Educational Leadership Strategies for Overcoming Digital Resistance in Schools

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Abstract

Digital transformation in education is often hindered not by infrastructure constraints, but by resistance to change from human resources. This resistance can take various forms, such as technological anxiety, adaptive reluctance, and passive rejection of new digital systems, which pose significant challenges for school management. This study aims to explore effective leadership strategies for reducing digital resistance and promoting an adaptive organizational culture in schools. Using a qualitative approach based on a literature review, this study identifies the root causes of resistance, which include the phenomena of technostress, concerns about increased workload, and low digital self-efficacy among educators and educational staff. The results show that traditional top-down leadership approaches have proven ineffective in the digital age. Therefore, this study recommends a multidimensional leadership approach that integrates participatory decision-making (bottom-up approach), personalized digital mentoring, and strategic recognition for digital drivers in schools. The success of this transformation is highly dependent on leaders' ability to prioritize empathetic communication and provide continuous support to ensure inclusive and sustainable technology adoption. This study concludes that human resource-oriented leadership strategies are a key factor in creating educational institutions that are resilient, innovative, and aligned with Sustainable Development Goal 4 (SDGs 4).

Keywords; Educational leadership; Digital transformation; Digital resistance; Digital self-efficac

Introduction

In the modern era, digital transformation in education has become an urgent necessity. This is because the rapid development of information and communication technology has changed the global education landscape (Chen & Kouhsari, 2025). The digital era requires educational institutions to integrate technology not only as a technical tool, but as an integral part of comprehensive organizational transformation (Dikdik et al., 2025). Therefore, digital transformation in education is not merely the use of the latest technological devices. It describes a profound change in the traditional paradigm that encompasses teaching methods, organizational structures, and school culture (Febrianto et al., 2024). However, in its implementation in schools, digital transformation often faces resistance from various stakeholders, particularly educators and educational staff. In this context, educational leadership plays a strategic role in overcoming barriers to change and facilitating the effective use of technology.

Resistance to change is one of the phenomena that often arises in the process of digital transformation, especially in schools. However, currently, resistance is not only directed at change, but also stems from concerns related to the application of technology in pedagogical practices. There are various psychological and technical factors that can hinder the digital transformation process, such as anxiety due to individuals' inability

to adapt to ICT (digital anxiety/technostress), low levels of individual confidence in using ICT (digital self-efficacy), perceptions of increased workload, and fears of losing relevance in the digital ecosystem (Fernández-Batanero et al., 2021). Without proper handling, resistance among educators and educational staff can lead to failed technology investments and hinder the overall effectiveness of the learning process in schools. Therefore, an educational leadership approach is needed that not only focuses on infrastructure procurement but is also capable of managing psychological and organizational cultural aspects in order to transform resistance into active support for digital innovation.

In practice, leadership in educational institutions today still tends to focus on the provision of technical infrastructure rather than the management of psychological and organizational cultural aspects. Most school leaders still rely on traditional leadership approaches that are instructional and top-down in nature (Nashrullah et al., 2025) explain that school leaders often only act as conduits for instructions from the central government to educators and educational staff (one-way), so they feel administratively burdened without really understanding the pedagogical value of the technology (Gkrimpizi et al., 2023). In fact, in the digital age, the top-down approach has proven to be ineffective in dealing with digital transformation. This is because this approach tends to ignore the emotional aspects and aspirations of technology implementers, which will trigger greater resistance in the school environment (Hubbart, 2023). Therefore, in the digital age, the approach of educational leaders must shift from regulating change to facilitating change through the active involvement of educators and educational staff.

Several studies reveal that innovative and open leadership (open innovation mindset) plays an important role in driving digital transformation in schools (Juric et al., 2026). However, it needs to be combined with effective knowledge management in order to overcome resistance and facilitate acceptance of change. In addition, based on the Job Demands-Resources (JD-R) theory, it shows that the personal resources of leaders, such as digital self-efficacy and social intelligence, also influence the success of digital transformation in schools (Fernández-Batanero et al., 2021).

