JURNAL EDUSCIENCE (JES)
p-ISSN : 2303 - 355X | e-ISSN : 2685 - 2217
PUBLISHED BY : LPPM of UNIVERSITAS LABUHANBATU

Exploration and Development of Digital-Ethical Leadership Models for School Principals in Educational Decision Making

Asmaul Husna[1], Endang Sri Maruti[2], Cerianing Putri Pratiwi[3], Supri Wahyudi Utomo[4]

[1,2,3,4]Postgraduate Program in Elementary Education, PGRI University, Madiun, Indonesia
*Email: endang@unipma.ac.id

ARTICLE INFO

Keywords:
Digital leadership;
Ethical leadership;
Decision making;
School principals;
Elementary education

ABSTRACT

Purpose - This study aims to examine in depth and formulate a contextual and adaptive digital-ethical leadership model for school principals in the educational decision-making process.

Methodology - This study uses an exploratory sequential mixed methods design with a naturalistic exploratory approach. Qualitative data were obtained through in-depth interviews with six elementary school principals in Bojonegoro Regency. In comparison, quantitative data were collected via a survey of three principals outside the research area to provide initial confirmation of the construct. Qualitative data analysis was conducted thematically using NVivo/ATLAS.ti, and quantitative data were analyzed descriptively using SPSS/R.

Findings - The research findings demonstrate that digital-ethical leadership stems from a principal's capacity to integrate digital data with ethical dimensions while remaining sensitive to the school's sociocultural context. Technology is not positioned as the primary determinant of decisions, but rather as a supporting instrument guided by the values of justice, empathy, and moral responsibility.

Contribution - The resulting model places ethics as the normative foundation in the digital transformation of education to produce equitable and sustainable decisions.

Received 13 Maret 2026; Received in revised form 21 Maret 2026; Accepted 10 June 2026
Journal Eduscience (JES) Volume 13 No. 3 (2026)
Available online 30 June 2026

INTRODUCTION

Digital transformation has emerged as a global phenomenon, fundamentally reconfiguring the governance of educational organizations across countries. The use of digital technology in educational decision-making processes has experienced significant growth, particularly in the post-COVID-19 period, leading to the accelerated adoption of digital platforms, data-driven systems, and artificial intelligence in school environments (Sakinah & Ramadhan, 2026). A UNESCO report indicates that more than 70% of education systems globally currently rely on digital technology in managerial and pedagogical practices, positioning digital leadership as a strategic competency for the 21st century (Abassi, 2025). However, this

accelerated pace of digitalization is often not matched by the ethical preparedness of educational leaders, which, in turn, creates various decision-making dilemmas with direct implications for teachers, students, and the sustainability of the school ecosystem.

From a global perspective, several studies emphasize that the effectiveness of digital leadership is not solely determined by technological mastery, but also by moral integrity and ethical sensitivity in interpreting the use of said technology. Weis and Vukasović (2025) found that shifting leadership from hierarchical structures to data-driven models and digital collaboration increases vulnerability to algorithmic bias, privacy violations, and decision-making inequality. In line with these findings, Abassi (2025) emphasized that the absence of an explicit ethical framework tends to encourage educational leaders to make ad hoc decisions that are solely oriented toward technological efficiency. This condition indicates that digital transformation in education is not a value-neutral process, but rather is fraught with ethical consequences that demand balanced, reflective, and responsible digital leadership.

Educational leadership in the digital era demonstrates a fundamental paradigm shift, shifting from traditional administrative leadership patterns to a transformational leadership model mediated by technology and grounded in moral values (Rohmawati & Syamsiah, 2024). Within this framework, Ethical–Digital Transformational Leadership is positioned as a grand theory that explains how principals integrate a transformational vision, the use of digital technology, and ethical principles in the educational decision-making process (Dahliani et al., 2025). Contemporary studies indicate that the effectiveness of digital leadership is no longer solely determined by the level of technology adoption, but rather by the leader's capacity to direct the educational transformation process aligned with organizational values and sustainability (Hegazy et al., 2026; Abassi, 2025).

Transformational leadership theory posits four main dimensions as the foundation of leadership practice (Harsoyo, 2022). In the context of digital leadership, these four dimensions have undergone a conceptual reinterpretation, with the idealized influence of leaders reflected through ethical role models in the use of technology, while intellectual stimulation is realized through the use of data and digital systems as the basis for school innovation and development (Weis & Vukasović, 2025; Sakinah & Ramadhan, 2026). In this regard, ethical leadership serves as a normative foundation that emphasizes the principles of justice, accountability, transparency, and protection of the rights of all educational stakeholders (Azmi et al., 2026; Brown & Treviño, 2022). Within the same theoretical framework, this grand theory integrates evidence-based decision-making (EBDM) as the primary operational mechanism in digital-ethical leadership practices (Datnow & Park, 2021; Schildkamp et al., 2020). Thus, EBDM cannot be understood as a value-free process, but rather as a leadership practice inherently integrated with the moral and ethical dimensions of decision-making (Azmi et al., 2026; Hallinger, 2020).

Principals' digital leadership is a multidimensional construct that extends far beyond mere technical proficiency with technological devices (Fridew et al., 2025). Recent literature positions digital leadership as a strategic capacity of school leaders to systematically and sustainably integrate digital technology into their institutional vision, organizational culture, and educational decision-making mechanisms (Sheninger, 2020; Hegazy et al., 2026). Digital leadership in education is rooted in integrating transformational leadership theory with technology-based organizational theory. Several studies have shown that principals with strong digital leadership capabilities can align educational vision with technology utilization strategies, so that technology is not treated as a separate entity from the school's pedagogical goals (Hallinger & Kovačević, 2021; Bond, 2020).

Educational leadership literature identifies several key indicators of principal digital leadership, including strategic competency in the use of technology, data and information literacy, the ability to manage educational information systems, and the capacity to foster technology-based innovation (Datnow & Park, 2021; Schildkamp et al., 2020). The availability of technological infrastructure, educational policy support, and the characteristics of the school's organizational culture have been shown to contribute to variations in the effectiveness of digital leadership (Bond et al., 2021; Pettersson, 2021).

Findings by Azmi et al. (2026) indicate that school principals' use of technology is often focused on administrative reporting needs, resulting in the strategic function of technology as a supporting instrument for pedagogical decision-making not being optimally utilized. Principals with adequate digital competencies tend to be more effective in managing and utilizing relevant information, coordinating various stakeholders, and formulating school policies that are responsive to internal and external environmental dynamics (Leithwood et al., 2020; Sheninger, 2020). However, without integrating ethical dimensions and moral reflection, digital leadership can yield decisions that are technically superior but problematic from a normative perspective.

