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E-Leadership in School Management for Society 5.0: A Systematic Review from an Educational Psychology Perspective

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ABSTRACT

The rapid digitalization of education, accelerated by the COVID-19 pandemic and the emergence of Society 5.0, has reshaped how schools are led, yet research on electronic leadership remains fragmented between technocentric accounts of platform adoption and human-centered accounts that foreground psychological and contextual conditions, with no synthesis reading the two through an educational-psychology lens. This study aims to reconstruct how e-leadership operates in school management within the Society 5.0 era and to specify the psychological mechanisms that determine its effectiveness. Adopting a systematic literature review guided by the PRISMA 2020 protocol, the study searched the Scopus database for peer-reviewed work published between 2020 and 2025 and analyzed six included studies through thematic and framework synthesis. The findings reveal three conceptualizations of e-leadership, namely technology-facilitated, hybrid, and transformative leadership, and four psychological components that underpin its effectiveness, namely self-efficacy, motivation and engagement, social influence, and adaptability. The analysis further shows that e-leadership influences outcomes indirectly, mediated by work engagement and moderated by infrastructure, culture, crisis, professional development, and organizational climate, and it integrates these patterns into a three-layer conceptual framework centered on human well-being. The principal implication for educational management is specific: leadership development and technology policy must target the cultivation of efficacy, engagement, and resilience and align digital strategy with each institution's particular configuration, rather than treating tools and training as sufficient in themselves.

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INTRODUCTION

The twenty-first century has bound the practice of leadership ever more tightly to digital infrastructure. Nowhere is that binding more consequential than in education, where the institutions charged with forming the next generation must themselves learn to operate across physical and virtual space at once. Japan's articulation of Society 5.0, launched through its Fifth Science and Technology Basic Plan, named the horizon toward which this shift is moving: a super-smart society that places human beings rather than machines at the center

of technological transformation and integrates cyber and physical systems for human prosperity (Mahajan et al., 2025; Ziatdinov et al., 2024). Society 5.0 differs from Industry 4.0 in scope. Where Industry 4.0 is preoccupied with automation and productive efficiency, Society 5.0 takes the whole of society as its field of application, education included, and raises a demand that is psychological and ethical before it is technical: that leadership in the digital era serve human flourishing rather than merely accelerate the adoption of tools.

For school leadership this demand has translated into a rapid and largely unchosen migration. High-speed mobile technology and the abrupt closures of the COVID-19 pandemic pushed principals from conventional presence-based leadership toward electronic forms of leading that depend on virtual communication and digital platforms to direct, supervise, and support their communities (Gkoros & Bratitsis, 2022; Indra et al., 2022). The literature that has grown around this migration is substantial, yet it runs in parallel lanes that rarely converge. One body of work treats e-leadership as a matter of technological competence and platform adoption, modeling the predictors of educators' willingness to use virtual communication (Gupta et al., 2023). Another examines the leadership relationship itself, reconceptualizing teacher leadership as a blend of face-to-face and virtual skill (Chua & Soo, 2023) and tracing how teachers develop digital leadership amid the arrival of artificial intelligence (Hoang, 2025). A third documents organizational outcomes, linking principals' e-leadership to school improvement and the effectiveness of public relations (Wiyono et al., 2023). Each lane illuminates a part, but none assembles the parts into a whole.

That fragmentation is not merely untidy; it conceals a genuine disagreement about what makes e-leadership work. A technocentric reading, common in adoption research, locates effectiveness in infrastructure and skill, implying that sufficient tools and training will deliver results. A more sceptical and human-centered reading insists that the decisive variables are psychological and contextual, pointing to evidence that infrastructure lifts performance only where it already exists (Tahir et al., 2021), that organizational environment and digital media jointly condition what leadership can achieve (Kempner, 2024), and that schools demonstrably ready to innovate may still implement e-leadership only partially when professional-development support is lacking (Rusdinal et al., 2024). The field thus holds two competing intuitions about the same phenomenon, and it has not yet adjudicated between them in a way that educational management can act upon.

The gap that follows is precise. Despite the volume of empirical study, there exists no systematic synthesis that reads e-leadership in school management through an educational-psychology lens, one that takes seriously the motivation, engagement, self-efficacy, and well-being that Society 5.0 places at the center of its human-centered vision. This omission matters because digital leadership in education is not the application of technology to an unchanged relationship but a transformation in how leaders influence, communicate, and collaborate, a transformation whose success or failure is most plausibly decided at the psychological level rather than the technological one. Without a synthesis organized around that level, the field's competing intuitions cannot be resolved, and leadership development continues to be designed as if technical skill were the whole of the problem.

