

Teacher E-Leadership in the Digital Age: A Systematic Review of Research and Practice

Yan Xueying, Mohd Anuar Bin Arshad, Han Lihua

School of Management, Universiti Sains Malaysia, Penang

Email: yanxueying2024@student.usm.my, lihua@student.usm.my

Corresponding Author Email: Anuar_arshad@usm.my

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Abstract

With the deepening integration of information and communication technologies in higher education, “teacher e-leadership” is becoming a key topic in research at the intersection of educational technology and teacher professional development. Teacher e-leadership has shown significant value in promoting student motivation, pedagogical innovation, platform trust and teacher collaboration. Therefore, this paper adopts a systematic literature review approach to focus on the research progress and trends of “teacher e-leadership” in the context of higher education, and comprehensively analyzes the evolution of its core concepts, pathways, antecedent variables, and research gaps. Based on the existing research foundation, this paper proposes that the research agenda of teacher e-leadership can be further expanded in the future from the dimensions of model refinement, cross-cultural comparison, teacher subjectivization, and integration of AI technology, so as to provide a direction for the construction of a contextually adaptive and theoretically in-depth leadership system.

Keywords: Teacher, E-Leadership, Professional Development, Educational Technology, Research Agenda

Introduction

Against the backdrop of the rapid development of digital technology, the role of teachers is undergoing a profound transformation. Higher education is no longer synonymous with the traditional classroom, but has become a complex system in which information technology is deeply embedded in teaching and management. The field of education is facing not only the introduction of technological tools, but also the redefinition of the educator's “identity”. As (Jameson, 2013) pointed out a decade ago that “we are entering the fifth phase of educational technology research”, one of the core features of which is the emergence of e-leadership in education. is the emergence of e-leadership in education.

E-leadership first appeared in management and information systems research and was defined as “the process by which a leader influences an individual or team through the use of

ICT". However, in recent years, the concept has been gradually introduced into educational research, especially in the context of distance education, virtual learning environments and blended learning. and (Carreño, 2014) pointed out that in virtual education, the teacher was not only a transmitter of course content, but should be seen as a "virtual tutor" and a "learning facilitator". "learning facilitator", a form of leadership based on technological empowerment.

Yuting et al.(2025), in their systematic review, emphasized that teachers in higher education are now expected to possess not only teaching skills, but also e-skills and e-leadership practices to create technology-enabled learning environments. This requirement has prompted academics to rethink whether the leadership behaviors assumed by teachers in the context of digital transformation are merely instrumental "technology use" or more proactive and influential "leadership behaviors". Although "principal e-leadership" has received some attention, such as Wu et al.'s (2019) study of K-12 schools, there is a lack of systematic research on e-leadership around 'teachers' themselves. Cordie and Lin (2018) explored whether teachers' engagement with technology constituted basic functional use or reflected deeper, proactive leadership behaviors. Their findings further reveal that teachers are frequently positioned as "passive adaptors" rather than as active agents in technology-driven educational transformation, underscoring a broader systemic deficiency in the cultivation of teacher e-leadership within higher education.

More critically, current research on teacher e-leadership is characterized by inconsistent conceptual definitions, with some studies confusing it with "digital literacy" or "ICT integration competence" (Van Wart et al., 2019; Jameson, 2013). The focus of most studies on principals or administrators, ignoring the e-leadership behaviors of teachers as frontline practitioners (Yuting et al., 2025). And the lack of correlation analyses between teachers' e-leadership and variables such as instructional effectiveness, teacher collaboration, student engagement, etc. (Arnold & Sangrà, 2018; Hoang, 2025) and other issues.

There is also a lack of exploration of e-leadership performance in cross-cultural contexts, as Hoang (2025) pointed out in his study that technological competence and cultural sensitivity together constitute the core literacy for teachers to develop e-leadership in non-English-speaking contexts. Therefore, this study aims to comprehensively organize the current research findings on teachers' e-leadership based on a systematic review approach, focusing on the following questions:

How is teacher e-leadership defined and constructed in different literatures?

How does teacher e-leadership affect the teaching process and learning outcomes?

What are the gaps in current research?

Methodological Approach

In order to gain a deeper understanding of the current state of development of teacher e-leadership in the field of education, this study adopted a systematic literature review approach. By systematically integrating and analyzing the existing research findings under the topic(Yuting et al., 2025); an attempt was made to figure out a comprehensive answer to the relevant questions. In concrete terms, the review process follows the PRISMA (Preferred Reporting Items for Systematic Reviews and Meta-Analyses) framework to standardize the process of screening and extracting literature. The framework has been widely used in

research reviews in the field of educational technology and e-leadership, showing good applicability and reliability (Arnold & Sangrà, 2018).