In the digital education landscape, ethical leadership positions the principal as a moral subject who bears responsibility for the social, pedagogical, and humanitarian implications of every technology-mediated decision. Recent literature defines ethical leadership as a leadership practice grounded in the values of justice, integrity, accountability, and sensitivity to stakeholders' interests and rights (Brown & Treviño, 2022; Zhu et al., 2023). Theoretically, ethical leadership is rooted in normative leadership theory, which positions leaders as guardians and interpreters of organizational values. In the context of digital-based education, this role extends to the obligation to ensure that the use of educational data, information systems, and artificial intelligence technology aligns with the principles of fairness, inclusivity, and non-discrimination (Abassi, 2025; Azmi et al., 2026). Empirical findings indicate that principals who consistently uphold the principles of transparency and fairness tend to build stronger trust among teachers and parents, which, in turn, contributes to greater effectiveness in implementing technology-based school policies (Berkovich & Eyal, 2021; Yukl et al., 2020). In the digital environment, transparency also extends to the clarity of data collection, processing, and utilization mechanisms, serving as a basis for educational decision-making.

However, implementing ethical leadership in digital education often confronts complex, multidimensional moral dilemmas. Principals are required to negotiate the demands of technological efficiency and objectivity with humanitarian considerations, particularly when student performance data is used as the basis for decision-making that directly impacts their academic trajectories and futures (Zhu et al., 2023; Abassi, 2025). This situation underscores that ethical leadership cannot be reduced to mere procedural compliance but rather requires in-depth moral reflection and sensitivity to the school's social dynamics and institutional context (Muadin & Sunarto, 2025). Findings by Azmi et al. (2026) indicate that the fragility of the technology ethics policy framework may encourage instrumental and pragmatic leadership decisions that raise significant moral issues. Furthermore, various studies confirm the close relationship between ethical leadership and the quality of educational decision-making. Principals who demonstrate consistent values and moral integrity tend to be more effective in managing conflicts of interest and preventing the reduction of technology to merely an instrument for fulfilling administrative needs (Berkovich & Eyal, 2021; Yukl et al., 2020). Within the conceptual framework of this study, ethical leadership is positioned as a normative control mechanism that helps ensure that digital leadership practices remain aligned with the goals of equitable, inclusive, and long-term sustainable education.

Evidence-Based Decision Making (EBDM) in educational leadership is a decision-making practice that integrates empirical evidence, research findings, and professional judgment within the framework of school organizational management. Contemporary literature positions EBDM as a strategic response to the increasing complexity of educational governance in the digital era, characterized by the massive and continuous growth of educational data (Schildkamp et al., 2020; Datnow & Park, 2021). In this context, school principals are required not only to have access to various data sources but also to possess analytical and reflective skills to interpret and use this data meaningfully in formulating strategic decisions that impact the quality of learning and educational equity principles (Setiabudi et al., 2025).

Several studies confirm that effective data-driven decision-making practices are not deterministic or mechanistic, but rather involve a process of professional dialogue, value judgment, and a deep understanding of school dynamics and culture (Datnow & Park, 2021; Brown et al., 2022). Within the digital leadership framework, technology functions as an enabler that expands the capacity for data access and processing. At the same time, the quality of educational decisions remains determined by the cognitive, reflective, and ethical

capacities of school leaders (Syukur et al., 2026). Empirical findings indicate that principals with adequate analytical and reflective competencies tend to utilize data selectively and contextually, rather than relying on quantitative indicators mechanistically (Schildkamp et al., 2020; Jimerson et al., 2021). These findings affirm that EBDM is an interpretive and deliberative leadership practice, not simply a data-driven technical procedure. Inequality in data availability, low-quality educational information systems, and limited training in data analysis and utilization are significant structural barriers for principals (Hallinger & Kovačević, 2021; Azmi et al., 2026).

Furthermore, high administrative pressures often shift data use toward fulfilling formal reporting obligations, thus subtracting EBDM's potential as a tool for improving pedagogical and strategic decision-making. Several empirical studies indicate that data use without ethical considerations can reproduce structural biases and lead to socially unjust decisions (Brown et al., 2022; Zhu et al., 2023). Based on this, EBDM in this study is conceptualized as an evidence-based decision-making process that must inherently be guided and controlled by ethical leadership principles to maintain a focus on the values of justice and inclusivity.

The conceptual framework in this study rests on the assumption that educational decision-making by school principals is the product of a dynamic interaction between digital leadership, ethical leadership, and evidence-based decision-making practices within the social and cultural landscape of developing countries. Digital leadership provides the structural foundation and technological capacity that enable school principals to access, process, and utilize information systematically and integratively (Sheninger, 2020; Hegazy et al., 2026). However, the availability of this technological capacity does not necessarily guarantee the quality of educational decisions if ethical considerations and evidence-based reflection are not present.

Several studies confirm that integrating ethical dimensions into leadership practices strengthens decision legitimacy and increases stakeholders' trust in the school environment (Brown & Treviño, 2022; Berkovich & Eyal, 2021). Thus, ethical leadership serves to moderate the relationship between digital leadership and educational decision-making practices, preventing the decision-making process from being reduced solely to technocratic logic. Evidence-based decision-making (EBDM) is understood as an operational tool that bridges digital leadership capacity with the principal's ethical orientation in the decision-making process. Through this approach, empirical data and findings serve as a rational basis for decision-making, yet are interpreted reflectively and contextually in light of the school's reality (Datnow & Park, 2021; Schildkamp et al., 2020). This perspective rejects the positivist assumption that data is a neutral entity and instead emphasizes that interpreting evidence always involves the leader's professional judgment and moral considerations.

The uneven distribution of digital infrastructure, collectivist cultural characteristics, and the intensity of bureaucratic pressures shape how principals articulate and practice digital-ethical leadership and EBDM in real-world contexts (Hallinger, 2020; Azmi et al., 2026). Therefore, the developed theoretical framework is adaptive and contextual, rather than universalistic.

Conceptually, the study of digital leadership draws on a synthesis of transformational leadership theory, ethical leadership, and evidence-based decision-making. Hegazy et al. (2026) assert that digital leadership has undergone a paradigm shift, from an orientation focused solely on technology utilization to a leadership capacity that holistically integrates data, normative values, and organizational vision. Within a similar framework, ethical leadership theory holds that the principles of fairness, accountability, and concern for the consequences of decisions for all stakeholders are the primary foundations of leadership practice (Azmi et al., 2026). This line of thought underscores the urgency of developing a hybrid leadership model capable of simultaneously managing the digital and ethical dimensions of decision-making.

However, empirical and theoretical studies continue to raise conceptual questions about the extent to which technology can improve the quality of leadership decisions. Several studies argue that the use of digital systems and artificial intelligence can increase the objectivity and precision of managerial decisions (Sakinah & Ramadhan, 2026). Conversely, other research warns that excessive reliance on digital systems risks reducing school leaders' capacity for moral reflection and contextual sensitivity in decision-making (Azmi et al., 2026). This argumentative tension highlights an unanswered gap in the discourse on the relationship between digital leadership and the ethical dimension of educational decision-making.

The complexity of the issue increases when linked to the principal's position as a key actor in strategic decision-making at the educational unit level. In this context, the principal serves not only as a technology manager but also as a guardian of values and a moral agent within the school community. Weis and Vukasović's (2025) findings indicate that although most principals possess adequate digital literacy, many lack a systematic ethical framework to guide data-driven decision-making. This lack of a structured ethical foundation has the potential to create conflicts of interest, inequities in school policies, and erode the school community's trust in leadership practices.