This review addresses that gap by asking four questions that structure the entire investigation: how e-leadership is conceptualized in school management within the Society 5.0 era; what components constitute its effectiveness from an educational-psychology perspective; how it relates to psychological outcomes such as motivation, engagement, and well-being in school contexts; and what moderating and mediating factors govern its success. In answering them, the study pursues four aims, namely to map the relevant literature systematically, to evaluate effectiveness through the psychological mechanisms that underlie it, to develop a conceptual framework that integrates Society 5.0 principles with established educational-psychology theory, and to derive evidence-based guidance for building the digital-leadership capacity of school leaders.

The significance of the undertaking is threefold. Theoretically, the review joins two literatures that have developed apart, digital-leadership research and educational psychology, and in doing so it offers a more complete account of why e-leadership succeeds or fails than either can provide alone. Practically, it speaks to the design of leadership development and to the policy choices that surround educational technology, where investment in tools has too often outpaced investment in the human capacity to lead with them. Contextually, by synthesizing evidence drawn from Vietnam, Malaysia, Turkey, India, and Greece, the review reads e-leadership across diverse cultural and institutional settings, a breadth fitting for a vision that was never meant for one nation alone but proposed as a horizon for societies worldwide.

RESEARCH METHOD

This study adopted a systematic literature review within a qualitative, interpretive paradigm, a design suited to a research object that is a body of published scholarship rather than a population of behaviors to be measured. The aim was not to generate new empirical data but to reconstruct, synthesize, and theorize how e-leadership in school management has been conceptualized and evaluated, read through an educational-psychology lens and against the human-centered commitments of Society 5.0. To secure transparency, rigor, and replicability, the review followed the Preferred Reporting Items for Systematic Reviews and Meta-Analyses, in its 2020 formulation (Page et al., 2021), and integrated theories of digital leadership, transformational leadership, and the human-centered principles of Society 5.0 as the interpretive frame guiding synthesis.

The literature search was conducted exclusively through Scopus, selected for its comprehensive indexing of peer-reviewed international scholarship and for the quality control its ranking metrics afford. The search combined the keywords "e-leadership in school" and "e-leadership" and was confined to peer-reviewed work published between 2020 and 2025, a window chosen to capture the surge of digital-leadership scholarship that accompanied and followed the COVID-19 pandemic. Restricting the search to a single high-quality database was a deliberate trade-off: it narrowed coverage but raised the consistency and citation reliability of the retrieved corpus, a defensible choice for a focused conceptual synthesis rather than an exhaustive meta-analysis.

Study selection proceeded through the four PRISMA phases of identification, screening, eligibility, and inclusion, illustrated in the flow diagram presented as Figure 1 in the Findings. Articles were eligible if they were peer-reviewed, written in English, situated within educational settings spanning K-12 schooling and higher education, and reported empirical evidence on e-leadership through qualitative, quantitative, or mixed-methods designs, with full text retrievable through Scopus or institutional access. To safeguard quality, only articles appearing in journals ranked Q1 through Q4 were retained. Records were excluded when they were not peer-reviewed, such as conference abstracts and book reviews, when they appeared in languages other than English, when they addressed business or corporate leadership without educational relevance, or when they lacked a retrievable abstract for screening. The criteria are consolidated in Table 2.

Data extraction used a standardized form that captured, for each study, its bibliographic details, the country and educational level of the research, the methodological design and sample, the theoretical frameworks invoked, the e-leadership dimensions examined, the psychological outcomes investigated, and the principal findings bearing on educational psychology. Synthesis proceeded through thematic analysis following the six-phase approach of Braun and Clarke, which moved from familiarization with the corpus through systematic coding to the construction of overarching themes, and was complemented by a framework synthesis that organized the coded material into the input, process, and output layers reported in the Findings. This dual procedure allowed the review to answer its four research questions while building toward an integrated conceptual model rather than a mere catalogue of results. **Table 1** summarizes the analytical phases.

Table 1. Phases of the analytical process

Phase	Stage	Procedure	Output
1	Familiarization	Repeated reading of titles, abstracts, and full texts of included studies	Working knowledge of the corpus
2	Coding	Systematic open coding of conceptual definitions, mechanisms, and findings	Initial code set across studies
3	Categorization	Grouping of codes into candidate themes aligned with the research questions	Four thematic clusters
4	Theoretical synthesis	Integration of themes into an input, process, and output framework	Conceptual model of effectiveness

Source: Authors' elaboration based on the cited literature.

To strengthen trustworthiness, the review combined several established safeguards. Source triangulation set the included empirical studies against a broader interpretive literature on Society 5.0 and educational psychology, so that no single study carried the synthesis alone. An audit trail, embodied in the documented search strategy and the PRISMA flow diagram, rendered the selection process transparent and reproducible. Interpretive consistency was maintained by returning repeatedly to the research questions during coding and synthesis, which kept the analysis anchored rather than drifting toward incidental observations. The screening itself was conducted by two reviewers working independently, with disagreements resolved through discussion until consensus was reached, a procedure that reduced the risk of selection bias. These measures are summarized in **Table 2**.

