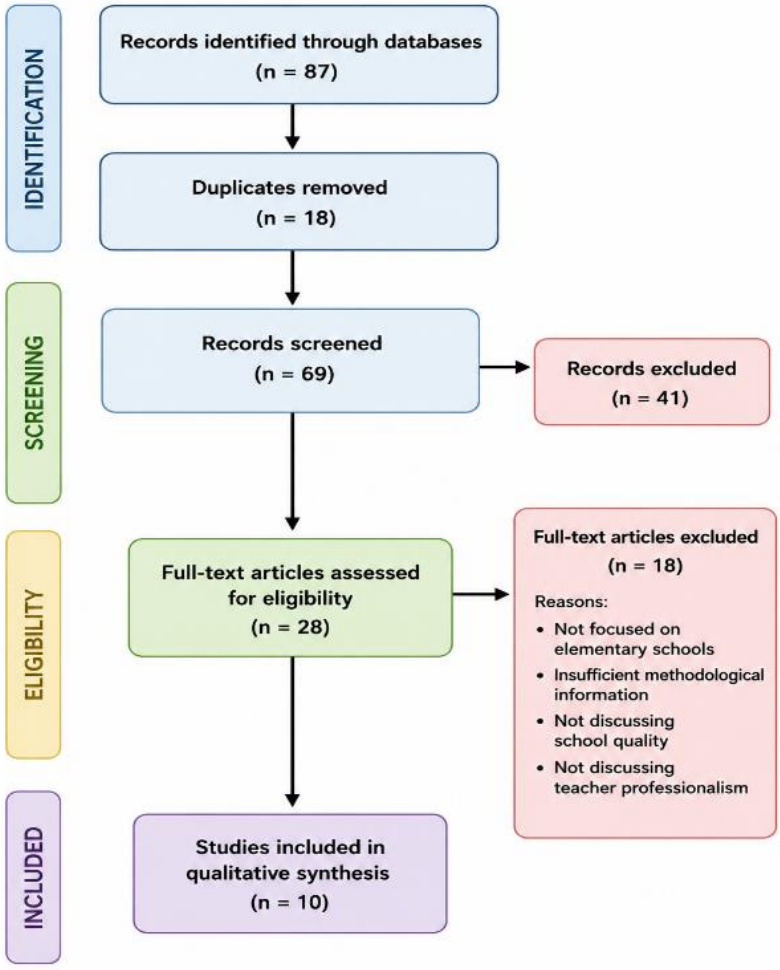


Figure 1. PRISMA 2020 Flow Diagram of Literature Selection Process

Figure 1 summarizes the selection process: 87 records were identified, 18 duplicates were removed, 69 records were screened, and 41 were excluded. Of the 28 full texts assessed, 18 were excluded, leaving 10 studies for qualitative synthesis.

Data Extraction

To facilitate systematic analysis, data extraction was conducted using a structured review matrix. The extracted information included author names, publication year, country of study, research objectives, methodology, sample characteristics, key findings, and implications regarding teacher professionalism and school quality. This procedure enabled the researchers to organize and compare findings across studies systematically.

Scope of Evidence and Use of Supplementary Literature

To ensure methodological transparency, the ten studies that passed all stages of the PRISMA 2020 selection process and are presented in Table 2 were treated as the core evidence base of this systematic review. These studies were used for data extraction, thematic analysis, synthesis, and the presentation of findings in the Results section. Additional publications cited in the Discussion, namely AbdulRab (2023), Aditya and Suranto (2024), Boylan et al. (2023), Fajar et al. (2025), Ghamrawi et al. (2024), Masruroh et al. (2024), Mustamin et al. (2025), Riadi et al. (2022), and Styana (2024), were not included in the formally screened corpus. These publications were used solely as supplementary contextual literature to interpret, compare, and situate the findings from the ten included studies within broader scholarly discussions. They were not included in the PRISMA flow calculation, data

extraction matrix, or thematic synthesis. Therefore, all findings reported in the Results section were derived exclusively from the ten formally included studies, while the additional sources served only explanatory and interpretive purposes in the Discussion.