Data Sources and Retrieval Strategy

We selected two international authoritative academic databases, Web of Science (WoS) and Scopus, as our literature sources. A total of 72 documents related to e-leadership and education were obtained from Web of Science (WoS) database; An additional 106 relevant documents meeting the search criteria were identified in the Scopus database. The keyword combination: "e-leadership" AND "education" was used throughout. Because all the literature involved was not large in number, there was no limit to the timeframe of the search, which in turn ensured that the full picture of the development of the topic was covered.

Inclusion and Exclusion Criteria

To ensure focus and validity of the study, the inclusion criteria included a focus on teachers (or university teaching staff) as the subject of the study; a clear definition of "e-leadership" as the core concept of the study; and a clear research design (qualitative/quantitative/mixed). Focusing on leadership in non-educational organizational or business management contexts was excluded.

Screening Process

Literature screening followed a four-stage PRISMA framework (identification, screening, eligibility, and inclusion), initially identifying 178 pieces of literature. Literature that did not meet the criteria was subsequently excluded based on the relevance of the title to the abstract, and 26 were ultimately included for analysis.

Data Extraction and Analysis Methods

Data extraction was coded around a few core dimensions: research context, study population, research methodology, theoretical modeling, findings and recommendations for future research. Most of the literature used qualitative or mixed research methods. In addition, some studies used the JBI (Joanna Briggs Institute) systematic assessment tool to evaluate the quality of the included literature, reflecting the trend of systematic review studies towards methodological standardization in the field of educational leadership.

Defining Teacher E-Leadership

The concept of "e-leadership" was originally developed by Avolio et al. to refer to the process of social influence through advanced information technology, with the goal of technologically mediated changes in the attitudes, emotions, perceptions and behaviors of an individual or a group in order to drive organizational performance (Avolio et al., n.d.). This definition establishes the theoretical foundation of e-leadership as a "digital leadership behavior that transcends physical boundaries".

With the digital transformation of education, e-leadership has been gradually introduced into the field of educational research. Jameson (2013) stated that e-leadership has become a key research topic in the fifth stage of the evolution of educational technology, which is centered on how educators can use technological resources strategically and reflexively to organize, motivate, and innovate the teaching-learning process. Van Wart et al. (2019) further enriched the hands-on understanding of e-leadership through a series of studies. They define it as a

leader's ability to effectively integrate traditional and e-communication methods, understand the advantages of ICT and strategically select digital tools for leadership practice in a multi-platform environment. To this end, they propose six core competency dimensions: e-communication, e-social skills, e-team building, e-change management, technological competence and e-trustworthiness.

In concrete teaching practice, this theory has gradually landed on the study of teachers' e-leadership, and Roman et al.(2019) argued that in distance or blended teaching scenarios, teachers themselves took on the key role of coordinating tasks, motivating students, and maintaining trust through the use of technology. This shift from "passive leader" to "active facilitator" is a reinvention of the teacher's leadership identity in the digitalization of education. In addition, Cascio & Shurygailo (2008) in their study of virtual teams emphasized that in non-face-to-face teaching and learning environments, leaders need to rely more on technology to mobilize students' social presence and task orientation, which is highly compatible with the role of the teacher in online teaching and learning. Unlike the common term "digital literacy" or "ICT integration skills," e-leadership emphasizes not only the technical operation of skills, but also how teachers can purposefully and affectively use technology for leadership behaviors within specific instructional goals, contexts, and cultures. behavior. As Van Wart puts it, the real power of e-leaders is in "choosing when, when not to choose, and how to choose which technologies to use to influence others.