In the context of education in developing countries, particularly in Indonesia, the challenges of digital ethical leadership are becoming increasingly significant. Unequal digital infrastructure, disparities in principal competencies, and high administrative burdens create decision-making conditions that are vulnerable to ethical lapses (Azmi et al., 2026). Furthermore, the collectivistic and bureaucratic nature of the culture demands a leadership approach that is not only adaptive to global dynamics but also sensitive to the local values inherent within the school community. These findings emphasize that digital leadership implementation cannot be uniform but must be tailored to the educational unit's social and cultural realities.

Based on this gap, this study aims to explore and formulate a digital-ethical leadership model for school principals in educational decision-making. Theoretically, this study is expected to enrich the literature on educational leadership by developing a conceptual framework that systematically integrates technological and ethical dimensions. In practice, the findings of this study are expected to serve as a reference for school principals and policymakers in designing adaptive, equitable, and sustainable decision-making strategies to improve educational quality.

METHODOLOGY

Research Design

This study employed an exploratory sequential mixed methods design with a naturalistic exploratory orientation, aimed at formulating and developing a digital-ethical leadership model for school principals in the context of educational decision-making.

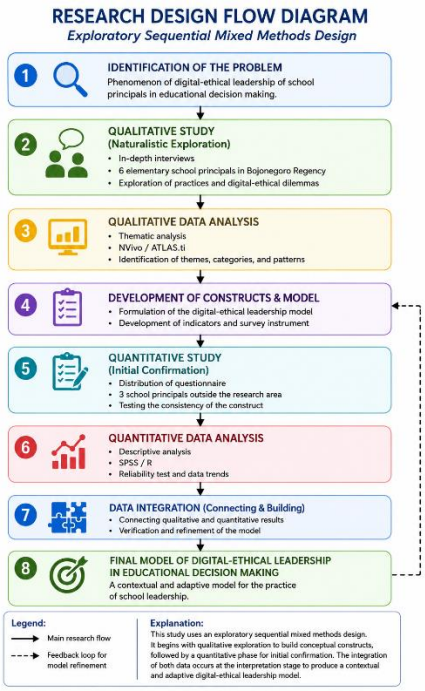

Figure 1. Research Design Flow

Investigating the complex phenomenon of digital-ethical leadership requires a sequential design that begins with an in-depth qualitative exploration, followed by quantitative reinforcement of the findings (Creswell & Plano Clark, 2021; Sugiyono, 2022).

Participants

The participant selection utilized purposive sampling to target elementary school principals with established experience in integrating digital systems into educational decision-making. In the qualitative phase, participants were purposively selected to ensure that the selected school principals had relevant experience in digital leadership and educational decision-making. The qualitative phase involved 12 elementary school principals from public and private schools in Bojonegoro Regency. The number of participants was determined by data saturation, as no substantially new themes emerged from the interviews.

The inclusion criteria for qualitative participants were:

1. Currently serving as an elementary school principal,
2. Having at least three years of leadership experience,
3. Actively utilizing digital systems or platforms in school management,
4. Willing to participate in in-depth interviews.

Surveys distributed during the quantitative phase generated data from 120 school principals representing various districts in East Java Province. Participants were selected using purposive and snowball sampling techniques to reach principals with relevant digital leadership experience. The larger number of respondents was intended to strengthen the statistical adequacy of the quantitative analysis and improve construct validation.

Data Collection

The data collection process combined in-depth semi-structured interviews, participant observation, and a comprehensive review of school policy documentation regarding digital-based decision-making. The main instruments were interview guidelines and observation sheets developed based on the dimensions of digital leadership, ethical leadership, and evidence-based decision-making. Expert judgment and readability tests were conducted to validate the content. The study was conducted in Bojonegoro Regency in January 2026, involving six school principals as participants in the qualitative phase and three principals from outside the Bojonegoro region as comparison respondents in the quantitative phase.

Instrument

The qualitative phase of this study employed semi-structured in-depth interviews as the primary data collection technique. This type of interview was selected because it provides researchers with flexibility to explore participants' experiences, perceptions, ethical considerations, and contextual realities related to digital leadership practices in schools while maintaining alignment with predetermined research objectives (Moleong, 2021). Semi-structured interviews also enabled the researcher to ask follow-up questions to obtain deeper explanations regarding emerging themes and unexpected findings.

Each interview was conducted individually, in a face-to-face setting at the participant's school, to ensure a natural and comfortable interaction. Several interviews were additionally supported through online communication platforms when scheduling constraints occurred. The duration of each interview ranged from approximately 45 to 90 minutes, depending on the depth of participant responses and the complexity of the issues discussed. All interviews were audio-recorded with participant consent and subsequently transcribed verbatim for thematic analysis. The interview guide was validated through expert judgment before implementation to ensure clarity, relevance, and consistency of the questions with the study's objectives.

This study engaged 120 public and private elementary school principals across multiple districts in East Java Province, Indonesia, via survey distribution. Respondents were selected using purposive and snowball sampling to ensure they had relevant experience in school leadership and digital management practices.

This sequential design executes the quantitative phase only after the qualitative phase concludes, leveraging a questionnaire built upon previous exploratory insights. This study used a 12-item Likert-scale closed-ended questionnaire distributed via Google Forms to measure Digital Leadership, Ethical Leadership, and Digital-Ethical Integration in Educational Decisions. Challenges and Reflections each had three items. The questionnaire was administered to six elementary school principals in Bojonegoro, selected by stratified

random sampling. The instrument was developed in-house based on the qualitative findings of phase 1 and a literature review, and has undergone content validity by experts, pilot testing, and construct testing with CFA. The test results showed excellent reliability, with Cronbach's Alpha > 0.87 for all dimensions.

Data Analysis

Qualitative data were analyzed thematically using ATLAS. TI software enables the identification of patterns, categories, and conceptual relationships that form the basis for a digital-ethical leadership model. Quantitative data analysis is conducted using statistical software such as SPSS or R to test the consistency, trends, and validity of the resulting digital-ethical leadership construct. The data integration process is carried out at the interpretation stage using a connecting-and-building approach, in which quantitative results strengthen, verify, and refine the conceptual model developed from the qualitative findings (Creswell & Plano Clark, 2021; Sugiyono, 2022).

FINDINGS

Descriptive Phase: Data Characteristics and Initial Patterns of Digital–Ethical Leadership

The Qualitative Section outlines thematic patterns derived from principal interviews and observations, establishing an initial framework for digital-ethical leadership and its core components. The Quantitative Section presents the results of testing the framework on 6 school principals through descriptive analysis and SEM, including model fit testing and hypothesis verification. The Integration Section combines the findings of both phases to develop an overall conclusion; it describes the statistically proven elements of the initial framework, the aspects that underwent development, and the theoretical and practical significance of the final model.

The research findings illustrate the distinct characteristics of digital transformation in educational leadership, as reflected by elementary school principals in Bojonegoro Regency. Qualitative analysis indicates that digital technology has been systematically integrated into school decision-making processes, particularly in aspects of learning assessment, institutional administration, and organizational communication. This pattern reflects a shift in leadership practices from an intuition-dominated approach to data-informed decision-making, grounded in digital systems and information, to formulate educational policies (Schildkamp et al., 2020; Datnow & Park, 2021). However, the use of digital data is not deterministic but is always linked to value considerations, professional experience, and the school's social context. These findings confirm that digital transformation in educational leadership is socio-technical, with technology and social dimensions intertwined rather than simply a technological change (Pettersson, 2021; Fullan et al., 2024).

