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ORIGINAL RESEARCH ARTICLE

Teacher Professional Development Management in the Society 5.0 Era

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ABSTRACT

The Society 5.0 era has created new demands for teacher professionalism, extending beyond pedagogical competence to include digital literacy, artificial intelligence, collaborative skills, creativity, and human-centered decision-making. These developments require teacher professional development to be managed systematically and sustainably. This study aims to analyze teacher professional development management in the Society 5.0 era and identify mechanisms that support adaptive and sustainable teacher competency development. The study employed a qualitative literature review approach by analyzing relevant scholarly publications addressing teacher professional development, educational management, digital transformation, artificial intelligence, and Society 5.0. The data were analyzed using thematic analysis through the processes of identification, coding, categorization, comparison, and synthesis of findings from selected literature. The findings reveal six main dimensions of teacher professional development management: needs-based identification of teacher competencies, strategic professional development planning, integrated development of digital and pedagogical competencies, collaborative professional learning, utilization of technology and artificial intelligence, and monitoring, evaluation, and sustainability. These dimensions form a continuous professional development cycle in which evaluation results serve as the basis for identifying subsequent professional development needs. The study demonstrates that teacher professional development in the Society 5.0 era needs to shift from a training-oriented approach toward an adaptive, collaborative, technology-supported, sustainable, and human-centered professional development management system.

Keywords: educational management; teacher professional development; Society 5.0; digital competence; artificial intelligence; sustainable professional development.



ABSTRAK

Peningkatan mutu pendidikan pada madrasah tidak hanya ditentukan oleh kualitas pembelajaran, tetapi juga oleh Era Society 5.0 menghadirkan tuntutan baru terhadap profesionalisme guru yang tidak hanya berkaitan dengan kompetensi pedagogik, tetapi juga literasi digital, kecerdasan buatan, kemampuan kolaboratif, kreativitas, dan pengambilan keputusan yang berorientasi pada kebutuhan manusia. Kondisi tersebut menuntut pengembangan profesional guru dikelola secara sistematis dan berkelanjutan. Penelitian ini bertujuan untuk menganalisis manajemen pengembangan profesional guru pada era Society 5.0 serta mengidentifikasi mekanisme yang dapat mendukung pengembangan kompetensi guru secara adaptif dan berkelanjutan. Penelitian menggunakan pendekatan qualitative literature review dengan menganalisis berbagai publikasi ilmiah yang relevan mengenai pengembangan profesional guru, manajemen pendidikan, transformasi digital, artificial intelligence, dan Society 5.0. Data dianalisis menggunakan analisis tematik melalui proses identifikasi, pengodean, kategorisasi, perbandingan, dan sintesis temuan dari literatur yang dipilih. Hasil penelitian menunjukkan enam dimensi utama manajemen pengembangan profesional guru, yaitu identifikasi kebutuhan kompetensi berbasis kebutuhan, perencanaan strategis pengembangan profesional, pengembangan kompetensi digital dan pedagogik secara terintegrasi, pembelajaran profesional kolaboratif, pemanfaatan teknologi dan artificial intelligence, serta monitoring, evaluasi, dan keberlanjutan. Keenam dimensi tersebut membentuk suatu siklus pengembangan profesional yang berkelanjutan, di mana hasil evaluasi menjadi dasar untuk mengidentifikasi kebutuhan pengembangan berikutnya. Penelitian ini menegaskan bahwa pengembangan profesional guru pada era Society 5.0 perlu bergeser dari pendekatan yang berorientasi pada pelatihan menuju sistem manajemen pengembangan profesional yang adaptif, kolaboratif, berbasis teknologi, berkelanjutan, dan tetap berorientasi pada nilai-nilai kemanusiaan.

Kata kunci: manajemen pendidikan; pengembangan profesional guru; Society 5.0; kompetensi digital; artificial intelligence; pengembangan berkelanjutan.