Table 2 presents the characteristics of the studies included in the review. The selected literature consists of ten studies published between 2022 and 2025. The studies originated from Spain and Indonesia, with three studies from each country, as well as China, Pakistan, India, and the United States, with one study from each country. The study by Anis (2024) was identified as originating from India. The reviewed studies employed diverse methodological approaches, including systematic literature reviews, bibliometric analyses, qualitative case studies, ethnographic research, conceptual studies, and quantitative surveys. Overall, the findings indicate that teacher professionalism contributes to school quality through professional development, instructional innovation, leadership support, digital competence, and adaptation to educational transformation.

Table 2. Characteristics of Included Studies

Study	Country	Method	Focus	Main findings
Salmerón Aroca et al. (2023) [5]	Spain	Systematic literature review	Teacher professional development and educational quality	Continuous professional development contributes to instructional quality, educational effectiveness, and school performance.
Khotimah et al. (2024) [4]	Indonesia	Qualitative case study	Teacher competence in elementary madrasahs	Competency development, collaboration, and technology integration support teacher professionalism and learning quality.
Wang et al. (2024) [1]	China	Bibliometric review	Digital technology and educational transformation	Digital technology supports educational transformation, teaching effectiveness, learning flexibility, and sustainability.
Zhai (2024) [9]	United States	Conceptual framework study	Generative AI and teacher roles	Generative AI expands teacher roles to include observation, adoption, collaboration, and innovation in digital learning.
Ayumi and Nasution (2025) [8]	Indonesia	Qualitative ethnography	Principal leadership and instructional quality	Leadership supports professionalism through supervision, development, and participatory decision-making.
Akram et al. (2022) [6]	Pakistan	Quantitative survey	Leadership and professional development	Leadership influences professional development, while training strengthens its relationship with professional competence.
Lubis et al. (2022) [3]	Indonesia	Literature review	Curriculum transformation and innovation	Transformation requires curriculum innovation, technology integration, and adaptive teaching competencies.
Anis (2024) [7]	India	Literature review	Professional development in the digital age	Post-pandemic education requires continuing development, digital literacy, and teacher adaptability.

Study	Country	Method	Focus	Main findings
Parcerisa et al. (2022) [10]	Spain	Systematic review	Autonomy and accountability	Teacher autonomy relates to professional decision-making, instructional effectiveness, and educational quality.
Mena-Guacas et al. (2025) [2]	Spain	Systematic review	Emerging technologies and transformation	AI, augmented reality, and adaptive learning may support educational change when accompanied by teacher preparation.

Data analysis employed the interactive model proposed by Miles, Huberman, and Saldaña (2014), consisting of three interconnected stages: data condensation, data display, and conclusion drawing/verification. Data condensation involved selecting, simplifying, and categorizing information obtained from the selected literature. Data display was conducted through thematic tables and narrative synthesis to facilitate interpretation and comparison among studies. Finally, conclusions were drawn through continuous verification processes to identify patterns, relationships, themes, and emerging trends regarding the contribution of teacher professionalism to elementary school quality in the era of educational transformation.

To enhance the credibility and trustworthiness of the review, the researchers applied source triangulation by comparing findings from various studies, contexts, and methodological approaches. In addition, transparency was maintained throughout the review process by documenting search strategies, selection procedures, inclusion criteria, and analytical decisions. This approach is consistent with qualitative research principles emphasizing credibility, dependability, confirmability, and transferability [11].

Through the integration of library research, systematic literature review, PRISMA 2020 procedures, and thematic analysis techniques, this study is expected to provide a comprehensive synthesis of current scientific evidence regarding the contribution of teacher professionalism to elementary school quality and offer insights for educational policy and practice in the era of educational transformation.