Furthermore, the data indicate that principals use a variety of digital platforms, including school management applications, spreadsheet-based worksheets, and digital report card systems, to monitor student learning outcomes and institutional performance continuously. Utilizing these systems enables faster, more structured, and well-documented decision-making processes. These results confirm previous research findings that digital leadership contributes to increased organizational efficiency and transparency in school governance (Sheninger, 2020; Jimerson et al., 2021). However, empirical data also indicates that principals do not completely cede decision-making authority to digital systems. Final decisions are still made through a process of professional reflection and contextual assessment of the school community's conditions, needs, and dynamics.

From an ethical leadership perspective, the descriptive findings indicate that a deeply internalized sense of honesty, fairness, empathy, and moral responsibility guides principals' decision-making. Principals emphasize the importance of transparency in information and accountability mechanisms for teachers, parents, and other educational stakeholders as part of the practice of leadership with integrity. This pattern aligns with the ethical leadership framework, which views educational leaders as moral stewards responsible for upholding the values and legitimacy of the school institution (Berkovich & Eyal, 2021; Brown & Treviño, 2022). In the context of digital transformation, the internalization of these ethical values becomes even more

significant, as decisions often involve managing students' personal data and digital footprints. Thus, the ethical dimension serves as a normative foundation that guides digital leadership practices.

Furthermore, the analysis identified the emergence of various ethical dilemmas in the use of digital technology, particularly those related to monitoring practices, performance evaluation, and data privacy protection. Principals are in a position to balance the need for data-based accountability with the obligation to protect the individual rights of school members. This finding supports Zhu et al.'s (2023) argument that ethical decision-making often occurs in situations of value conflict and information uncertainty. In the elementary school context, these dilemmas are further complicated by the involvement of students, who are a highly vulnerable group. Therefore, digital-ethical leadership requires a mature, reflective, and sensitive capacity for ethical judgment to address the social implications of each decision (Yukl et al., 2020; Abassi, 2025).

The contextual dimensions of school culture appear to play a significant role in shaping the findings of this study. Cultural patterns that tend toward collectivism and bureaucracy encourage principals to prioritize deliberative decision-making, maintain harmonious relationships, and consider social legitimacy within the school environment. These findings confirm Hallinger and Kovačević's (2021) view that the effectiveness of educational leadership in Asia is largely determined by sensitivity to local cultural values. Therefore, digital leadership practices cannot be understood independently of the social norms and value systems that exist within the school community. Therefore, their implementation is situational and cannot be generalized across contexts (Hallinger, 2020; Weis & Vukasović, 2025).

In addition to cultural influences, variations in teachers' digital competency emerge as a critical determinant of the successful implementation of digital-ethical leadership. In this context, principals function not only as strategic decision-makers but also as learning agents who facilitate the strengthening of human resources' digital capacity. These findings reinforce the argument that digital leadership requires leaders to play a pedagogical role in fostering digital literacy and building a collaborative learning culture within the school environment (Jimerson et al., 2021; Schildkamp et al., 2020). Without ongoing support and mentoring, the use of technology risks widening internal gaps among educators. Therefore, digital-ethical leadership must be accompanied by an inclusive professional development strategy focused on organizational justice.

The integration of digital and ethical leadership manifests in principals viewing technology as a tool to support decision-making rather than a substitute for human judgment. Research indicates that face-to-face interactions remain a priority, particularly for strategic and sensitive decision-making. This pattern affirms that relational dimensions, social trust, and the quality of interpersonal relationships remain the primary foundations of educational leadership practice (Leithwood et al., 2020; Sheninger, 2020). Thus, technology serves as a capacity enhancer for leadership, not a replacement for the leadership role itself. This configuration represents the character of digital-ethical leadership: humanistic, relational, and centered on human values.

From an evidence-based decision-making perspective, research indicates that the use of digital technology increases speed and precision in information processing but does not inherently guarantee moral or normative decision quality. This finding aligns with the view that data is not neutral but always requires interpretation through a specific value system (Datnow & Park, 2021; Brown et al., 2022). Therefore, digital-ethical leadership in this study is understood as an integrative practice that synergizes empirical evidence, ethical considerations, and a long-term educational vision orientation. This approach is increasingly relevant in addressing the complexities of educational governance in the era of artificial intelligence and the evolving digital ecosystem (Fullan et al., 2024).

Conceptually, the descriptive findings of this study enrich the body of digital leadership studies by emphasizing ethics as a fundamental dimension rather than merely an additional attribute. The formulation of digital-ethical leadership identified in the context of elementary schools in Indonesia provides a theoretical contribution to the development of leadership models that are contextual, pluralistic, and not centered on Western paradigms. This contribution is relevant to responding to criticisms of the hegemony of the Global North perspective, which has dominated international educational leadership discourse (Hallinger &

Kovačević, 2021; Pettersson, 2021). Thus, this study broadens the epistemic scope of digital leadership by presenting perspectives from developing countries.

However, interpreting the findings at this descriptive stage requires caution, given the limited number of informants and the study's geographic scope. The specificity of the local context limits the generalizability of the findings, but it is also a key strength in generating an in-depth, contextually meaningful understanding. Therefore, further research is recommended to test and compare these digital-ethical leadership patterns across various educational levels and regions. Such efforts are expected to strengthen the external validity of the proposed model and support the sustainable development of digital-ethical leadership to improve the quality of decision-making and educational governance in the era of digital transformation (Abassi, 2025; Weis & Vukasović, 2025).

Analytical Phase: Thematic Synthesis and Integration of Mixed Methods Findings

Thematic analysis of interview data revealed a configuration of themes that highlighted the close relationship among digital leadership, ethical leadership, and educational decision-making. The first dominant theme was the use of digital data as a rational basis for decision-making, where principals used computer-based assessment results, grade management applications, and digital archives to develop learning follow-up programs. This finding indicates a paradigm shift in educational decision-making, from practices based on intuitive considerations to approaches grounded in empirical evidence from digital systems, as emphasized in studies on evidence-based decision-making (Schildkamp et al., 2020; Datnow & Park, 2021).

The second main theme that consistently emerged positioned ethical leadership as a normative framework for the use of digital technology. Informants emphasized the importance of prudence in data management, particularly in protecting student privacy and ensuring fairness for teachers facing technical limitations. The various ethical dilemmas that emerged in the implementation of attendance systems, digital assessments, and the use of artificial intelligence demonstrated that technology creates a space of moral ambiguity that demands the reflective capacity of school principals in decision-making. These findings reinforce the view that digital leadership without an ethical foundation risks producing morally problematic policies and practices (Brown & Treviño, 2022; Zhu et al., 2023).