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1. INTRODUCTION

The emergence of the Society 5.0 era has brought fundamental changes to the paradigm of educational development. Society 5.0 is characterized not only by the rapid advancement of digital technologies, artificial intelligence (AI), big data, the Internet of Things (IoT), and increasingly integrated digital systems, but also by the positioning of human beings at the center of technological utilization (Ridho et al., 2025). In education, this transformation requires educational institutions not merely to adopt technology but also to ensure that technology is utilized to strengthen learning processes that are human-centered, adaptive, creative, collaborative, and responsive to students' needs. In this context, teachers have become strategic actors in educational transformation because the effectiveness of educational technologies and policies ultimately depends on teachers' capacity to integrate them meaningfully into learning practices (Dhameria et al., 2025).

The demands placed on teacher professionalism in the Society 5.0 era have become increasingly complex. Teachers are no longer expected merely to master subject matter and conventional pedagogical skills; they are also required to develop digital literacy, utilize educational data, understand the development of artificial intelligence, design technology-enhanced learning, implement innovative pedagogical approaches, and establish learning interactions that remain

responsive to students' individual needs and development. At the same time, teachers must respond to changes in students' characteristics, who are increasingly familiar with digital technologies, the expansion of learning resources, the demand for personalized and flexible learning, and the growing importance of twenty-first-century skills such as critical thinking, creativity, communication, collaboration, and problem-solving. Therefore, teacher professionalism in the Society 5.0 era should be understood as a dynamic construct that requires continuous development in accordance with changes in the educational environment.

However, teacher professional development in many educational institutions is still frequently implemented through administrative, incidental, and fragmented activities that are not fully based on teachers' actual professional needs. Programs such as training, seminars, workshops, and competency development activities are often not integrated into a systematic and sustainable professional development system (Ybnu T et al., 2024). Professional development may also remain oriented toward fulfilling institutional programs or administrative requirements rather than generating meaningful changes in classroom practices. Within the context of digital transformation, this challenge becomes more complex because teachers demonstrate different levels of digital readiness and technological competence (Harimurti, 2026). While some teachers can rapidly adapt to technological developments, others require continuous training, mentoring, and institutional support. Consequently, teacher professional development should not be treated merely as a series of training activities but as a strategic and continuous process that must be systematically managed (Barat Achieng, 2024).

The management of teacher professional development is therefore essential because improvements in teacher competence are determined not only by individual motivation but also by how educational institutions plan, organize, implement, monitor, and evaluate professional development programs.

From the perspective of Society 5.0, teacher professional development also needs to shift from a predominantly training-oriented approach toward a more comprehensive development-oriented approach (Kuryani et al., 2024). Teachers should be positioned as lifelong professional learners who continuously develop their competencies through experience, collaboration, reflection, and technology-supported learning. At the same time, technology should not be perceived as a replacement for teachers but as an instrument for strengthening their professional capacity. Artificial intelligence, for instance, can support teachers in designing learning activities, developing instructional materials, identifying students' learning needs, and conducting learning assessments. Nevertheless, its effective use requires pedagogical judgment, ethical awareness, creativity, and professional responsibility. Thus, the management of teacher professional development in the Society 5.0 era needs to maintain a balance between technological competence and the humanistic dimensions of teaching.

Previous studies have examined teacher professional development in relation to digital transformation, twenty-first-century competencies, digital learning, and competency development through training programs. These studies generally indicate that strengthening teachers' digital competencies and technological capabilities can improve their readiness to respond to changes in educational practices (Gallego Joya et al., 2025). However, much of the existing literature remains

focused on specific competency domains, particularly digital competence, the use of instructional media, or the effectiveness of particular training programs. Teacher professional development is also frequently conceptualized as an individual competency-building process or as participation in particular training activities. Meanwhile, the managerial dimension that connects needs assessment, program planning, collaborative professional learning, technology utilization, mentoring, evaluation, and sustainability has received comparatively less comprehensive attention as an integrated system.