RESULTS AND DISCUSSION

Characteristics of the Included Studies

The ten included studies discussed teacher professionalism in relation to instructional effectiveness, school improvement, educational innovation, and digital transformation. Their diverse designs and contexts informed the recurring themes presented below; the synthesis does not provide a pooled effect estimate or establish a causal contribution to elementary school quality.

Table 2 summarizes the characteristics of the studies included in this review, including research contexts, methodological approaches, and key findings related to teacher professionalism and educational quality.

Professional Development as a Foundation for School Quality

One of the most prominent findings identified in the reviewed literature is the importance of continuous professional development in enhancing educational quality. Several studies emphasize that professional development enables teachers to strengthen pedagogical competence, improve instructional practices, and adapt to changing educational environments.

Salmerón Aroca found that continuous professional development contributes significantly to instructional effectiveness and school improvement [5]. Similarly, Anis reported that professional development activities enhance teachers' adaptability, digital competence, and instructional innovation, particularly in post-pandemic educational contexts. These findings suggest that

professional learning should be viewed as an ongoing process rather than a one-time intervention [7].

The reviewed literature further indicates that schools investing in teacher professional development tend to demonstrate higher instructional quality and more sustainable educational improvement. Consequently, professional development serves as a foundational mechanism through which teacher professionalism influences school quality.

Teacher Competence and Instructional Effectiveness

Another major theme emerging from the reviewed studies concerns the relationship between teacher competence and instructional effectiveness. Teacher professionalism encompasses pedagogical, professional, social, and personal competencies that collectively influence teaching quality and student learning experiences.

Khotimah reported that competency development programs, collaborative learning communities, and technology-supported professional learning contribute to improving teachers' instructional performance. Professional teachers are better equipped to design meaningful learning experiences, implement innovative teaching strategies, and respond to diverse student needs [4].

The literature consistently suggests that instructional effectiveness serves as a critical pathway through which teacher professionalism contributes to school quality. Schools characterized by competent and professional teachers tend to demonstrate stronger learning outcomes, more effective classroom management, and improved student achievement.

Leadership Support and Professional Culture

Several reviewed studies highlight the importance of organizational support in strengthening teacher professionalism. Professionalism is not solely an individual characteristic but is also influenced by school leadership, institutional culture, and collaborative learning environments.

Akram found that leadership practices significantly influence teacher professional development [6]. Likewise, Ayumi and Nasution demonstrated that effective principal leadership supports teacher professionalism through supervision, mentoring, professional development opportunities, and participatory decision-making [8].

These findings suggest that school quality improvement requires the development of a professional culture in which teachers receive continuous support for learning, innovation, and collaboration. Leadership therefore acts as an enabling factor that strengthens the impact of teacher professionalism on school quality.

Teacher Professionalism in Educational Transformation

Educational transformation has expanded the scope of teacher professionalism beyond traditional pedagogical competencies. Contemporary educational environments require teachers to possess digital literacy, technological competence, and the ability to integrate digital tools into learning processes effectively.

Wang identified digital technology as a key driver of educational transformation [1]. Similarly, Lubis argued that educational transformation requires adaptive competencies, curriculum innovation, and technology integration [3]. These developments place new demands on teachers to continuously update their professional knowledge and skills.

The reviewed studies indicate that professional teachers play a central role in facilitating educational transformation by adapting instructional practices, utilizing digital technologies, and supporting innovative learning environments. Consequently, teacher professionalism becomes increasingly important as schools navigate digital transformation and educational reform.

Emerging Technologies and New Professional Roles

The literature also reveals that emerging technologies such as artificial intelligence (AI), adaptive learning systems, and digital platforms are transforming teachers' professional roles. Rather than

functioning solely as knowledge transmitters, teachers increasingly serve as facilitators, mentors, collaborators, and learning designers.

Zhai argued that generative artificial intelligence is reshaping educational practices and redefining teacher responsibilities [9]. Similarly, Mena-Guacas emphasized that emerging technologies require teachers to develop new competencies related to technological adaptation, innovation, and digital pedagogy [2].