This study integrated qualitative and quantitative data through a building approach, using interview results as the conceptual foundation for developing the digital-ethical leadership questionnaire. Analysis of Likert-scale responses (1–5) from three comparison school principals outside the Bojonegoro area revealed a tendency toward high agreement with statements emphasizing transparency, the use of digital data, and ethical considerations in decision-making. Although the number of respondents in the quantitative phase was relatively limited, these response patterns served as initial validation of the constructs generated in the exploratory phase rather than as a basis for statistical generalizations (Creswell & Plano Clark, 2021; Sugiyono, 2022).

SPSS Output Results

Table 1. Descriptive Statistics

	N	Minimum	Maximum	Mean	Standard Deviation
Q1	3	4	5	4.67	0.577
Q2	3	4	5	4.33	0.577
Q3	3	4	5	4.67	0.577
Q4	3	4	5	4.67	0.577
Q5	3	4	4	4.00	0.000
Q6	3	4	5	4.33	0.577
Q7	3	4	4	4.00	0.000
Q8	3	4	4	4.00	0.000
Q9	3	4	5	4.33	0.577
Q10	3	4	4	4.00	0.000
Q11	3	4	5	4.33	0.577

	N	Minimum	Maximum	Mean	Standard Deviation
Q12	3	4	4	4.00	0.000
Q13	3	4	4	4.00	0.000
Q14	3	4	4	4.00	0.000
Q15	3	4	4	4.00	0.000
Total_Score	3	61	65	63.33	2,082
Valid N (Listwise)	3				

Descriptive analysis of the 3 trial respondents showed that all items Q1–Q15 had high averages of 4.00-4.67 on a scale of 1–5. Several items, such as Q5, Q7, Q8, Q10, and Q12–Q15, had a standard deviation of 0.000, indicating that respondents' answers were uniform. The total instrument score averaged 63.33 out of a maximum of 75, with a standard deviation of 2.082. Due to the very limited number of respondents, these results are used only to assess the readability of the items and cannot be generalized. Items with SD=0 need to be reviewed to differentiate responses in a larger sample.

Table 2. Total Frequency Distribution

	Frequency	Percent	Valid Percent	Cumulative Percent
Valid 61	1	33.3	33.3	33.3
64	1	33.3	33.3	66.7
65	1	33.3	33.3	100
Total	3	100	100	

The frequency table shows that of the three trial respondents, each obtained a different total score: 61, 64, and 65 out of a maximum score of 75. The three scores have the same proportion of 33.3%. Cumulatively, 66.7% of respondents obtained a score above 61, and all respondents were in the high-score range (>60). This distribution indicates a tendency for instrument scores to fall in the high category, although variations between subjects remain visible. Due to the limited number of respondents, this distribution only describes the initial pattern and does not represent the population.

To ensure the internal consistency of the pilot questionnaire items, a reliability test was conducted using Cronbach's Alpha on 15 items. This test measures the extent to which items within a dimension measure the same construct. The test results are presented in Table 3 below

Table 3. Reliability Statistics (Reliability Test)

Cronbach's Alpha	N of Items
.846	15

The Cronbach's Alpha value was 0.846, indicating that the 15-item instrument had good internal consistency and was reliable. According to general criteria, an alpha value >0.80 indicates high reliability, so the items can be considered stable in measuring the intended construct. Although the number of trial respondents was still very limited (N=3), these results provide an initial indication that the instrument is suitable for use in the main data collection stage. Further testing with a larger sample is still needed to confirm the stability of this reliability coefficient.

Based on the results of descriptive statistical analysis using SPSS software on three school principals, namely SDN Bareng II Ngasem, SDN Mediyunan I Ngasem, and SDN Jampet Ngasem, an initial picture was obtained regarding the level of implementation of digital-ethical leadership in each educational unit. In general, the average value (mean) for all statement items ranges from 4.00 to 4.67 on a measurement scale of 1–5. This range of values reflects a high level of agreement, indicating that the principals have a very positive perception of the digital-ethical leadership indicators measured in this study.

An interesting aspect emerged in the analysis of data homogeneity, as indicated by the standard deviation values. Several statement items, particularly Q5, Q7, Q8, Q10, Q12, Q13, Q14, and Q15, showed a standard deviation value of 0.000. This finding indicates complete uniformity of responses among all respondents, with

each principal agreeing on the same level (score 4). This condition indicates strong normative consensus regarding the dimensions of digital morality, particularly regarding ethical role models and the moral responsibility of school leaders. Thus, it can be concluded that there are no significant differences in perceptions among respondents regarding the principal's role as a model of digital ethics in educational leadership.

The highest mean score was recorded in the Digital Integrity dimension, with a mean of 4.67, particularly for items Q1 (data confidentiality protection), Q3 (responsibility for the impact of technology use), and Q4. For these indicators, the majority of respondents gave the maximum score (5/strongly agree), reflecting a very strong level of commitment to teacher and student personal data security and to leadership accountability. These findings indicate that integrity in digital information management is a fundamental principle consistently upheld by school principals in their leadership practices.

Based on the accumulation of individual scores ranging from 61 to 65 out of 75, variations in the intensity of respondents' digital-ethical leadership attitudes are evident. Respondent Martin obtained the highest aggregate score (65), indicating a highly progressive and responsive leadership orientation across all dimensions of digital leadership. In contrast, Respondent Nurwanti demonstrated a relatively moderate but stable response pattern with a total score of 61, reflecting consistent attitudes in the application of digital-ethical leadership principles. Overall, these findings indicate that digital-ethical leadership practices at the research site have reached a relatively mature and conducive state, where the use of technology can be harmonized with humanitarian values and ethical considerations.

Conceptually, the interrelationships among variables indicate that digital leadership serves as a structural enabler, providing decision-making capacity and infrastructure. In contrast, ethical leadership serves as a normative framework that guides the use of technology and data. In this configuration, evidence-based decision-making serves as an operational mechanism that bridges the digital and ethical dimensions, ensuring that the resulting decisions are not only efficient and grounded in empirical rationality but also morally legitimate. The synthesis of these three elements yields a digital-ethical leadership model that is contextual and adaptive, particularly for elementary schools operating under limited infrastructure and resources.

DISCUSSION

Digitalization in educational leadership has triggered a fundamental shift in the way principals make decisions, moving from a predominantly intuition-based approach to one increasingly supported by data and technology. This research finding indicates that principals are beginning to utilize a variety of digital tools, including school management systems and assessment data, as a basis for strategic policy formulation. This orientation aligns with the data-informed decision-making approach, which views data as a means of professional reflection and strengthening substantive judgment, rather than simply as an instrument of administrative oversight (Schildkamp et al., 2020; Datnow & Park, 2021). However, educational data cannot be understood as value-free, as specific normative frameworks constantly influence its production and interpretation processes. Therefore, digital leadership practices inherently require an ethical foundation for decision-making (Brown & Treviño, 2022; Zhu et al., 2023).

Furthermore, this study's results confirm that a principal's digital leadership extends far beyond the mere technical mastery of technological devices. Instead, digital leadership demands reflective skills and moral judgment in interpreting data and formulating its consequences for the entire school community. Informants emphasized that strategic decisions are not entirely delegated to digital systems, but rather through a dialogical process that takes into account empathy and individual context. These findings reinforce critiques of technocratic tendencies that risk simplifying the complexity of education into mere quantitative indicators and performance outcomes (Pettersson, 2021; Weis & Vukasović, 2025). Thus, digital-ethical leadership can be understood as a hybrid leadership model that integrates technological rationality with moral wisdom in educational decision-making.