This situation reveals an important research gap concerning how teacher professional development can be systematically managed in response to the distinctive characteristics of Society 5.0. The first gap concerns the limited number of studies that conceptualize teacher professional development as a sustainable management system, rather than merely as a collection of competency-development activities. The second gap concerns the tendency of previous studies to examine digital, pedagogical, collaborative, and humanistic competencies separately, despite the fact that Society 5.0 requires the integration of these dimensions. The third gap relates to the limited attention given to institutional mechanisms that ensure professional development produces tangible changes in teaching practices and can be sustained over time.

Addressing these gaps, this study proposes a novelty in the form of an integrated and sustainable approach to teacher professional development management in the Society 5.0 era. The novelty does not simply lie in incorporating technology into teacher professional development, but rather in developing a managerial mechanism that connects competency needs assessment, professional development planning, the strengthening of digital and pedagogical competencies, collaborative professional learning, mentoring and reflection, human-centered technology utilization, and evaluation and sustainability mechanisms.

Based on these problems and research gaps, this study aims to analyze the management of teacher professional development in the Society 5.0 era, particularly by identifying teachers' professional development needs, examining the strategies and mechanisms used to develop teacher competencies, analyzing the role of technology in supporting professional development, and examining the evaluation and sustainability mechanisms of professional development programs. The study is expected to contribute theoretically to the field of educational management by extending the discussion of teacher professional development within the Society 5.0 ecosystem. Practically, it is expected to provide educational institutions with a framework for developing a professional development management system that is adaptive, collaborative, needs-based, sustainable, technologically responsive, and consistently oriented toward human-centered education.

2. RESEARCH METHODS

This study employed a qualitative literature review design to critically examine and synthesize previous research concerning teacher professional development management in the Society 5.0 era. A qualitative literature review was considered appropriate because the study did not aim to measure the statistical effect of a particular intervention, but rather to understand concepts, patterns, strategies, challenges, and managerial mechanisms related to the continuous professional

development of teachers in response to technological and educational transformation (König et al., 2025). The review focused on interpreting findings from previous studies and integrating them into a comprehensive understanding of how teacher professional development can be managed within a Society 5.0 educational ecosystem.

This study was conducted within the context of academic literature concerning teacher professional development management in the Society 5.0 era. As a qualitative literature review, the study did not involve a physical research site such as a school or educational institution. Instead, the research context was established through scholarly publications addressing teacher professionalism, professional development, educational management, digital transformation, artificial intelligence, digital competence, professional learning communities, and Society 5.0 in education. The literature was retrieved from major academic databases and scholarly search engines, including Scopus, Web of Science, ERIC, ScienceDirect, and Google Scholar.

The research context was therefore not limited to a particular geographical region but encompassed studies from different educational settings and national contexts. This broader context was important for identifying common patterns and contextual differences in teacher professional development management and for developing a more comprehensive understanding of professional development requirements in the Society 5.0 era. Since this study employed a qualitative literature review, it did not involve human participants such as teachers, principals, or educational administrators. Instead, selected scholarly publications constituted the primary units of analysis. The publications were selected purposively based on their relevance to the research questions and their contribution to understanding teacher professional development management.

The units of analysis included peer-reviewed journal articles, academic books, research reports, and other relevant scholarly publications discussing teacher professional development, teacher competency, professional learning, digital transformation, artificial intelligence in education, and Society 5.0 (Murphy-Graham et al., 2026). The selection emphasized publications that provided conceptual, empirical, or methodological insights into the management of teachers' professional development.

The selection of literature followed predefined inclusion criteria. Publications were included when they directly addressed teacher professional development or teacher competency development, contained relevant discussions of educational management or digital transformation, were academically credible, and provided sufficient information for thematic analysis. Publications that were duplicated, unrelated to teacher professional development, lacked adequate academic information, or focused exclusively on student outcomes without implications for teacher development were excluded.

Data were collected through a systematic literature search and document analysis process.