Therefore, teacher e-leadership should be seen as a multidimensional composite concept encompassing technological competence, communication strategies, team organization, remote motivation, and change orientation, and its manifestation is limited by the interplay of content, cultural context, and technological situation. As Roman et al. (2019) emphasized, "leadership occurs not only at the managerial level, but also at every technological touchpoint of teaching and learning." Future research should continue to deepen the boundaries of the conceptualization of teacher e-leadership, identify its observable behavioral paths in real teaching activities, construct effective evaluation frameworks, and explore the mechanisms of its impact on student motivation, pedagogical innovation, and organizational culture. Van Wart et al. (2019) noted that while this abstract definition is broadly adaptable in theory, it still needs to be concretized in applied contexts such as education. To this end, Van Wart et al. (2019) also proposed a more operationalized set of definitions of e-leadership through an in-depth study of e-learning case studies: e-leadership is not only the frequent use of technology, but also "the effective integration of traditional and electronic communication methods, the selective adoption of new technologies, and having the ability to skillfully use information technology in different contexts ". Further, Van Wart et al. refined e-leadership into six broad competency dimensions: including e-communication, e-social skills, e-team building, e-change management, e-technical competence, and e-trustworthiness. Roman et al. (2019) suggested in public management scenarios that e-leadership should be understood as a "technologically mediated influencing process" whose uniqueness lies in how leaders use ICT to guide remote collaboration, maintain trusting relationships, and enhance organizational performance. They emphasize that "a leader's mastery of tools" is as important as "an understanding of social mechanisms". In the educational arena, Van Wart et al.(2019) and Jameson(2013) jointly state. The role of the teacher is naturally "leadership" in nature, and its nature is to influence student behavior through multiple sources of power whether it is formal curriculum control or informal role modeling. When this influence occurs in virtual,

hybrid, or technology-enabled environments, the teacher becomes a prime example of an e-leader.

In addition, teacher e-leadership needs to be distinguished from “digital literacy” or “technology integration skills”. E-leadership emphasizes not “whether to use technology” but “how to use technology strategically, with leadership intent, for what purpose and in what context.” This emphasis on the integration of situational judgment and leadership intent is the key to distinguishing the “digital teacher” from the “educational leader”.

In summary, teacher e-leadership should be understood as a complex of competencies embedded in digital teaching and learning environments, encompassing communication, collaboration, technological understanding, trust building, and change management. It is one of the core leadership qualities that higher education teachers must possess in the 21st century to face the evolving teaching and learning ecosystem.

Effects of Teacher E-Leadership

Faculty e-leadership has gradually become a key variable in the digital transformation of higher education, with far-reaching impacts on the dimensions of faculty professional development, pedagogical innovation, student learning effectiveness, and organizational performance. Recent studies continue to reveal the multiple mechanisms of this new form of leadership. First, teachers' e-leadership behaviors can significantly contribute to instructional innovation and a collaborative culture. Yilmaz et al. (2020) found that teachers with e-leadership traits were more likely to inspire students' self-regulated learning and motivation in project-based online learning. Similarly, (Berkovich & Hassan, 2023) noted that principals' digitally transformational leadership was effective in enhancing teachers' organizational commitment and role identity, reflecting the positive value of e-leadership in building organizational climate.

In terms of instructional technology adoption, (Hoang, 2025) emphasized that college and university faculty with e-leadership skills are able to more effectively integrate AI tools into their teaching practices to enhance course quality and student engagement. His study proposed three key competency dimensions, technological instructional competency, pedagogical innovation competency, and culturally sensitive change management competency. These competencies not only contribute to teachers' own professional growth, but also enhance the technology-enabled effects of the teaching process. More importantly, teacher e-leadership has an indirect contribution to educational organizational performance. a systematic review by (Yuting et al., 2025) indicated that e-leaders significantly enhanced students' learning effectiveness and satisfaction by creating a digital learning environment and reinforcing student-centered instructional models. And (Ping et al., 2024) study also showed that the stronger the e-leadership, the higher the teachers' engagement in ICT platforms, especially during distance learning and outbreak response.

In addition, (Cordie & Lin, 2018) considered e-leadership to be a “strategic intervention” that enables teachers to proactively reconfigure curriculum and learning processes in the face of technological change. This is highly compatible with the perspective of the “fifth stage of educational technology research” as defined by (Jameson, 2013), namely, teacher e-leadership is not only technologically supported at the operational level, but also guided at

the strategic level. Cultural context has likewise been shown to be an important moderating variable in influencing teachers' e-leadership effects. For example, (Abuowda et al., 2024) found that teachers' cultural sensitivity significantly moderated their organizational citizenship behaviors and ICT adoption tendencies when exercising e-leadership. This echoes (Mishra et al., 2016)'s assertion in the TPACK framework that technology integration must be based on a deep understanding of the content, student background and cultural context.

Overall, teacher e-leadership plays an important role in instructional performance, student learning experience, faculty development, and organizational innovation. This role becomes especially critical in the context of the AI and distance education era. Future research could further explore its cross-cultural performance differences, development paths, and its buffering effect on teachers' emotional labor and burnout.