From an ethical leadership perspective, this study demonstrates that the principles of honesty, fairness, transparency, and moral accountability serve as the normative foundation for principals' decision-making

processes. These principles are articulated in the practice of formulating and documenting policies, providing transparency in information to teachers and parents, and exercising prudence in the management and use of students' digital data. These findings reinforce the conceptualization of ethical leadership, which views school leaders as key actors in maintaining the integrity and moral values of educational institutions (Berkovich & Eyal, 2021; Brown & Treviño, 2022). In the digital ecosystem, principals' ethical responsibilities become increasingly complex as issues of privacy, data security, and unequal access to educational technology increase (Abassi, 2025; Azmi et al., 2026).

Furthermore, this study identifies ethical dilemmas arising from technology-based monitoring and evaluation practices. Principals face a trade-off between demands for accountability driven by data use and the obligation to protect the individual rights of teachers and students. This situation indicates that ethical decision-making rarely occurs in a dichotomous manner, but rather exists along a spectrum of ambiguity, fraught with value conflicts and institutional pressures. This finding aligns with the empirical synthesis of Zhu et al. (2023), which asserts that ethical decisions are often made in situations of uncertainty and limited information. In the context of primary education, this complexity is even more sensitive because it involves students, a vulnerable group that demands a higher level of moral protection (Yukl et al., 2020; Berkovich & Eyal, 2021).

The findings of this study indicate that school culture plays a significant role in shaping digital-ethical leadership practices. The dominance of collectivistic cultures and bureaucratic patterns encourages principals to prioritize deliberative processes, social cohesion, and shared acceptance in strategic decision-making. These findings align with the findings of Hallinger and Kovačević (2021), who emphasized that the effectiveness of educational leadership in Southeast Asia is strongly influenced by sensitivity to cultural context. Therefore, the implementation of digital leadership cannot be treated as a uniform approach but must be adapted to local values and social configurations within the school environment (Hallinger, 2020; Pettersson, 2021).

Furthermore, the integration of digital and ethical dimensions demonstrates that educational leaders position technology as a facilitative tool rather than a substitute for professional and humanitarian considerations. Principals emphasized that direct interaction and interpersonal relationships remain fundamental elements in building trust and legitimacy in leadership. This finding reinforces the argument that effective digital leadership remains grounded in quality human relationships and a clear educational value orientation (Sheninger, 2020; Leithwood et al., 2020). Thus, the success of digital transformation in education is determined more by the capacity for reflective and ethical leadership than by the sophistication of the technology used (Weis & Vukasović, 2025).

The results of this study reveal that disparities in digital competency among teachers remain a structural obstacle to the implementation of digital-ethical leadership. In this context, school principals are required not only to be decision-makers but also to drive digital learning transformation and develop the capacity of school human resources. This finding is consistent with the argument of Jimerson et al. (2021), who emphasize the central role of leadership in building a culture of data literacy and inclusive technology use. Without ongoing mentoring and professional development strategies, technology adoption can deepen internal gaps and give rise to new forms of injustice within the school environment (Schildkamp et al., 2020; Azmi et al., 2026).

From an evidence-based decision-making perspective, this study demonstrates that utilizing digital data can improve the accuracy and efficiency of the decision-making process. However, it does not inherently guarantee the moral quality of decisions. Data still requires interpretation in light of educational goals and underlying human values. These findings reinforce the view that empirical evidence must always be interpreted through an ethical framework and the long-term vision of educational institutions (Brown et al., 2022; Datnow & Park, 2021). Thus, digital-ethical leadership can be positioned as an integrative leadership practice that harmonizes empirical evidence, value orientations, and practical wisdom in educational decision-making (Zhu et al., 2023).

Conceptually, the results of this study enrich the body of digital leadership scholarship by emphasizing the centrality of ethics as a primary foundation, rather than an additional attribute, in leadership practice. The formulation of a digital-ethical leadership model grounded in the context of elementary schools in Indonesia

significantly contributes to the development of more contextually grounded leadership theory. It offers an alternative to the dominance of Western paradigms in educational leadership studies. Thus, these findings respond to criticisms of the hegemony of the Global North perspective, as expressed by Hallinger and Kovačević (2021) and Pettersson (2021), while broadening the discourse on digital leadership through the lens of developing countries.

However, careful interpretation of this study's findings requires consideration of methodological limitations, particularly the number of participants and the relatively limited scope of the study area. The specificity of the local context limits the generalizability of the results, but it also enables an in-depth, contextually grounded understanding. Therefore, further research is recommended to test this digital-ethical leadership model at various educational levels and in more diverse geographic settings. Such efforts are expected to strengthen the model's validity and ensure its continued contribution to improving the quality of decision-making and educational governance in the digital era (Abassi, 2025; Azmi et al., 2026).

The development of digital transformation in the realm of educational leadership has driven a fundamental shift in the decision-making patterns of school principals, from a previously personal, intuitive approach to a more systematic one grounded in data and technology. The findings of this study indicate that school principals are increasingly integrating digital platforms, assessment data, and school management systems as the primary sources for formulating institutional policies. This dynamic aligns with the data-informed decision-making framework, which treats data as a strategic resource to improve the quality of education (Schildkamp et al., 2020; Datnow & Park, 2021). However, the use of digital data in education cannot be understood as a value-free process; rather, it has normative implications and ethical consequences. Therefore, digital leadership practices should be grounded in an ethical framework as a normative foundation for every decision-making process (Brown & Treviño, 2022; Zhu et al., 2023).

Furthermore, the results of this study confirm that the digital leadership of school principals does not merely reflect technical competence in the use of technology, but also includes reflective capacity and moral considerations in interpreting and utilizing data. The informants emphasized that strategic decisions remain the authority of human leadership, taking into account the social context, individual characteristics, and human values inherent in educational practices. These findings reinforce criticism of the technocratic approach in digital leadership, which risks reducing the humanistic aspects of education (Pettersson, 2021; Weis & Vukasović, 2025). Thus, ethical digital leadership can be understood as a form of hybrid leadership that integrates technology-based rationality with moral wisdom in educational management.

Within the framework of ethical leadership, this study's results confirm that the internalization of normative values such as honesty, fairness, transparency, and empathy guides principals' decision-making. These values are manifested in school governance practices, including accountable documentation of decisions, openness of information to stakeholders, and a cautious approach to the management and use of digital data on students and educators. These findings reinforce the concept of ethical leadership that positions educational leaders as guardians and interpreters of institutional moral values (Berkovich & Eyal, 2021; Brown & Treviño, 2022). In the context of digital transformation, these ethical responsibilities become increasingly complex as they intersect with issues of privacy protection, data security, and fairness in access to and use of educational technology (Abassi, 2025; Azmi et al., 2026).