Previous studies have shown that educational leadership plays an important role in digital transformation in schools (Peng et al., 2024). However, research that specifically examines leadership strategies to overcome digital resistance, especially in terms of the psychological and organizational culture aspects among educators and educational staff, is still limited, thus requiring further elaboration. This study aims to fill this gap by exploring adaptive and effective educational leadership strategies in overcoming such resistance. The main focus of this study is to identify leadership models that are able to balance job demands with resource support for educators and educational staff.

The results of this study are expected to contribute both theoretically and practically. Theoretically, this study is expected to enrich the literature on change management in educational institutions. Practically, this study is expected to serve as a strategic guide for school leaders in realizing sustainable, inclusive digital transformation that is in line with the achievement of SDG 4.

Methodology

This study uses a qualitative approach with a descriptive-analytical literature review method. The literature review method is the approach used in this article to collect and analyze information from various relevant sources (Kafa, 2025). This method was chosen to explore in depth the concepts of digital resistance and educational leadership strategies through a synthesis of various theories and previous research results. The data

used in this study are secondary data obtained from reputable scientific journals, textbooks, educational policy reports, and international conference proceedings.

The research stages include:

1. Problem Identification: Determining the locus of research on the phenomenon of digital resistance in the school environment.
2. Data Collection: Literature searches were conducted through academic databases such as Google Scholar, Scopus, and ScienceDirect using the keywords: digital resistance, school leadership, technostress, transformational leadership, and digital transformation in education. The search was limited to publications from 2021 to 2024 to capture recent developments in the field.
3. The collected literature was filtered based on inclusion and exclusion criteria. Inclusion criteria include peer-reviewed journal articles, books, policy reports, and conference proceedings discussing digital resistance, leadership in education, and digital transformation in schools. Exclusion criteria include articles not related to educational leadership, non-academic publications, duplicated articles, and studies without sufficient theoretical or empirical relevance.
4. Data Analysis: The collected literature was analyzed using content analysis techniques to identify patterns, obstacles, and effective leadership strategies.
5. Synthesis: The results of the analysis were then synthesized into a multidimensional leadership framework as a solution to the problems identified.

Results and Discussion

This section presents the results of an in-depth analysis of the phenomenon of digital resistance in schools and formulates relevant leadership strategies to overcome it. Digital transformation in educational institutions is a complex process involving infrastructure, organizational policies, and the psychological conditions of human resources. Through a synthesis of literature and observations of current educational phenomena, the discussion will begin by examining the root causes of digital resistance, which often serve as major obstacles to school progress.

The discussion will then evaluate why traditional top-down leadership models have proven ineffective in managing change in the digital age. This study then offers a multidimensional leadership strategy framework that is humanistic and adaptive. This framework is designed to bridge the gap between technological demands and the psychological well-being of educators and educational staff, in order to create a school ecosystem that is ready to face future challenges in a sustainable manner.

The Root Causes of Digital Resistance and Its Implications

Resistance to change is one of the main factors that determines the success or failure of digital transformation. In the school environment, digital resistance is not merely a rejection of technology, but is rooted in various interrelated internal and external factors, ranging from the psychological factors of educators and educational staff, technical factors, to organizational factors. Based on the literature, the root causes of this resistance can be categorized into several main factors:

1. Psychological Factors (Personal)

Psychological factors are aspects related to an individual's mental state, emotions, and perceptions of digital transformation. Some of the main root causes of resistance based on psychological factors include:

1) Technostress and Digital Invasion

Technostress is an individual psychological response in the form of feelings toward the presence, demands, changes, and pressures of technology in the work environment. This phenomenon arises when the demands of technology exceed personal resources, organizational capacity, or available time (Karakose et al., 2024). In the school environment, technostress arises when educators and educational staff experience mental fatigue and stress due to the demands of excessive teaching and administrative workloads (Liu et al., 2024). This condition makes it difficult for individuals to adapt to new pedagogical methods and constantly updated technology.