Table 2. Selection criteria and trustworthiness procedures

Inclusion criteria	Exclusion criteria	Triangulation	Audit trail
Peer-reviewed, English-language, educational setting, empirical evidence, Q1 to Q4 journals, full text available	Non-peer-reviewed items, non-English work, business focus without educational relevance, missing abstract	Empirical studies read against the Society 5.0 and educational-psychology literature	Documented Scopus search and PRISMA 2020 flow diagram

Source: Authors' elaboration based on the cited literature.

Three limitations follow from these choices and should temper the reading of the findings. The review is conceptual rather than empirical, so its contribution is theoretical reconstruction rather than statistical generalization. It draws on a single database, which favours citation quality over exhaustive coverage and may have excluded relevant work indexed elsewhere. The final corpus is small, six studies weighted toward emerging educational systems and the pandemic period, which means the conceptual framework should be read as an analytic proposition inviting further empirical testing rather than as a settled account of e-leadership effectiveness. The Discussion takes up these findings with that boundary firmly in view.

RESULT AND DISCUSSION

Result

Search Results and PRISMA Flow

The systematic search drew exclusively on Scopus, chosen for its comprehensive indexing of peer-reviewed international scholarship, using the keywords "e-leadership in school" and "e-leadership" within the publication window of 2020 to 2025. The initial query returned 115 records. Before screening, several records were removed: five duplicates were eliminated, 35 were flagged as ineligible by automation tools for falling outside the defined publication window, eight were excluded for not appearing in journals ranked Q1 through Q4, and one was removed for lacking a retrievable abstract. Sixty-six records consequently advanced to title-and-abstract screening.

During screening, 43 records were excluded against the relevance criteria, leaving 23 reports sought for retrieval. Ten could not be obtained, so 13 proceeded to full-text eligibility assessment. A further seven were excluded for reasons including an absent educational focus, no orientation toward school management, or the absence of empirical evidence on e-leadership effectiveness. Six studies satisfied every inclusion criterion and formed the final corpus. No additional records were identified beyond Scopus. The PRISMA 2020 flow diagram in **Figure 1** documents this sequence and underwrites the transparency and replicability of the selection process.

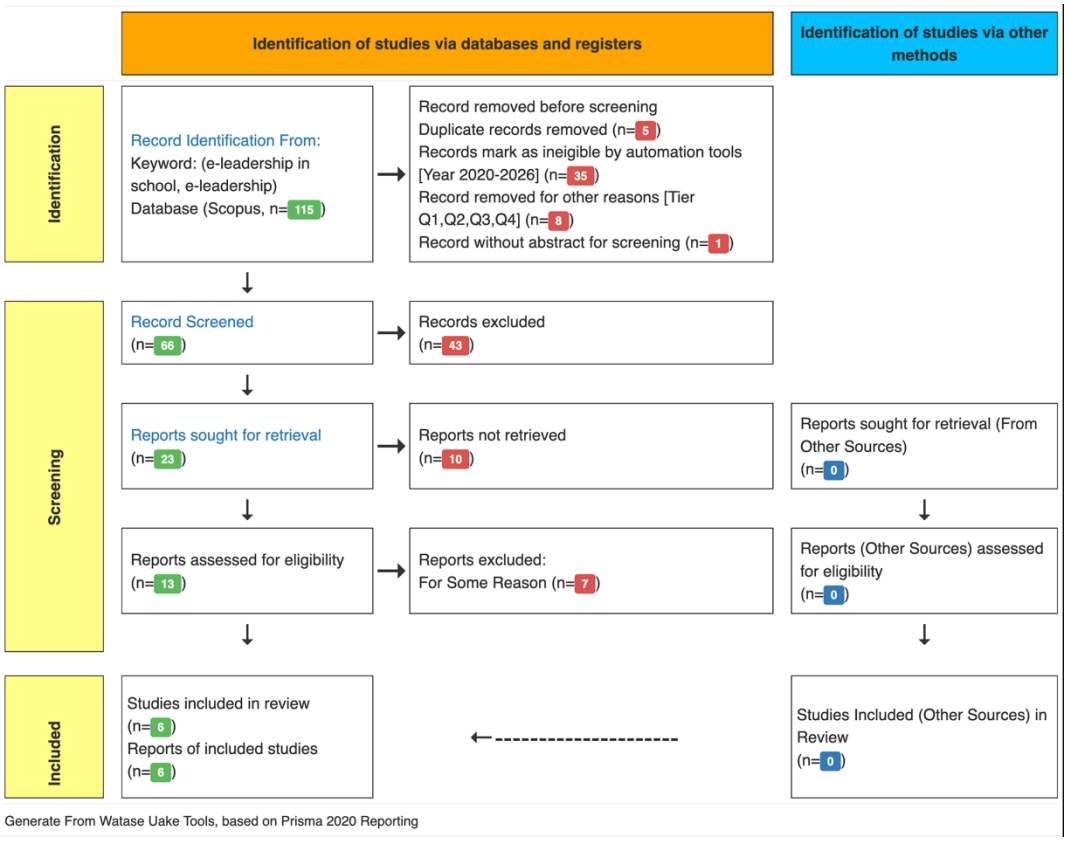

Figure 1. PRISMA flow diagram of the study selection process
(Source: Authors' elaboration)

Characteristics of Included Studies

The six included studies spanned varied geographical, methodological, and institutional settings, yielding a broad picture of e-leadership research in school management during the Society 5.0 transition. **Table 3** details each study.

