



Strengthening Teacher and Staff Management in Inclusive Schools through Digital Technology Integration for Deep Learning

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ABSTRACT

Inclusive education requires school management to be prepared to effectively and equitably manage student diversity. One of the main challenges faced by inclusive schools is the limited management of educators and education personnel (GTK) and the less-than-optimal strategic use of digital technology. This article aims to examine the strengthening of educator and education personnel management in inclusive schools through the integration of digital technology to support in-depth learning. The writing method uses literature studies and analysis of academic material related to GTK management and digital-based inclusive education. The results of the study indicate that the integration of digital technology in GTK management can improve the effectiveness of data collection, coordination, documentation of inclusive services, and support data-based decision-making. Thus, digital technology plays a crucial role in strengthening GTK pedagogical competencies and realizing in-depth inclusive learning.

INTRODUCTION

Inclusive education is an educational approach that places the principles of justice and equality as the primary foundation in the provision of educational services (UNESCO, 2017; OECD, 2018). This approach emphasizes that every student, including those with special needs, has the right to access quality education without discrimination (Ainscow, 2020). Inclusive education focuses not only on admitting students with special needs into regular schools but also on providing learning systems, policies, and practices that optimally accommodate the diverse characteristics and needs of students (Florian & Black-Hawkins, 2011; Ainscow, Booth, & Dyson, 2006).

The implementation of inclusive education requires comprehensive school readiness, including policy, curriculum, infrastructure, and human resources (Kurniawan & Hidayat, 2019). Inclusive schools are expected to create a welcoming, adaptive, and collaborative learning environment so that each student can develop according to their potential (Mulyasa, 2017). In this context, the role of school management is crucial in ensuring that all supporting components of inclusive education can operate in an integrated and sustainable manner (Bush, 2020; Hallinger & Heck, 2010).

However, in practice, inclusive schools still face various managerial challenges, particularly in managing educators and education personnel (Noor & Sugiyanto, 2021). Many educators lack the necessary competencies to address the diverse learning needs of students, including pedagogical, psychological, and social aspects (Directorate General of Teachers and Education Personnel, 2022). This situation is exacerbated by the limited availability of professional development programs specifically designed to support the implementation of inclusive education (Darling-Hammond et al., 2020).

In addition to educator competency, the management of educational staff also poses a challenge in implementing inclusive education (Noor & Sugiyanto, 2021). Educational staff are often not optimally involved in supporting inclusive services, particularly in administration, student data collection, and coordination between school work units (Kurniawan & Hidayat, 2019). As a result, inclusive education services are not yet implemented systematically and in a structured manner, potentially hampering the achievement of inclusive education goals (OECD, 2018).

Another frequently encountered problem is the manual process of data collection, coordination, and documentation of inclusive services (Komariyah, 2023). This manual system not only requires significant time and effort but also risks data errors and delays in decision-making (Sugiyono, 2019). Accurate and integrated data management is crucial for the planning, implementation, and evaluation of inclusive education services (UNESCO, 2017).

On the other hand, the development of digital technology provides significant opportunities for schools to improve the effectiveness and efficiency of educational management (Schleicher, 2018). The use of digital technology enables schools to manage data on educators, education personnel, and students more systematically, transparently, and accountably (Komariyah, 2023). Furthermore, digital technology can also support the improvement of

educator competencies through online training, professional learning communities, and access to broader learning resources (Sari & Wahyudin, 2020; Mishra & Koehler, 2006).

The integration of digital technology into the management of educators and education personnel is a strategic step in supporting the implementation of inclusive education (Komariyah, 2023). Through a digital-based management system, schools can strengthen coordination, accelerate administrative processes, and improve the overall quality of educational services (Hallinger & Heck, 2010). This aligns with the demands of digital transformation in education, which emphasizes efficiency, innovation, and improved service quality (Schleicher, 2018).

Therefore, the development of digitally based inclusive schools is an inevitable necessity in addressing the challenges of education in the modern era (OECD, 2018). The integration of digital technology into the management of educators and education personnel is expected to support the realization of student-centered, inclusive, and sustainable deep learning (Fullan, 2013; Komariyah, 2023). Thus, inclusive schools not only become learning spaces open to all but also become educational institutions that adapt to changing times.