In addition to causing mental fatigue, technostress can also lead to digital invasion in an individual's life. Digital invasion is the feeling of pressure experienced by individuals when they must always be available online outside of working hours. This occurs because technology blurs the boundaries between work and personal life, also known as techno-invasion. Other main dimensions of technostress that are interrelated include techno-overload, which is the demand to work faster, longer, and in greater quantities; techno-complexity, which is the perception that new technology is too complicated and difficult to understand; and techno-uncertainty, which is the feeling of being left behind due to constant technological changes (Karakose et al., 2024).

2) Digital Anxiety

Digital anxiety is a psychological response in which individuals feel fear or worry about failing when using technology in the workplace. In schools, this phenomenon occurs when educators and educational staff have to complete computer-based work or tasks but feel unsure about their technical abilities (Nashrullah et al., 2025). In addition, educators and educational staff often feel that new technologies such as Learning Management Systems (LMS) are too complicated to use and will only add to their workload (Ören & Atik, 2025). Therefore, this anxiety significantly hinders the digital transformation process because it triggers a reluctance to adopt new technologies. Individuals experiencing this condition tend to resist change and have difficulty undergoing digital transformation (Fernández-Batanero et al., 2021).

3) Digital Self-Efficacy

Digital self-efficacy is a psychological response in the form of an individual's belief in their ability to use technology effectively (Fernández-Batanero et al., 2021). In general, this aspect has a significant positive impact on accelerating digital transformation. However, if an individual's confidence or belief in their ability to innovate is low, it will become a major obstacle to organizational change (Liu et al., 2024). In a school environment, low self-efficacy in using technology can increase anxiety and hinder educators and educational staff from integrating technology into learning [12-13]. This is because they tend to avoid using digital devices if they feel unable to operate them effectively. In addition, lack of experience and past technical failures often reduce this confidence, which then triggers anxiety and avoidance behavior (Scholkmann, 2021). As a result, this condition hinders educators and educational staff from improving the necessary digital competencies.

2. Technical Factors

Technical factors are aspects related to competency or skill gaps and infrastructure availability in digital transformation. Some of the main root causes of resistance based on technical factors include:

1) Inadequate Infrastructure

Infrastructure is one of the main causes of resistance based on technical factors. To date, Indonesia still faces the challenge of a digital divide, characterized by disparities in technology access and internet network stability between schools in urban areas and remote areas (Singun, 2025). In addition, schools that already have basic infrastructure often still experience technical obstacles. Common logistical problems include low internet speeds, hardware damage, and high software licensing and maintenance costs (Sunu, 2022). These problems can clearly cause fatigue and resistance among educators and educational staff in using technology.

2) Lack of Digital Literacy and Information and Communication Technology (ICT) Skills

Digital literacy and ICT skills are key foundations for successful digital transformation. Conversely, low competence in these areas is often a major factor in organizational change failure. In schools, limited digital literacy and ICT skills among educators and educational staff are a major obstacle. This is because it makes it difficult for them to adapt to the speed of technological change and integrate it into the learning process (Dikdik et al., 2025). This technical inability can trigger low self-confidence and digital anxiety, which ultimately leads to resistance to the use of technology. In addition, differences in skill levels among educators and educational staff can also create uncertainty in adopting digital innovations in schools (Ören & Atik, 2025).

3) Lack of Relevant and Continuous Training

Relevant and continuous training is fundamental to the success of digital transformation. Conversely, the lack of appropriate training is often a major factor in the failure of organizational change. In the school environment, educators and educational staff require continuous competency development. If the training provided is not relevant and continuous, they will feel incompetent because the material presented often does not address specific administrative or managerial needs [10, 16]. This feeling of helplessness due to a lack of training can trigger stress and mental fatigue, which ultimately leads to resistance (Supriadi & Suryana, 2021). In addition, the lack of structured training causes educators and educational staff to feel less capable of effectively integrating digital tools into the curriculum (Liu et al., 2024).