These findings indicate that teacher professionalism in the era of educational transformation extends beyond mastery of subject content and pedagogical knowledge. Professional teachers must also develop technological competence and maintain readiness for continuous innovation.

Challenges in Strengthening Teacher Professionalism

Despite the positive contributions identified across the reviewed studies, several challenges remain. The literature consistently highlights disparities in access to professional development opportunities, technological infrastructure, institutional support, and digital resources.

Teachers in resource-constrained educational environments often experience difficulties participating in professional learning activities and implementing innovative instructional practices. Additionally, rapid technological developments create ongoing demands for continuous upskilling and adaptation.

The reviewed studies further suggest that professional development initiatives are sometimes fragmented, short-term, or insufficiently aligned with teachers' practical needs. Therefore, strengthening teacher professionalism requires systemic support, sustainable professional learning programs, and educational policies that prioritize teacher capacity building.

Overall, the findings demonstrate that teacher professionalism contributes to elementary school quality through multiple interconnected pathways, including professional development, instructional effectiveness, leadership support, organizational culture, technological competence, and adaptability to educational transformation. These dimensions collectively support school improvement and enhance educational quality in increasingly complex and dynamic educational environments.

Teacher Professionalism as the Core Determinant of Elementary School Quality

The findings of this systematic literature review reveal that teacher professionalism remains one of the most influential factors determining elementary school quality in the era of educational transformation. Across the reviewed studies, professionalism consistently emerges as a multidimensional construct encompassing pedagogical competence, professional competence, social competence, personal competence, digital literacy, ethical commitment, and continuous professional development. These dimensions collectively shape teachers' ability to facilitate meaningful learning experiences and contribute to school improvement.

The importance of teacher professionalism can be understood through the central role teachers occupy within educational systems. While educational reforms often emphasize curriculum development, technological innovation, and policy change, the successful implementation of these reforms ultimately depends on teachers' capacity to translate policy intentions into effective classroom practices. Riadi argue that teacher professionalism directly influences educational quality because teachers determine the effectiveness of instruction, student engagement, and learning achievement [16]. Likewise, Styana emphasizes that professional teachers possess not only mastery of subject matter but also innovative pedagogical skills, communication abilities, collaborative competencies, and adaptability toward technological developments [17].

These findings support the notion that teacher professionalism functions as a strategic resource for educational improvement. Professional teachers are more likely to engage in reflective practice, adopt innovative teaching approaches, and respond effectively to diverse student needs. Consequently, schools characterized by highly professional teachers tend to demonstrate stronger learning cultures, improved instructional quality, and higher levels of educational effectiveness.

In elementary education, the significance of professionalism becomes even more evident. Elementary school teachers play a foundational role in developing students' literacy, numeracy, character, social skills, and learning habits. Therefore, the quality of elementary education is highly dependent upon teachers' professional capacities. Deficiencies in teacher professionalism may negatively affect students' educational trajectories, whereas highly professional teachers contribute positively to long-term student development and school quality enhancement.

Educational Transformation and the Reconfiguration of Teacher Roles

The literature reviewed in this study demonstrates that educational transformation has substantially altered the traditional role of teachers. Historically, teachers were primarily regarded as transmitters of knowledge responsible for delivering content and maintaining classroom discipline. However, rapid technological advancement, digitalization, globalization, and the emergence of knowledge-based economies have expanded teacher responsibilities far beyond these traditional functions.

Educational transformation requires teachers to become facilitators of learning, instructional designers, collaborators, mentors, and agents of change. Aditya and Suranto explain that digital transformation in education is not merely about introducing technological tools into classrooms but involves fundamental changes in educational processes, organizational culture, and learning environments. Under such circumstances, teachers are expected to guide students in navigating increasingly complex information ecosystems while fostering critical thinking, creativity, collaboration, and communication skills [18].