The literature collection process consisted of four stages: identification, screening, eligibility assessment, and final selection (Respati et al., 2025). First, potentially relevant publications were identified through database searches. Second, titles and abstracts were screened to eliminate studies that were clearly unrelated to the research focus. Third, the full texts of potentially relevant studies were examined to assess their conceptual relevance, methodological quality, and

contribution to the research questions. Finally, publications meeting the inclusion criteria were selected for detailed analysis.

The collected literature was analyzed using qualitative thematic analysis. The analysis was conducted iteratively by reading the selected publications, identifying meaningful statements and concepts, assigning initial codes, grouping related codes into categories, and developing broader themes (Ahmad, 2025). The researcher then compared the themes across publications to identify similarities, differences, patterns, and research gaps. The analysis focused on several dimensions relevant to teacher professional development management in the Society 5.0 era, namely needs assessment, strategic planning, digital and pedagogical competency development, collaborative professional learning, mentoring and coaching, technology and artificial intelligence utilization, monitoring and evaluation, and sustainability.

The analysis subsequently moved from descriptive coding toward interpretive synthesis. Findings from different studies were compared and critically discussed to determine how the various dimensions of professional development were interconnected (Abdalla et al., 2026). Particular attention was given to the relationship between institutional management and individual teacher development. The analysis examined how needs assessment informs professional development planning, how planning is translated into training and collaborative learning activities, how technology supports professional learning, and how monitoring and evaluation contribute to continuous improvement. Finally, the themes were synthesized into an integrated conceptual understanding of teacher professional development management in the Society 5.0 era.

3. RESULTS AND DISCUSSION

The qualitative literature review identified six interconnected dimensions of teacher professional development management in the Society 5.0 era: (1) needs-based identification of teacher competencies, (2) strategic planning of professional development, (3) integrated development of digital and pedagogical competencies, (4) collaborative professional learning, (5) utilization of technology and artificial intelligence, and (6) monitoring, evaluation, and sustainability. These findings indicate that teacher professional development should be managed as a systematic and continuous process rather than as a series of isolated training activities.

The first finding indicates that effective teacher professional development begins with a systematic identification of teachers' actual professional needs. The literature shows that teachers have different levels of pedagogical competence, digital literacy, technological readiness, and professional experience. Therefore, professional development programs that are implemented uniformly without considering individual and institutional needs tend to have limited relevance.

In the Society 5.0 era, competency mapping encompasses not only conventional pedagogical and professional competencies but also digital literacy, data literacy, AI literacy, digital instructional design, technology integration, critical thinking, creativity, collaboration, and ethical awareness. Needs assessment therefore functions as the foundation for determining appropriate professional development priorities. The findings indicate that institutions need to identify competency gaps

through reflection, performance assessment, professional dialogue, and analysis of teachers' instructional challenges before designing development programs.

The second finding demonstrates that professional development requires systematic and strategic planning. The literature indicates that professional development is more effective when it is integrated into institutional development plans rather than implemented as incidental activities such as occasional workshops or seminars. Strategic planning includes determining development priorities, objectives, target competencies, appropriate development strategies, resources, implementation schedules, and evaluation mechanisms. In the Society 5.0 context, planning needs to integrate technological developments with pedagogical and human-centered educational needs. The findings also indicate that educational leaders have an important role in creating policies, allocating resources, providing opportunities for professional learning, and establishing an organizational environment that supports continuous teacher development.

The third finding shows that teacher professional development in Society 5.0 requires the integration of digital and pedagogical competencies. The literature indicates that technological competence alone is insufficient because teachers must be able to integrate technology meaningfully into instructional design, classroom interaction, assessment, and learning evaluation.

Professional development therefore needs to strengthen teachers' ability to use digital platforms, educational applications, digital learning resources, data, and AI-supported tools while maintaining strong pedagogical judgment. The findings further indicate that teachers need to develop critical thinking, creativity, communication, collaboration, and ethical awareness alongside digital skills. This integrated competency perspective ensures that technology serves pedagogical and educational purposes rather than becoming an end in itself.