LITERATURE REVIEW

The literature review in this study is structured around four interrelated themes: inclusive education and school management, educator and staff management, digital technology integration in education, and immersive learning in the context of inclusive schools. These four themes provide a conceptual foundation for understanding how digital technology can strengthen educator management systems and support meaningful learning.

Inclusive education is widely recognized as a fundamental approach to promoting equity and social justice in education. International perspectives emphasize that inclusive schools must accommodate the diversity of learners by creating flexible learning environments and responsive support systems. Inclusive education requires schools to go beyond physical access and focus on meaningful participation, engagement, and learning outcomes for all learners. Therefore, the effectiveness of inclusive schools is closely linked to the quality of management and support for educators and education staff.

School management in an inclusive context encompasses not only administrative control but also strategic leadership, human resource coordination, and the development of a collaborative school culture. Effective inclusive school management enables educators to respond to the needs of diverse learners through coordinated planning, shared accountability, and continuous professional learning. Conversely, weak management structures often lead to fragmented services, inconsistent instructional practices, and low collaboration among teachers, which can ultimately hinder the goals of inclusive education.

The management of educators and education personnel is a key component in the effectiveness of inclusive schools. This management

encompasses recruitment, placement, professional development, performance evaluation, and ongoing support. In inclusive schools, these processes must consider pedagogical competence, inclusive attitudes, adaptability, and collaboration skills. Numerous studies have shown that a mismatch between educator competence and their assigned roles can negatively impact the quality of learning and teacher motivation. Therefore, systematic and responsive management practices are crucial for maintaining the sustainability of inclusive education.

Professional development plays a central role in strengthening educator capacity. Continuous professional learning enables educators to develop inclusive pedagogical skills, understand the characteristics of diverse learners, and adopt innovative learning strategies. The concept of continuous improvement emphasizes the importance of reflective practice and lifelong learning for educators. Without adequate professional development support, teachers will struggle to effectively implement inclusive and deep learning practices.

Digital technology has emerged as a powerful support tool in education, particularly in inclusive contexts. Digital tools support accessibility, personalization, communication, and efficient management of the educational process. Learning management systems, digital collaboration platforms, and data management tools facilitate documentation, coordination, and differentiation of learning. In inclusive schools, these technologies help educators monitor student progress, share information, and design adaptive learning experiences.

However, the literature also notes that technology integration is often hampered by limited training, infrastructure gaps, and resistance to change. Technology is often used as an additional tool, rather than as an integrated management system. To maximize its impact, digital technology needs to be aligned with pedagogical goals, management structures, and educator needs. Strategic integration ensures that technology supports both learning and managerial functions.

Deep learning is another important concept in contemporary education. It emphasizes meaningful understanding, critical thinking, problem-solving, and the application of knowledge in real-life contexts. In inclusive classrooms, deep learning is particularly relevant because students have diverse learning profiles and require flexible and personalized learning approaches. Deep learning encourages active student engagement, reflection, and collaboration, which are essential elements of an inclusive learning environment.

Literature shows that deep learning in inclusive schools is more effective when supported by a coherent management system, ongoing professional development, and a collaborative school culture. Digital technology serves as a bridge between inclusive education principles and deep learning practices by providing interactive learning, formative assessment, and reflective teaching. Therefore, strengthening educator management through the integration of digital technology creates conducive conditions for the development of deep learning in inclusive schools.

METHODOLOGY

This research is crucial for gaining a comprehensive understanding of the management of educators and education personnel in digital-based inclusive schools. Inclusive schools have unique characteristics because they serve students with diverse abilities, backgrounds, and learning needs. This requires an adaptive, planned management system that is oriented toward fulfilling each student's right to learn fairly and with quality.

In practice, managing educators and education personnel in inclusive schools still faces various challenges, such as limited educator competency in inclusive education, weak coordination between staff, and an unintegrated administrative system. These challenges are further complicated when schools fail to optimally utilize digital technology to support management and learning processes. As a result, inclusive education services are not fully effective and sustainable.