The geographical spread placed two studies in Vietnam (Hoang, 2025; Maheshwari et al., 2024), with Malaysia (Ping et al., 2024), Turkey (Yilmaz et al., 2020), India (Gupta et al., 2023), and Greece (Gkoros & Bratitsis, 2022) each contributing one. This concentration in developing and emerging educational systems is itself telling, since it is precisely in these settings that the move toward Society 5.0 generates the sharpest tension between digital ambition and infrastructural constraint. The institutional levels were correspondingly varied: Hoang (2025) studied EFL teachers in Vietnam, Ping et al. (2024) examined secondary schools in Malaysia, Yilmaz et al. (2020) and Maheshwari et al. (2024) addressed higher education in Turkey and Vietnam respectively, Gupta et al. (2023) surveyed educators in India, and Gkoros and Bratitsis (2022) focused on K-12 teachers in Greece. This range allowed comparison across tiers rather than confining the review to a single level.

Table 3. Characteristics of Included Studies

No	Author(s) & Year	Country	Educational Level	Methodology	Sample Size	Focus Area
1	Ping et al. (2024)	Malaysia	Secondary School	Mixed methods	287 teachers	Barriers to e-leadership participation
2	Hoang (2025)	Vietnam	EFL teachers	Qualitative	15 teachers	Digital leadership development in AI integration
3	Yilmaz et al. (2020)	Turkey	Higher education	Quantitative	120 students	E-leadership approaches in online project-based learning
4	Gupta et al. (2023)	India	Educators	Quantitative	425 educators	UTAUT3 perspective on virtual communication adoption
5	Gkoros & Bratitsis (2022)	Greece	K-12 education	Quantitative	180 teachers	E-leadership during the COVID-19 pandemic
6	Maheshwari et al. (2024)	Vietnam	Higher education	Quantitative	445 employees	E-leadership effects on employee outcomes during COVID-19

Source: Authors' elaboration based on the cited literature.

Methodologically, four studies adopted quantitative designs drawing on survey instruments and structural equation modeling (Gupta et al., 2023; Maheshwari et al., 2024; Yilmaz et al., 2020; Gkoros & Bratitsis, 2022), one employed qualitative interviewing (Hoang, 2025), and one combined surveys with qualitative data in a mixed-methods design (Ping et al., 2024). The prevalence of quantitative, model-testing work indicates a field maturing toward hypothesis testing and validation, while the qualitative and mixed-methods contributions supply the contextual texture that pure modeling tends to flatten. Sample sizes ranged from 15 participants in Hoang's (2025) qualitative study to 445 employees in Maheshwari et al.'s (2024) higher-education sample, a spread that mirrors the differing logic of each design. Publication dates clustered between 2020 and 2025, the majority appearing during or after the COVID-19 pandemic, which underscores how sharply the health crisis intensified scholarly attention to digital leadership.

Conceptualization of E-Leadership in School Management

The first research question asked how e-leadership is conceptualized in school management within the Society 5.0 era. Across the corpus, three distinct yet overlapping conceptualizations emerged, together tracing the maturing understanding of digital leadership in education.

The first treats e-leadership as technology-facilitated leadership that extends conventional leadership functions into virtual space. Ping et al. (2024) framed e-leadership as practice mediated by information and communication technologies, attending to how school principals deploy digital platforms to discharge administrative, instructional, and supervisory duties. This reading is continuous with the foundational view of e-leadership as a technology-enabled form of influence that extends traditional leadership into remote and distributed work environments (Gupta et al., 2023). In the Malaysian setting it surfaced concretely in principals' reliance on messaging and conferencing platforms to sustain communication with teachers through school closures.

The second understands e-leadership as a hybrid model fusing face-to-face and virtual competence. Hoang (2025) traced this among Vietnamese EFL teachers, showing that digital leadership development demands the integration of pedagogical leadership with technological fluency rather than the substitution of one for the other. The hybrid reading echoes the Singaporean reconceptualization of e-teacher leadership as a blend of physical

and virtual leadership skills (Chua & Soo, 2023), and it is especially apposite to Society 5.0, where the deepening fusion of physical and cyber space obliges leaders to move fluently between modalities.