The fourth finding emphasizes that professional development becomes more effective and sustainable when supported by collaborative learning. The literature identifies professional learning communities, peer learning, mentoring, coaching, lesson study, peer observation, collaborative lesson planning, and reflective discussions as important mechanisms for strengthening teacher professionalism. Through collaboration, teachers are able to exchange experiences, identify instructional problems, share innovative practices, and collectively develop solutions. This process shifts professional development from an individual activity toward a form of organizational learning. Teachers are not merely recipients of training but also become active participants in producing and sharing professional knowledge. In the Society 5.0 era, such collaboration is increasingly important because rapid technological change requires continuous learning and adaptation.

The fifth finding concerns the strategic utilization of digital technology and artificial intelligence to support teacher professional development. The literature demonstrates that digital platforms, online courses, webinars, professional communities, learning management systems, and digital resource repositories provide opportunities for teachers to engage in flexible and continuous professional learning.

Artificial intelligence further expands these opportunities by supporting teachers in developing instructional materials, exploring pedagogical strategies, analyzing learning information,

designing assessments, and obtaining feedback. However, the findings also indicate that AI utilization requires digital literacy, critical evaluation, ethical awareness, and professional judgment. Therefore, technology and AI should function as supporting instruments for professional development rather than replacing teachers' professional roles. Effective management requires institutions to ensure that teachers develop not only operational skills but also the ability to use technology appropriately, critically, and ethically.

The sixth finding indicates that monitoring and evaluation are essential for ensuring the sustainability of teacher professional development. The literature shows that training programs are less likely to produce lasting changes when they are not followed by mentoring, classroom implementation, reflection, feedback, and systematic evaluation. Monitoring should examine the implementation of professional development activities, while evaluation should assess changes in teachers' competencies and teaching practices. Reflection and feedback provide opportunities for teachers to identify strengths, challenges, and further development needs. The findings indicate that evaluation results should subsequently be used to redesign professional development programs, creating a continuous improvement cycle.

Sustainability is achieved when professional development becomes embedded within institutional routines through professional learning communities, mentoring systems, continuous competency mapping, leadership support, digital learning platforms, and regular reflective practices. Thus, sustainability does not simply refer to the continuation of training activities but to the institution's capacity to continuously identify needs, develop appropriate interventions, evaluate outcomes, and improve professional development strategies.

Discussion

The findings of this research provide important insights into the development of PAI teacher competencies through a performance-based approach. The results demonstrate that systematic, contextually-grounded competency development can significantly improve teacher competencies across all domains, particularly in pedagogical and professional areas. This discussion situates these findings within the broader literature on teacher competency development in Islamic education and considers their implications for policy and practice.

The findings of this study demonstrate that teacher professional development management in the Society 5.0 era cannot be reduced to the implementation of training programs. It requires an integrated management process that begins with identifying teachers' needs, continues through strategic planning and competency development, is strengthened by collaboration and technology utilization, and ultimately depends on continuous evaluation and sustainability. This finding is consistent with the broader conception of professional development as a continuous process that should be connected to teachers' actual instructional practices rather than treated as an isolated training event.

The finding that professional development should begin with the identification of teachers' actual needs is consistent with the principle of needs-based professional development. Darling-Hammond et al. emphasize that effective professional development should be closely connected

to teachers' content needs, active learning, collaboration, and opportunities to apply new knowledge in practice. From this perspective, competency mapping is not merely an administrative procedure but a mechanism for ensuring that professional development responds to authentic problems encountered by teachers.

This finding is particularly relevant in the Society 5.0 context because teacher competencies are no longer homogeneous. Teachers face different levels of digital readiness, pedagogical competence, and technological experience. Therefore, a uniform professional development model is increasingly inadequate. Recent research on AI integration similarly shows that teachers have diverse professional development needs, including AI literacy, pedagogical knowledge, positive attitudes, organizational support, and continuous training (Guilen & Oni, 2025). The finding therefore extends the conventional understanding of teacher professional development by placing needs assessment as the starting point of a management cycle. The implication is that educational leaders need to shift from a program-driven approach toward a needs-driven approach. In this model, competency mapping becomes the basis for determining priorities, selecting appropriate development strategies, and allocating institutional resources.