The reviewed studies suggest that educational transformation presents both opportunities and challenges. On one hand, digital technologies provide unprecedented opportunities for personalized learning, expanded educational access, and enhanced instructional effectiveness. On the other hand, teachers face growing pressure to continuously update their competencies and adapt to rapidly changing educational demands.

Masruroh found that many educators continue to experience challenges related to technological infrastructure, limited access to digital resources, and resistance to educational change. These obstacles demonstrate that educational transformation cannot be understood solely as a technological phenomenon [19]. Rather, it is fundamentally a human and organizational process requiring substantial investment in teacher capacity development.

Furthermore, educational transformation necessitates a shift in professional identity. Teachers are increasingly expected to function as lifelong learners capable of continuously updating their knowledge and skills. This expectation reflects broader societal changes in which professional competence is no longer viewed as static but as a dynamic process of continuous adaptation and improvement.

Continuous Professional Development as a Mechanism for Sustainable School Improvement

One of the strongest themes emerging from the reviewed literature concerns the role of continuous professional development (CPD) in enhancing educational quality. Nearly all reviewed studies emphasize that professionalism cannot be achieved through pre-service education alone. Instead, it requires sustained engagement in professional learning activities throughout teachers' careers.

AbdulRab describes professional development as a lifelong process encompassing formal training, collaborative learning, reflective practice, mentoring, and participation in professional learning communities [20]. Through these activities, teachers acquire new pedagogical knowledge, strengthen instructional competencies, and remain responsive to emerging educational trends.

Similarly, Mustamin found that sustained professional development initiatives positively influence instructional quality and curriculum implementation [21]. Teachers who participate regularly in professional learning activities demonstrate greater instructional confidence, stronger pedagogical expertise, and higher levels of student engagement. These findings suggest that professional development serves as a critical mechanism through which teacher professionalism contributes to school quality.

The reviewed literature also highlights the importance of collaborative professional learning. Boylan et al. argue that transformative professional learning extends beyond technical skill acquisition and involves critical reflection, collective inquiry, and professional agency [22]. Teachers become active participants in educational improvement rather than passive recipients of training programs.

This perspective aligns with contemporary theories of professional learning, which emphasize the importance of professional learning communities, peer collaboration, and knowledge sharing. Such approaches encourage teachers to engage collectively in solving educational problems, experimenting with innovative practices, and reflecting on instructional effectiveness.

Consequently, continuous professional development should be viewed not as an isolated intervention but as an integral component of sustainable school improvement strategies.

Teacher Leadership and Collective Professionalism

Another important finding concerns the growing recognition of teacher leadership as an essential dimension of professionalism. Traditional conceptions of educational leadership often focus exclusively on principals and administrators. However, contemporary research increasingly acknowledges the significant contributions of teacher leaders to school improvement processes.

Ghamrawi et al. demonstrate that professional development programs designed to cultivate teacher leadership contribute to organizational learning, instructional innovation, and professional collaboration [23]. Teacher leaders support their colleagues through mentoring, coaching, knowledge sharing, and collaborative problem-solving activities.

The emergence of teacher leadership reflects a broader shift toward collective professionalism. Educational quality is no longer viewed as the product of isolated individual efforts but as the outcome of collaborative professional cultures. Within such cultures, teachers share responsibility for student learning, curriculum development, and school improvement.

This finding is particularly relevant for elementary schools, where collaborative relationships among teachers often play a crucial role in supporting student development. Teacher leadership enhances schools' capacity to respond to educational challenges by distributing expertise and fostering collective responsibility for educational outcomes.

Therefore, strengthening teacher professionalism should involve not only individual competency development but also the cultivation of leadership capacities that enable teachers to contribute actively to organizational improvement.

School Leadership as an Enabling Factor for Teacher Professionalism

The reviewed studies consistently highlight the importance of school leadership in supporting teacher professionalism. While professional competence originates at the individual level, its development is strongly influenced by organizational conditions created by school leaders.