Antecedents of Teacher E-Leadership

Teacher e-leadership does not develop by chance, but rather as a result of multidimensional factors interacting over time. Based on (Van Wart et al., 2019) framework and a recent systematic literature review, the antecedent variables can be categorized into four major dimensions: individual traits, organizational support, technology literacy and cultural awareness.

Individual Dimensions

Whether a teacher has a clear sense of technology leadership often depends on his or her attitude towards information technology, self-efficacy and motivation for change. Some studies have suggested that teachers' e-leadership is significantly influenced by their "innovation orientation". Teachers who believe they have the ability to control and direct information technology are more likely to engage in proactive leadership behaviors (Van Wart et al., 2019), and (Yilmaz et al., 2020) found that teachers with greater "virtual leadership self-regulation" were more likely to implement goal-oriented digital instructional management and to be effective in managing digital instruction. digital instructional management and motivate students to learn.

Organizational Level

In the absence of clear training systems, incentives or role empowerment arrangements in the organizational structure, even when teachers have the potential to e-lead, there is often institutional resistance to translate it into actual behaviour. E-leadership requires not only skill and willingness, but also institutional soil to nurture it (Van Wart et al., 2019). In empirical studies of secondary school teachers, it has been suggested that there are three common challenges that teachers face when engaging in technology-related leadership tasks: 1) the organizational culture or administrators' expectations for teachers to lead technological change are unclear; 2) the related roles and responsibilities are not formally defined in the system; and, 3) the existing teaching and learning tasks already take up a great deal of energy, which makes it difficult for teachers to dedicate their time and resources to additional leadership tasks. These factors combined to form the basis of the e-teacher development program. Together, these factors constitute a real bottleneck in the development of e-leadership among teachers (Ping et al., 2024).

Without an environment of institutional support and cultural incentives, it is difficult for teachers to develop into actual e-leaders, even if they have the technical will to do so. (Machado & Brandão, 2019) emphasized that in VUCA (Volatility, Uncertainty, Complexity, Ambiguity) educational environments, organizations need to give teachers more authority and flexibility to participate in digital governance, otherwise their leadership behaviors will be "structurally inert ". Similarly, (Singh, 2021) noted that knowledge sharing occurs not only by relying on the technical competence of leaders, but also by requiring organizational support in terms of process design and trust mechanisms, a finding that also holds true for teacher collaboration and faculty co-construction.

Technological Competence and Digital Adaptability

Technological literacy continues to form the basis of teachers' e-leadership behaviors. E-leadership: Implications for Theory, Research, and Practice.(Avolio et al., n.d.), as a theoretical foundation document, argued that leaders must realize effective communication and influence transfer through information technology. In the teacher scenario, this ability is manifested in operational capabilities such as platform migration, tool selection, and instructional reconfiguration. In addition,(Bieńkowska et al., 2023) further confirmed the positive relationship between technological literacy and organizational performance through modeling analysis, which indirectly indicates that technological competence is the foundation for teachers' e-leadership to achieve pedagogical effectiveness. (Van Wart et al. (2019) identified "e-technological skill" as one of six core leadership competencies, encompassing teachers' understanding of emerging ICT tools, their ability to integrate traditional and digital methods, and their capacity to manage technological breakdowns. In the context of the increasing penetration of AI into teaching practice, whether teachers can demonstrate "digital adaptability" has become a key prerequisite for their e-leadership. Teachers who have a certain degree of AI knowledge and experience in using AI usually show a stronger ability to cope with the change of platforms, reconfiguration of teaching content, or guiding students to collaborate with technology, as well as a stronger intention to lead. This adaptability is not only reflected in the mastery of tools, but also an ability in the strategic integration of technology into the teaching and learning process(Hoang, 2025).

Cultural Sensitivity and Diversity Awareness

Effective e-leadership does not only depend on verbal expression or technical operation, but also on whether teachers have sufficient cultural understanding and contextual judgment. (Van Wart et al., 2019) pointed out in their e-trustworthiness dimension that if teachers ignore linguistic differences or cultural diversity in virtual teaching, it may lead to misunderstanding and even alienation between students and teachers. teaching, if teachers ignore language differences or cultural diversity, it is easy to trigger students' misunderstanding, mistrust, and even lead to teacher-student alienation. Cultural sensitivity is therefore considered an important foundation for establishing trustworthiness in virtual teaching.