The second finding emphasizes that professional development must be positioned as part of strategic educational management. This finding can be understood through the perspective of strategic human resource development, in which employee development is aligned with organizational goals and future environmental demands. In educational institutions, teacher professional development should therefore be connected to institutional quality improvement rather than treated as an independent activity.

This perspective is also compatible with the concept of continuous professional development (CPD), which views teacher learning as an ongoing process involving formal training, informal learning, collaboration, reflection, and application in practice. Strategic planning ensures that these activities do not occur separately but form an integrated development pathway.

The importance of strategic planning becomes even more evident in AI-related professional development. A recent systematic review of AI professional development found that existing programs frequently focus on individual teacher outcomes, while organizational-level changes receive less attention (Tan et al., 2025). This finding supports the present study's argument that professional development needs to be managed at the institutional level. Thus, the contribution of this study lies in positioning professional development as an organizational strategy, in which leadership, resources, policies, development priorities, and evaluation are integrated into a single management framework.

The third finding indicates that digital competence should not be developed separately from pedagogical competence. This finding strongly corresponds with the Technological Pedagogical Content Knowledge (TPACK) framework, which argues that effective technology integration requires the interaction of technological knowledge, pedagogical knowledge, and content knowledge. Teachers therefore need to understand not only how technology works but also how it can be integrated appropriately into specific pedagogical and disciplinary contexts.

The literature on AI professional development reinforces this perspective. A recent systematic review of AI professional development programs specifically emphasizes the fusion of technological and pedagogical knowledge and uses TPACK as an analytical framework for understanding effective AI-related teacher learning. Similarly, research on AI and teachers indicates that technological competence alone is insufficient because teachers also need pedagogical judgment, critical evaluation, and ethical awareness.

The present finding therefore confirms that Society 5.0 requires a shift from technology-oriented professional development to technology-pedagogy integration. Teachers should not merely be trained to operate digital applications or AI tools but should be able to determine their pedagogical value, limitations, ethical implications, and relevance to students' needs. This reinforces the human-centered orientation of Society 5.0, in which technology functions as an instrument for strengthening educational quality rather than replacing the professional role of teachers.

The fourth finding shows that collaboration is a central mechanism for sustaining teacher professional development. This finding is consistent with the theory of Professional Learning Communities (PLC), which positions teachers as members of a learning-oriented professional community that continuously shares knowledge, reflects on practice, and collectively solves instructional problems. The systematic review by Vangrieken et al. demonstrates that teacher communities play an important role in professional development and that their effectiveness is influenced by leadership, trust, group dynamics, and respect (Vangrieken et al., 2015).

These findings strengthen the present study's argument that professional development should move from an individual learning model toward collective organizational learning. Collaboration enables teachers to exchange experiences, test new pedagogical approaches, provide peer feedback, and develop solutions to shared instructional problems. In the Society 5.0 era, this mechanism becomes increasingly important because technological change occurs rapidly and cannot be addressed effectively through occasional training alone.

The implication is that educational leaders need to create institutional spaces for sustained professional interaction. Professional learning communities, mentoring, coaching, lesson study, peer observation, and collaborative lesson planning should therefore be institutionalized as part of everyday professional practice. This transforms the school or educational institution from merely a workplace into a professional learning organization.

The fifth finding indicates that technology and AI should function as enabling instruments for teacher professional development rather than as substitutes for teachers. This finding is consistent with the human-centered orientation of Society 5.0 and recent research on AI in teacher development. The present finding is supported by recent research showing that AI-integrated professional development can provide personalized and data-driven support while maintaining teacher agency. Li, Wang, and Chen found that existing AI-integrated professional development programs tend to position teachers as active leaders in their interaction with AI rather than passive recipients of technological support (Tripathi et al., 2025). More recent research similarly argues that AI-based professional development should move beyond technical skills toward adaptable, innovative, and ethically responsible teacher identities, with AI functioning as an assistant rather than replacing teachers' professional judgment.