The third casts e-leadership as a transformative force for organizational improvement and innovation. Gupta et al. (2023) examined it through the Unified Theory of Acceptance and Use of Technology (UTAUT3), positioning digital leadership as a catalyst for technology adoption and the uptake of virtual communication rather than a reactive accommodation to change. In the Indian context this appeared in principals' efforts to drive virtual-communication adoption among educators, with performance expectancy, effort expectancy, and social influence functioning as the principal predictors of acceptance.

Read together, these conceptualizations establish that e-leadership in school management is not a single construct but a multidimensional phenomenon that braids technological mediation, hybrid competence, and transformative organizational influence. The convergence is consonant with the human-centered logic of Society 5.0, in which digital tools are subordinated to educational and humanistic ends rather than allowed to displace the human work of leadership.

Components of E-Leadership Effectiveness from an Educational Psychology Perspective

The second research question concerned the components of e-leadership effectiveness viewed through an educational-psychology lens. Thematic analysis of the corpus isolated four psychological components that underpin effective e-leadership in school settings.

The first is self-efficacy and technology competence, the belief of leaders and followers alike in their capacity to use technology for educational ends. Gkoros and Bratitsis (2022) found that Greek teachers' assessments of their principals' e-leadership effectiveness were closely tied to the principals' demonstrated technological competence and confidence with digital tools. The pattern is consistent with Bandura's social-cognitive account, in which self-efficacy beliefs govern motivation, effort, and persistence under difficulty. Principals who exhibited high technological self-efficacy were correspondingly more able to instill comparable confidence in their staff, setting in motion a self-reinforcing cycle of adoption.

The second is motivation and engagement, the psychological machinery that e-leadership mobilizes among educational personnel. Maheshwari et al. (2024) showed that perceived e-leadership significantly shaped work engagement, well-being, and organizational citizenship behavior among higher-education employees in Vietnam during the pandemic. Read through self-determination theory, e-leadership here satisfied the basic psychological needs for autonomy, competence, and relatedness, thereby strengthening intrinsic motivation. The enforced isolation of pandemic-era remote work rendered those needs unusually conspicuous.

The third is social influence and collaborative learning, the social-psychological processes by which e-leadership cultivates collaborative communities. Yilmaz et al. (2020) contrasted vertical and shared e-leadership in online project-based learning and found that shared e-leadership advanced self-regulated learning, motivation, and group collaboration more effectively than hierarchical arrangements. The result expresses the social-constructivist premise that learning and leadership are socially mediated, since distributing leadership functions across team members generated the conditions for peer learning, mutual regulation, and collective efficacy.

The fourth is adaptability and resilience, the psychological capacity to withstand technological disruption and organizational change. Ping et al. (2024) found that Malaysian secondary-school teachers' willingness to engage in e-leadership initiatives was significantly conditioned by their readiness for change and their resilience. The pandemic functioned as a severe test of these resources, with more adaptable teachers showing markedly greater

acceptance of e-leadership practice, a finding that connects directly to the wider educational-psychology literature on teacher resilience.

Taken together, the four components imply that effective e-leadership rests on both individual psychological resources, namely self-efficacy, motivation, and resilience, and social-psychological processes, namely collaboration, social influence, and collective learning. The implication for leadership development is direct: programs must address cognitive, motivational, and social-emotional dimensions rather than confining themselves to technical skill. The following table synthesizes the four components and their evidentiary basis.

Table 4. Psychological components of e-leadership effectiveness

Component	Underlying psychological principle	Manifestation in the corpus	Supporting study
Self-efficacy and technology competence	Social-cognitive theory; efficacy beliefs drive effort and persistence	Principals' confidence with digital tools shaped perceived effectiveness	Gkoros & Bratitsis (2022)
Motivation and engagement	Self-determination theory; autonomy, competence, relatedness	Perceived e-leadership raised engagement, well-being, citizenship behavior	Maheshwari et al. (2024)
Social influence and collaborative learning	Social constructivism; leadership and learning are socially mediated	Shared e-leadership improved self-regulation and collaboration	Yilmaz et al. (2020)
Adaptability and resilience	Teacher resilience; capacity to absorb disruption	Readiness for change predicted willingness to adopt e-leadership	Ping et al. (2024)

Source: Authors' elaboration based on the cited literature.

Relationship Between E-Leadership and Psychological Outcomes

The third research question examined how e-leadership relates to psychological outcomes in school contexts. The corpus offered consistent evidence of positive associations, yet the mechanisms and the moderators of those associations varied enough to caution against any single causal story.

Work engagement recurred as the central mediating mechanism. Maheshwari et al. (2024) found that work engagement carried the effect of e-leadership onto employee outcomes, including well-being and organizational citizenship behavior, which indicates that e-leadership rarely acts on outcomes directly. Where leaders used digital communication tools well, set clear direction in virtual environments, and sustained supportive relationships, staff reported greater vigor, dedication, and absorption, and that engaged state in turn translated into well-being and discretionary effort beyond formal requirements.