Similarly, Abuowda et al. (2024) study showed that in online learning environments with a multicultural composition, teachers who demonstrate a high level of cultural competence are more likely to maintain social interaction and pedagogical cohesion in the classroom. Cultural awareness not only affects teachers' expression and teaching choices, but also relates to their ability to act as "e-leaders" to effectively integrate student differences and create an inclusive

learning environment. In other words, teachers' e-leadership is largely influenced by the cultural context in which they are educated. In both local and international classrooms, a lack of cultural awareness can be a hidden barrier to e-leadership practice.

Research Gaps and Future Research Agenda

Although research on “e-leadership” in the field of educational technology has increased in recent years, recent literature indicates persistent gaps in theoretical definitions, cultural adaptability, and empirical applications. Hoang (2025) pointed out that most of the existing research focuses on the use of tools and management of technology, and there are fewer studies on how educators can combine technological competence with cultural sensitivity to play a forward-looking strategic leadership role in the context of the rapid development of artificial intelligence (AI). how to combine technological competence with cultural sensitivity to play a forward-looking strategic leadership role in the context of rapid development of artificial intelligence.

On the theoretical front, lagging constructs remain a prominent issue. Although the empirical model developed by Chua and Chua (2017) identified several key dimensions of e-leadership in school contexts—including strategic thinking, cultural supportiveness, and operational feasibility—the dynamic interrelationships among these dimensions have not been systematically theorized. In particular, their causal mechanisms, interaction pathways, and theoretical interdependencies remain insufficiently explored and empirically unverified. Second, cultural intelligence (CQ), as a key variable in cross-cultural leadership research, has rarely been addressed in e-leadership literature. However, there has been evidence that cultural adaptability and cultural empathy in technical leadership behaviors significantly affect their performance in diverse educational environments. Hoang (2025) found that technical competence and cultural sensitivity were almost equally important in predicting teacher leadership effectiveness, suggesting that future research should systematically integrate CQ into e-leadership models.

Third, the educational contexts of non-Western countries have not received enough attention. Hoang (2025), using Vietnamese universities as a sample, emphasized that e-leadership development of teachers relies on the synergistic mechanism of “technological proficiency, pedagogical innovation, and cultural adaptation”. However, the strategies for developing culturally appropriate leaders in different cultural contexts are still in the exploratory stage.

Fourth, in terms of empirical strategies, current research focuses on cross-sectional surveys and lacks longitudinal tracking design, which leads to a static understanding of the evolutionary path of e-leadership behaviors. Iqbal et al. (2025) also suggested developing a comprehensive evaluation system of “social attributes, strategic thinking, and self-reflective ability” in combination with qualitative interviews and structural models in order to reveal the deeper logic of leadership behaviors in the digital environment.

Fifth, there is still limited research on e-leadership in marginalized educational settings such as primary and secondary schools and non-elite colleges and universities. Sinclair (2014) suggested that leaders need to abandon the traditional “center-controlled” paradigm in

cross-cultural teaching and learning environments, and shift to a “culturally shared, relationship-driven” approach.

Suggested Future Research Agenda

Although the discussion on e-leadership has accumulated quite a lot of results, it is true that from the existing literature, there is still much room to dig deeper, especially in terms of cultural diversity, empirical methods, and situational appropriateness.

First, the relationship between e-leadership and cultural intelligence (CQ) has hardly been systematically explored. An exception is Hoang (2025), who, based on data from Vietnamese university teachers, pointed out that technological competence and cultural sensitivity go hand in hand in today's world where AI technology is widely involved in teaching. In other words, if a teacher is any good at using platform tools but ignores the cultural context of his or her students, his or her e-leadership behavior is likely to be ineffective. In particular, Hoang (2025) further identified “technological proficiency, pedagogical innovation, and cultural adaptation” as the three pillars of e-leadership that make a real difference. This suggests that future research should no longer treat “culture” as a background variable, but rather as a core factor in the e-leadership competency system.

In addition, Blau and Presser (2013), in their study on analyzing data platforms to drive organizational change, highlighted that digital transformation often breaks the cultural inertia of traditional hierarchical systems, resulting in teachers facing cognitive and behavioral challenges between “new technology and old culture”, which also raises questions for e-leadership research. Sudiana et al. (2021) further argued that teachers' e-leadership in multicultural schools is highly dependent on their culturally appropriate behaviors and empathy, suggesting that culture is not a peripheral issue, but a fundamental driver of digital leadership behaviors.