Furthermore, this study reveals ethical dilemmas inherent in the use of digital technology in performance monitoring and evaluation practices. School principals face a dilemma between the demands of data-based accountability and the obligation to protect individual rights and dignity. This condition aligns with the meta-analytical findings of Zhu et al. (2023), which show that ethical decisions are often made in a context of ambiguity and complex value conflicts. At the elementary school level, this dilemma becomes even more sensitive, given that students are a vulnerable group that requires special protection. Therefore, ethical digital leadership practices require mature, reflective, and contextually informed ethical judgment so that the use of technology remains in line with the principles of justice and humanity in education (Yukl et al., 2020; Berkovich & Eyal, 2021).

The school's cultural dimension actively shapes emerging patterns of ethical digital leadership. In the context of education in Indonesia, a collectivist and bureaucratic cultural character encourages school principals to base decision-making on deliberative processes, social cohesion, and mutual legitimacy. These findings expand on Hallinger and Kovačević's (2021) argument regarding the urgency of cultural sensitivity in educational leadership practices in Southeast Asia. Therefore, the implementation of digital leadership cannot be applied uniformly across contexts, but rather requires adaptation to local values and relational dynamics that develop in the school environment (Hallinger, 2020; Pettersson, 2021).

Furthermore, the integration of digital and ethical dimensions in this study shows that technology is understood as a supporting instrument for the leadership process rather than a substitute for human considerations. School principals emphasized the importance of face-to-face interaction for maintaining social relationships, building trust, and fostering school community cohesion. These findings reinforce the view that the effectiveness of digital leadership remains dependent on the quality of interpersonal relationships and clarity of educational values (Sheninger, 2020). Thus, the success of digital transformation in the education sector is determined more by the capacity of leadership to integrate technology with social values and contexts than by the level of technological sophistication itself (Leithwood et al., 2020; Weis & Vukasović, 2025).

This study identifies disparities in teachers' digital competencies as a significant structural barrier to the implementation of ethical digital leadership. This condition places school principals in a strategic role, not only as decision-makers but also as drivers of digital learning and developers of human resource capacity in the school environment. These findings reinforce the argument of Jimerson et al. (2021), who assert that leadership effectiveness is largely determined by its ability to foster a culture of data and inclusive digital literacy. Without systematic mentoring and continuous professional development programs, the use of technology can deepen internal disparities and give rise to new forms of injustice within school organizations (Schildkamp et al., 2020; Azmi et al., 2026).

From the perspective of evidence-based decision making, this study shows that the use of digital data does contribute to increased efficiency and precision in decision making, but does not automatically guarantee the quality of decisions from a moral and value perspective. Data, therefore, requires an interpretation process aligned with educational objectives and ethical principles. This finding affirms Brown et al.'s (2022) view that empirical evidence cannot be separated from the value framework that guides its use. Therefore, ethical digital leadership can be understood as an integrative process that combines empirical evidence, ethical considerations, and a long-term educational vision within a strategic decision-making framework (Datnow & Park, 2021; Zhu et al., 2023).

From a theoretical perspective, this study enriches the study of digital leadership by positioning ethics as a fundamental component rather than an additional attribute. The formulation of a digital-ethical leadership model grounded in leadership practices in Indonesian elementary schools makes a significant contribution to the development of a more contextual and culturally sensitive leadership theory that is not limited to Western contexts. These findings also respond to criticism of the dominance of Northern Global perspectives in educational leadership literature, which often overlooks the complexity of developing country contexts (Hallinger & Kovačević, 2021; Pettersson, 2021). Thus, this study broadens the horizon of the digital leadership discourse through an empirical perspective from the Global South context.

However, the findings must be interpreted with caution, given the study's methodological limitations, particularly the relatively small sample size and limited geographical coverage. The specificity of the local context limits the generalizability of the findings, but it is also a major strength, producing a deep, meaningful understanding rooted in empirical reality. Therefore, further research is recommended to test and develop this ethical digital leadership model across different educational levels and in more diverse regional contexts. These efforts are expected to strengthen the theoretical validity and practical contribution of ethical digital leadership in improving the quality of decision-making and sustainable educational governance in the digital age (Abassi, 2025; Azmi et al., 2026).

CONCLUSION

This study concludes that principals' digital-ethical leadership is a hybrid form of leadership, formed by the intertwining of digital technology use, ethical foundations, and sensitivity to the school's sociocultural context. Empirical findings indicate that principals do not position technology solely as an administrative tool, but rather use it critically and reflectively in educational decision-making. The use of digital data contributes to greater policy rationality and accountability while remaining guided by the values of justice, empathy, and moral responsibility. Thus, the results of this study confirm that the effectiveness of digital leadership in developing countries cannot be separated from its ethical dimensions and accompanying humanitarian orientation (Pettersson, 2021; Zhu et al., 2023).

Furthermore, this study demonstrates that digital-ethical leadership practices remain highly contextual, precluding universal generalization. Limited technological infrastructure, heterogeneity of teachers' digital competencies, and strong collectivist school cultures influence how principals understand and implement digital leadership. Therefore, the resulting leadership model does not place technology at the center of decision-making, but rather treats it as a supporting instrument under the control of human discretion. These findings reinforce criticisms of technologically deterministic approaches to educational leadership and emphasize that sustainable digital transformation must go hand in hand with strengthening ethical values and social relations within the school ecosystem (Hallinger, 2020; Berkovich & Eyal, 2021).

From a theoretical perspective, this research makes a significant contribution to the development of educational leadership studies by formulating a digital-ethical leadership model that synthesizes the concepts of digital leadership, ethical leadership, and evidence-based decision-making within a coherent conceptual framework. The resulting model offers an alternative perspective, emphasizing that ethics is not a complementary dimension but a normative foundation that animates all digital leadership practices. With this approach, this research not only strengthens existing theoretical findings but also broadens the scope of educational leadership theory through the contextual perspective of primary schools in developing countries (Brown & Treviño, 2022; Abassi, 2025).

From a practical perspective, the findings of this study underscore the urgency of simultaneously strengthening school principals' capacity in both digital and ethical literacy. The design of school leadership development programs should be holistic, focusing not only on improving technical competency in technology use but also on strengthening reflective skills for responding to ethical dilemmas that arise in data-driven decision-making. At the policy level, structural support from local governments is a crucial prerequisite, including the provision of adequate digital infrastructure, ongoing professional mentoring for teachers, and the development of ethical guidelines for the use of data and technology in schools. These efforts are necessary to ensure that the digital transformation agenda is fair, inclusive, and long-term.

Another policy implication is the need to strengthen regulations that protect educational data privacy while encouraging responsible technology use. Within this framework, school principals need to be granted proportional professional autonomy to balance administrative demands, digital innovation, and respect for human values. With this approach, digital-ethical leadership can serve as a strategic tool to improve educational quality without neglecting the principles of social justice and the well-being of all school members.

In closing, this study acknowledges limitations related to the region covered and the number of participants, so generalizations of the findings should be made with caution. Nevertheless, the depth of analysis and the consistency of the findings provide a strong empirical foundation for further research. Future research is recommended to test and validate the digital-ethical leadership model through large-scale quantitative designs or comparative studies across regions and educational levels. This will allow the developed model to be further refined and make a broader contribution to the development of educational leadership in the digital era.