A second pathway ran through self-regulated learning. Yilmaz et al. (2020) showed that shared e-leadership markedly strengthened students' self-regulated learning in online project-based settings, since a distributed leadership structure handed learners greater autonomy and responsibility and thereby activated metacognitive strategies of planning, monitoring, and evaluation. From an educational-psychology standpoint this matters because self-regulated learning is a recognized determinant of achievement and of the capacity to keep learning independently.

A third pathway concerned technology acceptance and behavioral intention. Gupta et al. (2023) found that e-leadership shaped educators' intention to adopt virtual communication through performance expectancy, effort expectancy, and facilitating conditions. Leaders who modeled technology use, supplied adequate support, and built enabling conditions raised their followers' willingness to integrate technology into professional practice, which underscores how far psychological readiness and perceived control govern adoption.

Commitment and identification supplied a fourth pathway, and here the corpus revealed instructive divergence rather than uniformity. Ping et al. (2024) and Gkoros and

Bratitsis (2022) both reported positive links between e-leadership and teacher commitment, but the commitment differed in kind: in Malaysia e-leadership strengthened affective commitment through bonds forged in virtual space, whereas in Greece it reinforced continuance commitment through the practical necessity of digital collaboration during the pandemic. That contrast shows that the same leadership construct can attach to different psychological anchors depending on context.

The synthesis is therefore not that e-leadership uniformly produces good outcomes but that it produces psychological conditions, namely engagement, self-efficacy, autonomy, and belonging, which in turn enable outcomes, and that those conditions are themselves shaped by the technological, organizational, and cultural setting.

Moderator and Mediator Factors in E-Leadership Effectiveness

The fourth research question explored the factors that strengthen or weaken e-leadership effectiveness. The analysis surfaced five, operating at the boundary between leader capacity and the conditions under which that capacity is exercised.

Technological infrastructure emerged as the first and most material moderator. Gupta et al. (2023) found that facilitating conditions, including reliable connectivity, adequate hardware, and technical support, significantly conditioned the link between e-leadership and technology adoption, so that even capable e-leaders struggled where infrastructure was thin. The point carries particular force in developing systems, where the digital divide between urban and rural institutions persists.

Cultural context formed a second moderator. Hoang (2025) showed that Vietnamese values of collectivism and respect for hierarchy shaped how EFL teachers experienced digital leadership development, with teachers favoring approaches that preserved relational harmony and face even in virtual settings. Ping et al. (2024) similarly observed that Malaysian teachers' participation reflected cultural expectations about authority and shared decision-making, which together establish that e-leadership effectiveness cannot be read apart from the values that structure educational interaction.

Crisis conditions acted as a third factor, a contextual trigger rather than a steady moderator. Gkoros and Bratitsis (2022) found that the emergency shift to distance education during the pandemic created unprecedented demand for e-leadership while simultaneously constraining leaders' capacity to support staff, so the crisis amplified both the importance and the difficulty of digital leadership and exposed gaps in preparedness that ordinary conditions would have concealed. Maheshwari et al. (2024) likewise noted that pandemic-era remote work introduced isolation, burnout risk, and the dissolution of work-life boundaries, all of which forced leaders to adapt.

Professional development served as a fourth factor, this time genuinely mediating. Ping et al. (2024) found that teachers given systematic training in digital pedagogy and leadership were far more likely to develop effective practice, whereas its absence blocked development even among willing educators, which places institutional investment in human capital at the center of any realistic account of digital leadership.

Organizational climate completed the set. Yilmaz et al. (2020) showed that collaborative climates supported shared e-leadership while hierarchical climates reinforced vertical patterns, and that the fit between leadership approach and prevailing climate, rather than the approach alone, governed outcomes for self-regulated learning and collaboration. Effectiveness, on this evidence, depends on alignment between style and setting rather than on any universal template. The table below maps each conditioning factor to its function and evidentiary basis.

Drawing the threads together, the analysis of the six studies supports a conceptual framework for e-leadership effectiveness in school management within the Society 5.0 era, one that integrates the components, pathways, and conditioning factors identified above rather than merely listing them.

Table 5. Moderating and mediating factors of e-leadership effectiveness

Factor	Function	Effect on effectiveness	Supporting study
Technological infrastructure	Moderator	Weak infrastructure blunts even competent e-leadership	Gupta et al. (2023)
Cultural context	Moderator	Local values shape acceptable leadership conduct	Hoang (2025); Ping et al. (2024)
Crisis conditions	Contextual trigger	Amplifies both demand for and difficulty of e-leadership	Gkoros & Bratitsis (2022); Maheshwari et al. (2024)
Professional development	Mediator	Training converts capacity into effective practice	Ping et al. (2024)
Organizational climate	Mediator	Fit between style and climate governs outcomes	Yilmaz et al. (2020)

Source: Authors' elaboration based on the cited literature.