3. Organizational Factors

Organizational factors are aspects related to how the environment or system hinders digital transformation. Some of the main root causes of resistance based on organizational factors include:

1) Management Structure and Policy

Management structure and policy are aspects related to the formal management of an organization. The main obstacles to digital transformation in schools from this dimension include workload and time constraints (Liu et al., 2024). Educators and teaching staff are often overwhelmed by teaching demands and administrative tasks, leaving them without sufficient energy or time to learn new digital processes. In addition, rigid organizational structures that neglect welfare (top-down leadership approach) tend to trigger high resistance (Hubbart, 2023). This is due to the lack of technical and

psychological support, causing educators and teaching staff to feel burdened by the demands of digital change.

2) Work Culture and Organizational Climate

Work culture and organizational climate are aspects related to norms and customs that apply in the school environment. The main obstacles to digital transformation in this dimension include comfort zones and traditional culture (Tanjung et al., 2024). Educators and teaching staff tend to feel secure with old routines that have been tested over many years. This reluctance to change is rooted in the comfort of traditional or conventional practices and the fear of losing job stability (Liu et al., 2024). In addition, obstacles also arise due to social pressure and excessive expectations from stakeholders, such as parents or the community, who demand the rapid implementation of technology (Fernández-Batanero et al., 2021). Without optimal preparation, this pressure actually causes stress that hinders the effectiveness of digital transformation in schools.

In addition to the factors mentioned above, based on Knut Illeris' learning perspective, there are three main phenomena of "non-learning" that are the root causes of resistance:

1. Misperception, which occurs when individuals fail to understand the nature or functionality of new technology, triggering cognitive resistance.
2. Learning defense, which is a rejection that often occurs subconsciously due to threats to professional identity or emotional comfort.
3. Learning resistance, which is an active and conscious rejection of external demands that are perceived as incompatible with individual values. (Schmitz et al., 2023)

Digital resistance that is not taken seriously will cause schools to be slow to innovate. This results in ineffective transformation, as it only touches on administrative aspects without profoundly changing pedagogical practices. The broader impact includes failure to achieve change objectives, budget waste, and the loss of schools' ability to adapt quickly in a competitive era. In addition, the unpreparedness of educators and educational staff in adopting new technologies can reduce the quality of learning and erode the school community's trust in the leadership and technology services provided. Ultimately, this condition hinders student learning outcomes and reduces overall academic and administrative productivity.

Personally, resistance often arises as an individual defense mechanism to protect professional identity. However, this condition actually causes a high emotional burden for educators and educational staff. The gap between technological mastery and high work demands has a negative impact on psychological well-being and physical health. This state of mental distress not only reduces motivation and job satisfaction but also has the potential to damage relationships at school and reduce commitment to the profession. If left unaddressed, this will damage the professional ecosystem of schools and hinder the creation of a healthy, innovative, and collaborative work environment. Therefore, an educational leadership style is needed that can manage the technical needs of the organization alongside the psychological well-being of its members.

The Ineffectiveness of Traditional Top-Down Leadership Approaches

Digital transformation in schools is not merely a technical matter of data transfer or equipment procurement, but rather a fundamental change in organizational paradigm. However, observations in the field

show that many educational institutions still use a traditional leadership model that is vertical and instructive. This top-down approach often assumes that change can be enforced through administrative instructions and formal policies without considering other aspects.