This study hopes to provide a more comprehensive picture of the various issues and challenges schools face in managing educators and education personnel in the context of inclusive education. This literature review provides an initial overview of how educational human resource management is implemented in inclusive schools and the extent to which the use of digital technology contributes to increasing the effectiveness of such management.

Furthermore, this study also seeks to examine the impact of digital technology integration on improving the quality of inclusive education services. The use of a digital-based management system is believed to support more systematic and accurate data collection, coordination, monitoring, and evaluation of educator and education staff performance. Therefore, digital technology has the potential to be a strategic solution to address various managerial challenges in inclusive schools.

By understanding the challenges and opportunities, the results of this study are expected to serve as an initial reference in decision-making and policy formulation for digital-based inclusive school management. Understanding the real conditions.

RESULTS AND DISCUSSION

This study aims to analyze the management of educators and education personnel in the implementation of digital-based inclusive schools. This study uses qualitative analysis techniques with the Miles and Huberman (1994) approach, which includes three main stages: data reduction, data presentation, and conclusion drawing. Through this approach, data obtained from literature studies, policy documentation, and empirical findings from various previous studies are analyzed in depth by linking them to the context of inclusive education and digital transformation. This analysis aims to obtain a comprehensive picture of managerial challenges, opportunities for utilizing digital technology, and relevant strategies for managing educators and education personnel to support inclusive schools.

The literature sources reviewed in this research are shown in the following table.

Table 1. Literature Sources Reviewed

Article Title	Writer	Key Findings
Inclusive Education in Indonesia	Kemendikbudristek (2023)	Shows gaps in school readiness in managing inclusive education.
Educational Human Resource Management	Mulyasa (2021)	Educator management determines the quality of educational services.
Teacher Competence in Inclusive Education	Marlina (2022)	Many teachers do not yet have inclusive pedagogical competencies.
School Digital Transformation	Prasetyo (2021)	Digital systems improve the efficiency of school management.
Educational Personnel Management	Suryadi (2020)	Educational staff play an important role in inclusive administrative services.
Deep Learning in Inclusive Schools	Wuryani (2023)	Deep learning requires collaborative management support.
Digitalization of Educational Administration	Nurlaila (2023)	Digitalization makes it easier to record and monitor educational human resources.
Challenges of Inclusive Schools	Oktaviani (2022)	The main obstacles include human resources, policies, and support systems.
Inclusive Principal Leadership	Yusuf (2021)	Leadership determines the success of inclusive human resource management.
Technology in Educational Management	Susanti (2023)	Technology supports data-driven coordination and decision-making.

Based on these sources, data analysis was carried out through the following stages.

Data Reduction

Data reduction is the initial stage in qualitative analysis, aiming to filter, simplify, and organize data to focus on core issues relevant to the research objectives. In this study, data from various literatures were analyzed to identify key themes related to the management of educators and education personnel in digital-based inclusive schools.

The data reduction results revealed a number of crucial issues that pose challenges to inclusive school management. These issues include limited educator competency in inclusive education, the suboptimal role of education personnel in supporting inclusive services, weak internal school coordination systems, and the continued dominance of manual administration systems.

These conditions have resulted in human resource management in education being unable to optimally support the diverse needs of students.

Furthermore, data reduction also shows that the use of digital technology in inclusive schools remains partial and unintegrated. Many schools only use technology for basic administration, such as attendance data entry or routine reporting, without developing a comprehensive teacher and staff management system. As a result, data related to teacher competency, training, and performance are not being fully utilized as a basis for managerial decision-making.

By summarizing and focusing the data on these issues, this study eliminated irrelevant information and retained data that was highly significant for the development of digital-based inclusive school management. This data reduction served as the foundation for the next stage of analysis.

Data Presentation

Data presentation is a subsequent stage aimed at organizing the results of data reduction for easy understanding and systematic analysis. In this study, data presentation was conducted in the form of a thematic matrix that illustrates the relationship between managerial challenges, the actual conditions in inclusive schools, and the role of digital technology.