Second, regarding the adaptation of e-leadership in different cultural and institutional contexts, the current research horizon is still Western-oriented. Studies like Hoang (2025) were still in the minority, and from other literature, as Sinclair (2014) emphasized cultural embeddedness or Chua & Chua, (2017), who proposed strategy model, the vast majority of them still remain at the level of institutional explanations, and lack the path of operationalization of specific cultural dimensions.

Third, the empirical methodology of current research remains monolithic. Most of the literature relies on cross-sectional questionnaires, which can capture certain aspects of attitudes and behaviors, but it is difficult to answer the question of “how behaviors evolve in response to technological or organizational contexts.” Iqbal et al. (2025) suggested that structural modeling and qualitative interviews can be combined in a “mixed-methods” approach. At the same time, there is a lack of ‘longitudinal tracking designs’ in e-leadership research. This is also clearly stated in the future research agenda envisioned by (Jones, 2017). If we want to explore how technology integration gradually reshapes organizational culture and has a profound impact on leadership behavior, we must start from the time dimension and design a long-term research framework that captures the evolution of behaviors and feedback mechanisms. Finally, Yuting et al. (2025) added that future research needs not only

methodological expansion, but also “coupled design of empirical strategies and theory generation,” i.e., interaction between methods and theories rather than fragmentation.

Fourth, our understanding of how e-leadership is “distributed” within organizations is still limited. Who are the “hidden” technology leaders, especially in teacher collectives, curriculum groups, and even inter-school alliances? How do these distributed influences actually permeate the culture of teaching and learning? Blau and Presser (2013) argued that the introduction of digital platforms has altered traditional leadership pathways, allowing informal users of technology to wield influence, but we do not yet know whether this change will result in a structural reorganization of power.

Finally, the issue of balance between technology and ethics deserves to be on the agenda. As AI and big data enter the classroom, e-leadership is not just about “leading people to use the tools,” but also about trust, privacy, and fairness in the use of technology. Hoang (2025) specifically stated that future teacher e-leaders must not only be “tech savvy,” but also “be able to determine when technology should not be used.”

Conclusion

Faculty e-leadership is becoming an indispensable form of competence in the digital ecosystem of higher education. This review demonstrates that e-leadership is no longer a simple extension of technology application, but encompasses a much more complex core than tool operation. It integrates multiple dimensions of educational practice, such as communication, organizational management, change facilitation, and trust construction, and has gradually become a new type of leadership that cuts across teaching and management practices.

On the one hand, research has identified key components, such as e-communication, social collaboration, platform operation and maintenance, change facilitation, and digital trustworthiness, which have been shown to be effective in promoting student engagement, stimulating pedagogical innovation, and enhancing teacher collaboration (Van Wart et al., 2019). On the other hand, teachers' ability to develop and exercise e-leadership is also influenced by a variety of factors, including technological literacy, self-efficacy, organizational support systems, and their ability to perceive and respond to cultural diversity (Hoang, 2025).

Despite the accumulation of related research, e-leadership as a theoretical system is still in the construction stage. In particular, it is not yet sufficient in the theoretical structure construction, empirical path design, and cultural appropriateness analysis. In the current research context dominated by the English culture circle, there is still a lack of systematic exploration on the generative logic, manifestation and mechanism of teachers' e-leadership behaviors in non-Western educational contexts. Therefore, it is necessary for future research to further promote conceptual clarification and the development of measurement tools, as well as to incorporate teachers' practical experience. The evolutionary trend of digital technology and the institutional structure of educational organizations into the same analytical framework, so as to explore a research path of e-leadership that can respond to real-life scenarios and has theoretical explanatory power.

Finally, This study provides new perspectives and ideas for understanding the changing roles of teachers in digital education environments. On the theoretical front, we reorganized the core concept of “teacher e-leadership” and clarified its differences with similar terms such as digital skills and technology integration. The study further suggests that teachers' leadership is not only about their proficiency in the use of technology, but also about how they mobilize technology, influence students, guide teams, and drive change in their teaching. This provides a well-structured and content-specific framework for subsequent related research. On a practical level, the article pays special attention to college teachers in non-Western cultural contexts, emphasizing how teachers can leverage technology to achieve warm educational guidance amidst multicultural and institutional differences. The study points out that cultural comprehension, organizational climate, and teachers' own initiative are important factors influencing the formation of e-leadership behaviors. These findings help universities to develop more relevant strategies in teacher training, pedagogical reform and digital transformation.

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