Thus, the contribution of the present finding lies in positioning technology and AI within a broader professional development management system. Technology provides flexibility, access, personalization, and new learning opportunities, but its effectiveness depends on teachers' pedagogical competence, ethical awareness, and institutional support. Consequently, digital transformation should be accompanied by professional governance so that technological innovation remains aligned with educational and human values.

The sixth finding emphasizes that professional development cannot be considered successful merely because teachers participate in training activities. This finding is consistent with the principle of continuous improvement, in which evaluation functions as feedback for subsequent development. Professional development should therefore produce observable changes in teachers' knowledge, competence, instructional practices, and ultimately educational quality.

The literature on AI-integrated professional development reveals an important issue relevant to this finding: evaluation practices tend to focus more on individual outcomes than on organizational change. This limitation demonstrates the importance of extending evaluation beyond participation and individual competency gains toward changes in professional practice and institutional capacity.

In the present study, monitoring and evaluation are positioned as mechanisms that reconnect the final stage of professional development with the initial stage of needs identification. This creates a continuous improvement cycle: needs are identified, programs are planned and implemented, outcomes are evaluated, weaknesses are identified, and new professional development priorities are established (Tengan et al., 2021). Sustainability is therefore not simply the continuation of a training program but the institutionalization of professional learning into organizational routines.

This finding also reinforces the importance of leadership and organizational culture. Without leadership support, professional learning communities, mentoring, adequate resources, and opportunities for reflection, the results of professional development are likely to remain temporary. Therefore, sustainable professional development requires an institutional environment in which continuous learning becomes part of teachers' professional identity and organizational culture.

Taken together, the six findings demonstrate that teacher professional development management in the Society 5.0 era represents a synthesis of several complementary theoretical perspectives. Needs-based development emphasizes alignment with teachers' actual competency gaps; strategic management connects professional development with institutional goals; TPACK explains the integration of technological and pedagogical competencies; Professional Learning Communities explain the importance of collaborative learning; while continuous improvement provides the basis for monitoring, evaluation, and sustainability.

The contribution of this study is therefore not merely to confirm that teachers need digital competencies. Rather, the study proposes a shift in perspective from training-centered professional development toward an integrated professional development management system. The distinctive mechanism lies in connecting needs identification → strategic planning → integrated competency development → collaborative learning → technology and AI utilization → monitoring, evaluation, and sustainability as one continuous cycle.

4. CONCLUSION

This study concludes that teacher professional development management in the Society 5.0 era requires a shift from a training-oriented approach toward an integrated, continuous, and needs-based management system. The qualitative literature review identified six interconnected dimensions: needs-based identification of teacher competencies, strategic planning of professional development, integration of digital and pedagogical competencies, collaborative professional learning, utilization of technology and artificial intelligence, and monitoring, evaluation, and sustainability. These dimensions demonstrate that professional development is most effective when it is managed as a continuous cycle rather than as a series of separate training activities.

The main contribution of this study lies in integrating these dimensions into a management perspective that connects individual teacher development with institutional capacity. Technology and AI are positioned as supporting instruments rather than replacements for teachers, while collaboration, mentoring, reflection, and evaluation function as mechanisms for ensuring that newly acquired competencies are translated into actual teaching practices. Consequently, professional development in Society 5.0 should develop not only teachers' digital capabilities but also their pedagogical judgment, creativity, collaboration, critical thinking, ethical awareness, and human-centered orientation. The study further demonstrates that sustainable teacher professional development depends on strong institutional support. Educational leaders need to establish policies, provide resources, facilitate professional learning communities, and develop continuous evaluation mechanisms. Thus, the management of teacher professional development can be understood as a continuous process of needs identification, strategic planning, competency development, collaborative learning, technology-supported development, evaluation, and continuous improvement. This perspective provides a conceptual basis for educational institutions seeking to prepare teachers who are adaptive, digitally capable, professionally reflective, and responsive to the human-centered demands of Society 5.0.

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