REFERENCES

Abassi, R. (2025). *Cyber-ethical leadership in higher education: A practice-based framework for the digital age*. *Journal of Ethics in Higher Education, 4*(1), 1–18. https://jehe.globethics.net/article/view/8994

Abassi, R. (2025). Cyber-ethical leadership in education: Navigating digital responsibility and moral agency. *Journal of Educational Administration, 63*(1), 45–61.

Azmi, A., Arifin, S., & Damayanti, Y. M. (2026). Artificial intelligence in education: Ethical challenges and policy implications for inclusive learning. *Didakta: Journal of Education and Learning, 3*(1), 45–60. https://researchfrontiers.id/didakta/article/view/8

Berkovich, I., & Eyal, O. (2021). Ethical leadership and educational administration: A critical review. *Educational Administration Quarterly, 57*(3), 432–470.

Bond, M. (2020). Schools and emergency remote education during the COVID-19 pandemic: A living rapid systematic review. *Asian Journal of Distance Education, 15*(2), 191–247. https://doi.org/10.5281/zenodo.4425683

Bond, M., Zawacki-Richter, O., & Nichols, M. (2021). Revisiting five decades of educational technology research: A content and authorship analysis. *British Journal of Educational Technology, 52*(4), 1615–1635. https://doi.org/10.1111/bjet.13129

Brown, C., Schildkamp, K., & Hubers, M. D. (2022). Combining the best of two worlds: A conceptual proposal for evidence-informed school improvement. *Educational Research, 64*(2), 155–172.

Brown, M. E., & Treviño, L. K. (2022). Ethical leadership: A review and future directions. *The Leadership Quarterly, 33*(1), 101593. https://doi.org/10.1016/j.leaqua.2021.101593

Brown, T., Chen, Y., & Mehta, R. (2022). Evidence-based decision making in educational leadership. *Educational Management Administration & Leadership, 50*(4), 623–640.

Creswell, J. W., & Plano Clark, V. L. (2021). *Designing and conducting mixed methods research* (3rd ed.). SAGE Publications. Dahliani, Ni Kadek Putri dkk. (2025). Kepala Sekolah sebagai PemimpinTransformasional di Era Digital. *JPIM: Jurnal Penelitian Ilmiah Multidisipliner, 01*(03), 500–510.

Datnow, A., & Park, V. (2021). *Data-driven leadership*. Jossey-Bass.

Fullan, M., Quinn, J., Drummy, M., & Gardner, M. (2024). *Education reimagined: Leading learning in the age of AI*. Corwin.

Hallinger, P. (2020). Leading educational change in East Asia: Challenges for policy and practice. *Journal of Educational Administration, 58*(3), 257– 273.

Hallinger, P., & Kovačević, J. (2021). A systematic review of research on educational leadership and management in Southeast Asia. *Educational Management Administration & Leadership, 49*(1), 3–22.

Harsoyo, R. (2022). Teori Kepemimpinan Transformasional Bernard M. Bass dan Aplikasinya Dalam Peningkatan Mutu Lembaga Pendidikan Islam. *Southeast Asian Journal of Islamic Education Management, 3*(2), 247–262. http://sajiem.iainponorogo.ac.id/sajiem

Hegazy, A., Basha, S. E., Elgammal, N., & Hassan, D. (2026). Strategic digital leadership and ethical decision-making in dynamic educational environments. In *Decision-making in the digital era* (pp. 89–104). Springer. https://doi.org/10.1007/978-3-032-07220-7_6

Jimerson, J. B., Garry, V., Poortman, C. L., & Schildkamp, K. (2021). Leadership for data-informed decision making. *School Leadership & Management, 41*(4–5), 399–420.

Leithwood, K., Harris, A., & Hopkins, D. (2020). Seven strong claims about successful school leadership revisited. *School Leadership & Management, 40*(1), 5–22. https://doi.org/10.1080/13632434.2019.1596077

Muadzin, L. A. & Sunarto. (2025). Kepemimpinan Etis dan Kultural dalam Pendidikan. *Jurnal Manajemen dan Pendidikan Agama Islam*, *3*(2), 184-192. https://doi.org/10.61132/jmpai.v3i2.984

Syukur, Muhammad dkk. (2026). Inovasi Digital Dalam Menejemen Mutu Terpadu Untuk Meningkatkan Kolaborasi Dan Profesionalisme Guru pendidikan Agama Islam.AL *07*(01), 313-324.

Setiabudi, Agung dkk. (2025). Penerapan Model Rasional dalam Pengambilan Keputusan Kepala Sekolah pada Era Kurikulum Merdeka. *Journal of Education and Culture, 5*(3), 19-29. https://ejournal.indrainstitute.id/index.php/jec/index.

Frizdew, B. R. d. (2025). Peran Kepemimpinan Digital Kepala Sekolah Dalam Mengoptimalkan Pembelajaran Berbasis Teknologi Jurnal Kepemimpinan & Pengurusan Sekolah *10*(4), 2273-2284. https://doi.org/10.34125/jkps.v10i4.1211.

Rohmawati, Lutfi & Siti Neng Syamsiah. (2024). Peran Kepemimpinan Transformasional Dalam Meningkatkan Kualitas Pendidikan Di Era Digital. *Jurnal Review Pendidikan dan Pengajaran, 7*(4), 18306-18311. http://journal.universitaspahlawan.ac.id/index.php/jrpp.

Moleong, L. J. (2021). *Metodologi penelitian kualitatif* (Edisi revisi). PT Remaja Rosdakarya.

Pettersson, F. (2021). Education in digital transformation: Global perspectives on the future of education. *European Educational Research Journal, 20*(5), 653–669.

Sakinah, A. P., & Ramadhan, A. M. (2026). The integration of artificial intelligence in school managerial decision-making: Opportunities and challenges. *Jurnal Ilmiah Ilmu Pendidikan, 9*(2), 233–247. http://www.jiip.stkipyapisdompu.ac.id/jiip/index.php/JIIP/article/view/10193

Schildkamp, K., Poortman, C. L., Luyten, H., & Ebbeler, J. (2020). Data-based decision making for school improvement: *Educational Research Review, 29*, 100316.

Sheninger, E. (2020). Digital leadership in education: Transforming learning for the digital age. *International Journal of Leadership in Education, 23*(1), 1–15. https://doi.org/10.1080/13603124.2019.1623922

Sugiyono. (2022). *Metode penelitian kombinasi (mixed methods)*. Alfabeta.

Weis, L., & Vukasović, T. (2025). The impact of artificial intelligence on leadership: Perspectives from leadership experts. *Agora International Journal of Educational Sciences, 6*(1), 15–29. https://univagora.ro/jour/index.php/aijes/article/view/7347

Yukl, G., Mahsud, R., Hassan, S., & Prussia, G. E. (2020). An improved measure of ethical leadership. *Journal of Leadership & Organizational Studies, 27*(2), 123–135.

Zhu, W., Liao, Z., Yam, K. C., & Johnson, R. E. (2023). Ethical leadership and decision making: A meta-analytic review. *Journal of Applied Psychology, 108*(1), 1–25. https://doi.org/10.1037/apl0001023