The framework operates across three connected layers. An input layer holds leader characteristics, namely technological competence, psychological readiness, and leadership style, alongside contextual conditions of infrastructure quality, organizational culture, and crisis status. A process layer activates the psychological mechanisms of self-efficacy development, motivation, social influence, and collaborative learning. An output layer gathers individual outcomes such as well-being, engagement, and professional growth, organizational outcomes such as school improvement and innovation adoption, and educational outcomes such as student achievement and digital literacy. The layers are sequential but recursive, since outputs feed back to reshape inputs over time. **Figure 2** renders this structure.

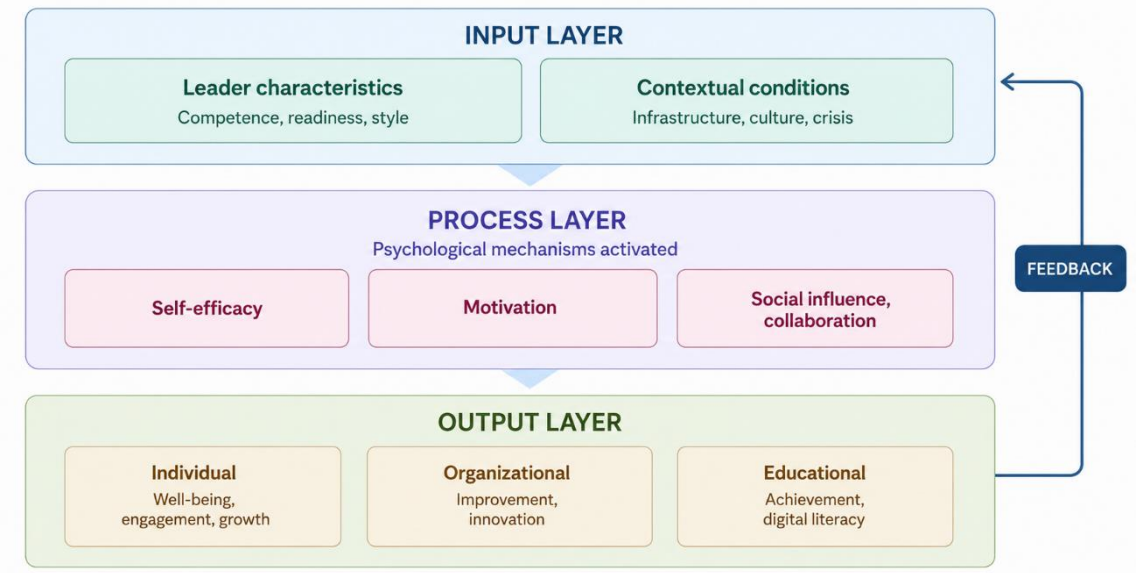

Figure 2. A three-layer conceptual framework of e-leadership effectiveness (Source: Authors' elaboration)

What the framework asserts, and what distinguishes it from a summary, is that effectiveness is a property of the whole configuration rather than of the leader alone. It places psychological well-being and human development at the center, in keeping with the human-centered commitment of Society 5.0, and it treats technology adoption as a means rather than an end. The framework also concedes its own limits: conceptual coherence across six studies, drawn largely from emerging systems and weighted toward the pandemic period, does not guarantee that the model holds across settings or that institutional realization will follow from analytic clarity. That honest boundary is where the Discussion takes up the argument.

Discussion

Read across the four research questions, the evidence converges on a single argument: e-leadership in school management within the Society 5.0 era is not a technological upgrade of conventional leadership but a reconstitution of the leadership relationship itself, one governed by psychological and contextual conditions rather than by digital tooling alone. The discussion develops that argument through four issues that cut across the findings, positioning the contribution against the wider literature rather than restating the results.

The first issue concerns the nature of the transformation. The three conceptualizations recovered, namely technology-facilitated leadership, hybrid competence, and transformative organizational force, resist the reduction of e-leadership to platform deployment. The Society 5.0 literature frames the era as human-centered, placing people rather than automation at the center of innovation (Mahajan et al., 2025; Ziatdinov et al., 2024), and the hybrid model traced by Hoang (2025) coheres with the Singaporean reconceptualization of e-teacher leadership as blended physical and virtual skill (Chua & Soo, 2023). What this review adds is that the hybridity is constitutive rather than transitional: leaders are not waiting out a temporary displacement to virtual space but learning to hold human connection and educational purpose within permanently mediated environments, much as Indonesian principals managing learning disruption had to turn individuals into capable technology users rather than merely installing systems (Komariah et al., 2026).