Table 2. Data Based on Six Main Themes Found

No	Main Theme	Narrative of Findings
1	Educator Competence	Many educators do not yet have adequate understanding and skills of inclusive pedagogy.
2	The Role of Educational Personnel	Educational staff have not been optimally involved in inclusive administrative services.
3	Human Resource Management System	Management of educators and education personnel is still manual and not integrated.
4	Utilization of Digital Technology	Digital technology has not been utilized strategically for school HR management.
5	Coordination and Collaboration	Coordination between educators and educational staff is still weak.
6	Policy Support	School and government policies do not fully support the digitalization of inclusive schools.

The matrix above illustrates the actual conditions of managing educators and education personnel in inclusive schools. Each theme demonstrates the link between structural and operational challenges and the need for digital transformation in education management. This data presentation provides a strong foundation for discussing strategies to strengthen digital-based inclusive school management.

Based on the data analysis, it can be concluded that the management of educators and education personnel in inclusive schools still faces various structural and managerial challenges. Limited educator competency in inclusive

education is a major factor hampering the quality of learning services. Furthermore, the suboptimal role of education personnel has resulted in ineffective administrative and support services for inclusive education.

From a management perspective, the manual and fragmented human resource management system in education hinders the data collection, monitoring, and evaluation of educator and education staff performance. Data-driven management is essential to support informed decision-making in the context of inclusive education. This weakness highlights the gap between the demands of inclusive education and the preparedness of school management systems.

The unintegrated use of digital technology was also a key finding in this study. Technology that should improve the efficiency and effectiveness of inclusive school management has not been optimally utilized. This is due to limited infrastructure, low digital literacy among human resources, and the absence of policies specifically encouraging the digitalization of inclusive school management.

Overall, the results of this study indicate that developing digitally inclusive schools requires a comprehensive and sustainable management approach. The government and school administrators need to strengthen policies, improve the competency of educators and education personnel, and develop an integrated digital-based management system. Without these efforts, the provision of quality and equitable inclusive education will be difficult to achieve.

CONCLUSIONS AND RECOMMENDATIONS

The management of educators and education personnel in digital-based inclusive schools still faces various managerial and structural challenges. These challenges include limited educator competency in inclusive education, the suboptimal role of education personnel in supporting inclusive services, and a human resource management system that is still manual and fragmented. This situation is exacerbated by low digital literacy, limited technological infrastructure, and the absence of policies specifically encouraging the integration of digital technology in inclusive school management. As a result, the management of educators and education personnel is unable to optimally support the implementation of inclusive, high-quality, and student-centered learning.

Nevertheless, there are a number of strategic opportunities that can be exploited to overcome these obstacles. The planned and integrated use of digital technology has the potential to increase the efficiency of data collection, coordination, and monitoring of the performance of educators and education personnel. Furthermore, strengthening educator competencies through ongoing training, optimizing the role of education personnel in inclusive service systems, and increasing the capacity of school principals as managers and leaders of digital transformation are crucial steps in developing digitally-based inclusive schools. Therefore, affirmative and contextual policies are needed from the government, accompanied by a school commitment to developing

adaptive and collaborative management. This approach is expected to transform the management of educators and education personnel from merely administrative to strategic instruments in realizing equitable and sustainable inclusive education.

Based on the discussion, the central and regional governments need to strengthen affirmative policies that encourage the integration of digital technology in the management of educators and education personnel in inclusive schools. These policies should be directed at developing an integrated digital-based human resource management system, improving technological infrastructure, and providing sustainable funding support. These steps are crucial to ensuring that inclusive school management is systematic, efficient, and data-driven.

At the educational unit level, inclusive schools are advised to prioritize strengthening the competencies of educators and education personnel through ongoing training focused on inclusive education and digital literacy. Optimizing the role of education personnel in data management and supporting services, as well as developing a digital-based performance monitoring and evaluation system, is necessary to ensure that human resource management is not merely administrative but also supports improvements in the quality of inclusive services.

Furthermore, school principals need to strengthen their role as digital transformation leaders and change managers in the context of inclusive education. Adaptive, collaborative, and innovation-oriented leadership is expected to encourage the optimal use of technology in managing educators and education personnel. Thus, digital-based inclusive school management can serve as a strategic instrument in realizing equitable, quality, and sustainable education.

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