The ineffectiveness of this traditional model is a major factor that reinforces digital resistance in school environments. Rigid leadership fails to bridge the gap between the organization's use of digital technology and the reality of individual workloads and anxieties. As a result, this approach triggers resistance, mental fatigue, and a decline in trust in school management. The reasons why this approach is no longer relevant in the face of digitalization are as follows:

1. Limitations of Strategic Vision and Holistic Understanding
   Traditional leadership often operates without an integrated digital vision, resulting in transformation without a clear direction. Leaders in this model tend to get caught up in short-term problem-solving rather than long-term strategic planning (Dikdik et al., 2025). The lack of explanation regarding the vision that connects technology with institutional goals makes educators and educational staff view digital change as merely an administrative disruption. In addition, limited digital literacy at the leadership level often hinders understanding of how technology can fundamentally change the education model, resulting in support provided to staff becoming less relevant (Febrianto et al., 2024).
2. Rigid and Fragmented Hierarchical Structure
   A highly centralized and bureaucratic organizational structure hinders schools' ability to respond to rapid technological changes. This vertical leadership model creates barriers between units that hinder collaboration (Liu et al., 2024). Communication breakdowns often occur, with leaders viewing transformation as solely the responsibility of technicians, while IT teams lack the authority to change academic policies. As a result, leaders struggle to manage the uncertainty and internal conflicts that arise during the transition process (Ören & Atik, 2025).
3. Focus on Technocentrism and Quick Fixes
   Many traditional leaders adopt a mindset that assumes that simply providing hardware infrastructure will automatically improve the quality of education. This overly technical focus treats technology as merely an administrative tool, without considering the pedagogical aspects and organizational cultural transformation (Dikdik et al., 2025). The tendency to prioritize physical procurement over investment in human capacity development results in shallow technology integration (Liu et al., 2024). This ignores the fact that digital transformation is essentially about knowledge management and behavioral change, not just installing new devices.
4. Instructive Approach and Threat to Autonomy
   Technological decisions that are imposed instructively without dialogue tend to create skepticism. A rigid top-down approach makes educators and educational staff feel that their job security is threatened, which ultimately results in technology being physically available, but learning practices remaining stuck in old patterns (Vásquez-Pajuelo et al., 2024). Leaders' failure to establish two-way communication causes a gap between central policy and classroom implementation. When combined with the failure of previous projects, this makes resistance even more entrenched (Ören & Atik, 2025).
5. Failure of Human Aspect Management and Digital Justice
   Traditional leaders often fail to provide a safe space for staff to discuss their concerns, resulting in hidden resistance that undermines the momentum for change (Hubbart, 2023). Without strong digital self-efficacy, it is difficult for a leader to inspire behavioral change in their members (Verma, 2025).

In addition, old-school leadership tends to ignore social contexts such as access gaps, which actually risk widening the quality gap in education. Given that most transformation failures stem from human aspects, traditional approaches that ignore psychological and social factors are bound to reach a dead end.

Multidimensional Leadership Strategy: Framework and Implementation Mechanisms

The failure of traditional leadership models in addressing psychological and technical aspects in the digital age underscores the need for a reorientation toward a more adaptive approach. To overcome digital resistance rooted in technostress and low self-efficacy, a multidimensional leadership strategy that goes beyond mere administrative instructions is needed. This strategy does not view technology as something separate, but rather as part of a human ecosystem that requires empathetic, collaborative, and data-driven leadership.

Multidimensional leadership in this context is an integrated framework that aligns technological demands (job demands) with the availability of organizational support (resources). Through this approach, school leaders no longer act as sole authorities who give orders, but rather transform into facilitators of change and digital culture. The main focus of this strategy is to build a psychologically safe work environment where innovation is encouraged, and technical failures are seen as part of the collective learning process. The following are the main components of the multidimensional leadership framework and its implementation mechanisms in the school environment:

1. Integration of Digital Vision and Transformational Leadership
   Digital leadership (e-leadership) requires leaders to play an active role as visionaries who are able to integrate technology into the curriculum while strengthening organizational values (Veseli et al., 2025). Through the transformational leadership model, leaders combine a top-down strategic vision with bottom-up empowerment of educators and educational staff (Warrick, 2023). This strategy has been proven to significantly increase the confidence and skills of educators and educational staff. Studies have shown that digital leadership has up to a 79.8% influence on the acceptance of technology by educators and educational staff (Witthöft et al., 2024). Leaders must be able to provide intellectual stimulation by guiding staff to solve old challenges using innovative methods to support a sustainable learning culture transformation.
2. Strengthening Self-Efficacy and Social Intelligence
   Leadership efficacy is the main foundation for inspiring behavioral change in the entire school community. Leaders must first increase their confidence in using technology in order to create an innovative environment. This confidence must be accompanied by social intelligence to manage staff's emotional responses to new technology empathetically (Fernández-Batanero et al., 2021). By understanding staff's digital anxiety, leaders can create a psychologically safe environment, limit after-hours communication to maintain digital well-being, and provide personal support that can mitigate technostress.
3. Distributed Models and Horizontal Collaboration
   The high complexity of technology means that leadership can no longer be centered on a single individual, but must shift to a distributed leadership model. This strategy involves forming teams that share responsibility for handling technical, pedagogical, and administrative aspects simultaneously (Wollscheid et al., 2025). This collaborative and horizontal approach encourages cooperation between

units such as IT and academic teams, as well as external partnerships to enrich school resources. Involving educators and educational staff in decision-making not only increases commitment to change but also creates a collaborative culture that mediates performance improvement (Vásquez-Pajuelo et al., 2024).

4. WSTP Framework and Knowledge Management
   Effective digital strategy implementation requires comprehensive guidance, such as the WSTP Model. This model includes the following dimensions: Will (building a positive attitude), Skill (technical training), Tool (infrastructure provision), and Pedagogy (integration of technology in teaching) (Warrick, 2023). Within this framework, leaders act as knowledge brokers through knowledge management that facilitates information exchange (Juric et al., 2026). Adaptive leaders also need to explore the integration of technologies such as AI to automate administrative tasks, thereby freeing up more time for leaders to focus on professional mentoring and coaching-style supervision.
5. Operational Mechanisms: PDCA and the Role of Change Champions
   To ensure sustainability, schools need to implement the Plan-Do-Check-Act (PDCA) cycle as a systematic framework for data-driven planning and periodic evaluation. This strategy has been proven to improve the performance of educators and educational staff by up to 77.3% (Singun, 2025). In the field, the presence of credible change agents is highly effective in reducing resistance and providing personal support to colleagues who are struggling (Ören & Atik, 2025). Transformative leaders must have key competencies as inspirational communicators, innovators, facilitators of learning environments, and leaders who constantly update their understanding of technology.

Conclusion

This study shows that digital resistance in the school environment is not merely a rejection of technology, but rather a complex phenomenon rooted in psychological, technical, organizational, and cultural dimensions. Factors such as technostress, digital anxiety, and low digital self-efficacy among educators and educational staff have been proven to be major obstacles, exacerbated by inadequate infrastructure and excessive workloads.

Furthermore, it was found that traditional top-down and instructional leadership approaches are no longer effective in managing digital change. This model often triggers resistance and reduces the psychological well-being of school members because it neglects the aspects of autonomy and human management. As a solution, the implementation of a Multidimensional Leadership Strategy that integrates transformational vision, distributed leadership, and a systematic operational framework (such as the WSTP Model and the PDCA cycle) is a must. This strategy bridges the gap between digital demands and humanistic needs, thereby creating an adaptive and innovative school ecosystem.

Based on the results of the discussion, here are some practical recommendations for stakeholders:

1. For School Principals: It is necessary to reorient leadership styles from administrative authority to empathetic change facilitators. It is important to build psychological security in schools so that educators and educational staff feel confident to innovate without fear of making technical mistakes.

2. For Educators and Education Personnel: It is recommended to be active in peer-learning communities to collaboratively improve digital literacy, which will ultimately increase digital self-efficacy.
3. For Education Institutions/Agencies: Technology training should not only focus on technical skills (hard skills), but also include digital stress management and pedagogical integration that is relevant to the actual workload in the fiel

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