Fajar found that principals who actively support teacher learning through supervision, mentoring, professional development opportunities, and collaborative decision-making contribute significantly to teacher growth and educational quality improvement. Effective leaders create environments in which teachers feel supported, valued, and encouraged to innovate [24].

School leadership also plays an essential role in establishing professional cultures characterized by trust, collaboration, and continuous learning. Such cultures encourage teachers to engage in experimentation, reflective practice, and collective problem-solving without fear of failure.

The findings suggest that professional development initiatives are most effective when supported by strong leadership structures. Consequently, efforts to improve elementary school quality should address both teacher development and leadership capacity simultaneously.

Digital Competence and the Future of Teacher Professionalism

The digital era has expanded the scope of teacher professionalism by introducing new competency requirements. In addition to traditional pedagogical and subject-matter expertise, teachers must now

possess digital competencies enabling them to integrate technology effectively into teaching and learning processes.

Styana identifies technological adaptability as a core component of contemporary professionalism [17]. Similarly, Masruroh found that teachers who effectively utilize digital tools demonstrate higher levels of instructional innovation and student engagement [19].

Digital competence involves more than technical proficiency. It includes the ability to evaluate digital resources critically, design technology-enhanced learning experiences, facilitate online collaboration, and address ethical issues related to digital technology use. These competencies are increasingly important as schools continue to integrate digital technologies into educational practices.

The emergence of artificial intelligence further complicates the professional landscape. Teachers must now understand how AI technologies can support learning while simultaneously addressing concerns related to ethics, privacy, academic integrity, and educational equity.

Consequently, future-oriented teacher professionalism requires a combination of pedagogical expertise, technological competence, ethical awareness, and adaptive capacity.

Implications for Elementary Education Policy and Practice

The synthesis of findings has several important implications for educational policy and practice. First, policymakers should recognize teacher professionalism as a strategic investment rather than an operational expense. Improving school quality requires long-term commitment to teacher development, professional learning, and capacity building.

Second, professional development programs should be sustained, contextually relevant, and aligned with teachers' practical needs. Short-term training initiatives are unlikely to generate meaningful improvements unless integrated into broader professional learning systems.

Third, educational institutions should strengthen collaborative professional cultures by supporting teacher leadership, professional learning communities, and peer mentoring initiatives.

Finally, digital transformation efforts should prioritize teacher capacity development alongside technological infrastructure investment. Technology alone cannot improve educational quality without professional teachers capable of integrating it effectively into teaching and learning processes.

The synthesis identifies professional development, organizational support, and digital competence as relevant considerations for elementary school improvement. These findings should be interpreted in light of the diverse study designs and the distinction between formally included studies and supplementary contextual literature.

CONCLUSION

This review synthesized ten studies on teacher professionalism and elementary school quality in the context of educational transformation. Recurring themes included continuous professional development, instructional competence, leadership support, professional collaboration, and digital adaptability. The findings describe relationships and proposed mechanisms across diverse sources; they do not establish a pooled effect or a causal contribution to school quality.

Schools and policymakers should consider sustained professional learning, mentoring, collaboration, and leadership support alongside investment in technology. The conclusions are limited by the search coverage, heterogeneous evidence, and incomplete reporting of quality appraisal. Future research should evaluate specific professional-development approaches against clearly defined school-quality and student-learning outcomes in elementary settings.

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AUTHOR CONTRIBUTION STATEMENT

Nurajizah: Conceptualization, Methodology, Investigation, Formal Analysis, Writing - Original Draft. Eka Setiahati: Investigation, Formal Analysis, Data Curation, Validation, Writing - Review & Editing. Tubagus Habibi: Methodology, Resources, Data Curation, Visualization, Writing - Review & Editing. Hamidah: Validation, Supervision, Project Administration, Writing - Review & Editing.

AI DISCLOSURE STATEMENT

ChatGPT was used during copyediting to assist with language and formatting. The authors should review and verify the edited manuscript and remain responsible for its final content.

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