The second issue concerns why some initiatives succeed while others fail. The four psychological components identified, namely self-efficacy, motivation and engagement, social influence, and adaptability, supply an explanatory vocabulary that purely technological accounts lack. Gupta et al.'s (2023) UTAUT3 analysis shows that beliefs about technology predict adoption as strongly as technical skill, the engagement findings of Maheshwari et al. (2024) echo evidence that work engagement mediates the link between e-leadership and innovative behavior (Said & Kamel, 2023), and the resilience theme connects to documented post-pandemic struggles to sustain team spirit in digital settings (Toleikienė et al., 2024). The extension this review proposes is integrative: educational psychology is not an optional supplement to digital-leadership research but the level at which the success or failure of e-leadership is actually decided, which is why development that addresses only technical skill is structurally incomplete.

The third issue concerns the form of the influence, which the findings show to be indirect, working through mediating psychological states rather than direct control. The engagement mediation reported by Maheshwari et al. (2024) parallels Indonesian evidence that principals' e-leadership improves schools partly through the effectiveness of school public relations, marking relationship quality as the carrier of the effect (Wiyono et al., 2023), while Yilmaz et al.'s (2020) finding that shared rather than vertical e-leadership strengthens self-regulated learning locates effectiveness in the distribution of leadership rather than its concentration. The contribution is a caution against simplistic causal stories: e-leadership builds social capital and relational trust, and outcomes follow from those conditions, so evaluation that tracks only proximate technological metrics will misread how digital leadership works.

The fourth issue concerns the limits of generalization, since the five conditioning factors recovered, namely infrastructure, culture, crisis, professional development, and organizational climate, establish that effectiveness is situated rather than universal. Infrastructure dependence is decisive in developing systems, where strategic e-leadership lifts teacher performance only where adequate infrastructure exists (Tahir et al., 2021), recasting the digital divide as a leadership problem; cultural moderation among Vietnamese and Malaysian teachers (Hoang, 2025; Ping et al., 2024) aligns with evidence that organizational environment and digital media jointly shape what e-leadership can achieve (Kempner, 2024); and the crisis findings of Gkoros and Bratitsis (2022), together with the Indonesian observation that schools were ready to innovate yet implemented e-leadership only partially

for want of professional-development support (Rusdinal et al., 2024), imply that effectiveness emerges from interacting conditions rather than leader competence alone. The review therefore challenges the transfer of universal best practices and argues for situated, system-level approaches, a contribution summarized against the engaged literatures in **Table 6**.

Table 6. Theoretical contribution of the review

Body of literature	What it already holds	How this study extends or challenges
Digital-leadership theory	E-leadership extends leadership into mediated environments	Recasts mediation as a permanent, constitutive condition
Educational psychology	Efficacy, motivation, and resilience shape professional behavior	Positions these as the level where effectiveness is decided
Society 5.0 scholarship	The era is human-centered, balancing technology with social ends	Operationalizes human-centeredness as well-being in leadership
Educational management	Leadership influences school improvement and outcomes	Shows the influence is indirect, carried by engagement and trust

Source: Authors' elaboration based on the cited literature.

This review makes a sharp and specific contribution to educational management on three fronts that together redefine how digital leadership should be governed in schools. Conceptually, it relocates the effectiveness of e-leadership from the technological to the psychological level, which hands managers a more precise target than the procurement of platforms, namely the deliberate cultivation of efficacy, engagement, and resilience among staff, and which explains why well-resourced digital initiatives still fail when those conditions are absent. Diagnostically, the three-layer framework of input, process, and output converts a diffuse sense of underperformance into a testable judgment about which layer is breaking down, giving managers an instrument that pinpoints whether the failure lies in leader and contextual inputs, in the psychological mechanisms that should be activated, or in the multilevel outcomes that should result. Practically, the evidence yields a single decisive principle of alignment: because infrastructure, culture, crisis exposure, professional development, and organizational climate jointly determine what is achievable, no e-leadership strategy can be transferred wholesale, and managers must calibrate their approach to the specific configuration of their institution while investing in the professional development that turns leadership capacity into practice. These claims must be read against the study's limits, since the review is conceptual rather than empirical, rests on a single database, and synthesizes a small corpus weighted toward emerging systems and the pandemic period, so the framework it offers is a testable proposition for educational management rather than a confirmed account of cause and effect.

CONCLUSION

This systematic review set out to understand how e-leadership operates in school management within the Society 5.0 era, and it arrives at a conceptual claim rather than an empirical verdict: digital leadership in education is effective not when it perfects the use of technology but when it sustains the human relationship through which leadership influences learning. The framework developed here organizes that claim across three layers, in which leader and contextual inputs activate psychological mechanisms that in turn yield individual, organizational, and educational outcomes, with each layer conditioning the next and the whole remaining sensitive to infrastructure, culture, and circumstance. Because the analysis rests on a small corpus drawn from a single database and weighted toward emerging systems and the pandemic period, its conclusions are interpretive and provisional, offered as a structured reading of the literature rather than as confirmed cause and effect, and they call for empirical work that tests the proposed mechanisms across varied national and institutional settings. What the review finally affirms is that the promise of Society 5.0 in education will be measured less by the sophistication of the technology's schools adopt than by the human flourishing their leaders are able to protect.

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