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Digital Transformation in Learning Assessment: Challenges, Trends, and Teacher Readiness for Curriculum Implementation in Indonesia

Samsul Mikrot Pulungan, smikrotpulungan@gmail.com, UIN Syahada Padangsidimpuan, Indonesia
Anmar Azhari Nasution, anmarnasution@uinsyahada.ac.id, UIN Syahada Padangsidimpuan, Indonesia

Yusril Alkarim Harahap, yusrilhrp2000@gmail.com, UIN Syahada Padangsidimpuan, Indonesia
Zulhimma, zulhimma@uinsyahada.ac.id, UIN Syahada Padangsidimpuan, Indonesia

Abstract: The digital transformation of education in Indonesia has accelerated significantly, driven by curriculum reforms and the increasing integration of technology into learning assessment practices. This study aims to examine current trends in the use of digital assessment platforms, identify the major challenges encountered in their implementation, and analyze teachers' readiness to adapt to evolving assessment paradigms. A Systematic Literature Review (SLR) was conducted by analyzing 20 peer-reviewed journal articles published between 2019 and 2026. The findings indicate that the use of interactive digital platforms, such as Google Forms, Quizizz, and Kahoot, has enhanced students' engagement, concentration, and learning motivation, with several studies reporting improvements of up to 78%. Furthermore, the implementation of e-Rapor has strengthened transparency and accountability in student assessment through its integration with the Dapodik education database. Nevertheless, the implementation of digital assessment continues to face several challenges, including the predominance of summative assessment practices, disparities in technological infrastructure between urban and rural schools, limited digital competencies among senior teachers, and the increasing administrative workload associated with assessment management. Based on these findings, this study recommends the development of standardized indicators for teachers' digital assessment literacy that reflect authentic classroom practices, as well as the design of more inclusive, artificial intelligence (AI)-supported diagnostic assessment systems to enhance the quality and effectiveness of future educational assessment.

Keywords: Digital Assessment, Merdeka Curriculum, Digital Literacy, Systematic Literature Review, e-Rapor.

INTRODUCTION

The rapid advancement of digital technology and information systems in the twenty-first century has fundamentally transformed almost every aspect of human life, including the educational sector. Educational institutions are increasingly expected to respond to technological disruption by redesigning teaching, learning, and assessment practices to meet the demands of contemporary society. Digital transformation is no longer viewed merely as the adoption of technological tools but as a comprehensive process of restructuring educational systems to improve effectiveness, efficiency, and learning quality. Within this context, assessment has become one of the most significant components requiring reform because it directly influences instructional decision-making, curriculum implementation, and students' learning experiences. Consequently, educational assessment is expected to evolve from traditional measurement practices into a more dynamic, technology-supported process capable of capturing students' cognitive, affective, and psychomotor competencies comprehensively (Asiah, 2026).

For many decades, educational assessment in Indonesia and numerous other countries relied predominantly on conventional teacher-centered approaches that emphasized summative examinations conducted at the end of instructional periods. Such assessment models primarily measured students' cognitive achievement while providing limited opportunities for continuous feedback, reflective learning, and individualized instructional improvement. Although summative assessment remains important for certification and accountability purposes, it has increasingly been criticized for failing to capture the complex competencies required in the twenty-first century, including critical thinking, creativity, collaboration, communication, and problem-solving skills. As educational priorities continue to shift toward competency-based learning, traditional assessment practices are considered insufficient to evaluate students' holistic development or to support meaningful learning processes (Malakiano, 2025).

Responding to these global educational developments, assessment paradigms have gradually shifted toward student-centered approaches that emphasize assessment as an integral part of learning rather than merely a mechanism for measuring learning outcomes. Contemporary educational theories advocate three complementary functions of assessment: assessment of learning, assessment for learning, and assessment as learning. While assessment of learning continues to serve accountability and certification purposes, assessment for learning functions as formative evaluation that provides continuous feedback for improving instructional practices. Meanwhile, assessment as learning encourages students to become active participants in evaluating their own learning progress through self-reflection and self-regulated learning strategies. These paradigms position assessment as a continuous process that promotes deeper understanding, learner autonomy, and instructional improvement rather than solely generating numerical scores (Saidah & Muhid, 2025).

The integration of digital technology has further accelerated this paradigm shift by enabling assessment systems that are more adaptive, interactive, and data-

driven. Digital assessment platforms facilitate real-time feedback, automated scoring, immediate performance analysis, and personalized learning recommendations that were difficult to achieve using conventional paper-based assessments. Furthermore, advances in educational technology have introduced learning analytics capable of monitoring students' learning behaviors, identifying learning difficulties, and supporting evidence-based instructional interventions. Consequently, digital assessment is increasingly recognized not only as a technological innovation but also as a strategic instrument for improving educational quality, promoting student engagement, and enhancing teachers' instructional decision-making processes in rapidly changing educational environments (Asiah, 2026; Saidah & Muhid, 2025).

Indonesia has embraced this educational transformation through the nationwide implementation of the Merdeka Curriculum, which has been progressively introduced since 2022 as one of the government's major educational reform initiatives. Unlike previous curricula that primarily emphasized standardized learning outcomes, the Merdeka Curriculum prioritizes flexibility, differentiated instruction, competency development, and personalized learning experiences. These principles require substantial changes in classroom assessment practices, encouraging teachers to move beyond conventional testing toward more authentic, formative, and diagnostic assessment strategies. Consequently, educational assessment is positioned as an essential component for understanding students' individual learning characteristics and continuously supporting their academic development throughout the learning process rather than merely evaluating final achievement (Ramalia & Syamsurizal, 2025).

The implementation of the Merdeka Curriculum requires schools to redesign their assessment systems by introducing diagnostic assessments conducted before instruction and formative assessments implemented throughout the learning process. Diagnostic assessment enables teachers to identify students' initial competencies, prior knowledge, learning readiness, psychological characteristics, and preferred learning modalities, including visual, auditory, and kinesthetic learning styles. Through comprehensive diagnostic information, teachers are expected to design instructional strategies that accommodate individual learning differences while ensuring equitable educational opportunities for all students. Such personalized instructional planning is expected to improve learning effectiveness by aligning classroom activities with students' diverse educational needs and developmental characteristics (Nugroho, 2023).

Moreover, formative assessment under the Merdeka Curriculum serves as an ongoing mechanism for monitoring learning progress and providing constructive feedback rather than functioning solely as a grading instrument. Continuous formative assessment enables teachers to identify misconceptions, monitor students' conceptual development, and implement timely instructional adjustments whenever learning difficulties emerge. Simultaneously, students receive opportunities to reflect upon their own learning progress, recognize their strengths and weaknesses, and develop greater responsibility for achieving learning objectives. Therefore, assessment becomes an inseparable component of the instructional process that continuously informs teaching and learning

improvements rather than representing an isolated activity conducted only at the conclusion of instructional units (Malakiano, 2025).

The successful implementation of these assessment reforms depends substantially upon the effective integration of Information and Communication Technology (ICT) into educational assessment systems. Digital technologies offer significant opportunities to improve assessment efficiency, reduce administrative burdens, increase reporting accuracy, and provide immediate analytical information regarding students' learning performance. Furthermore, technology-supported assessment environments encourage greater student participation by incorporating interactive learning experiences that enhance engagement and motivation. Rather than simply digitizing conventional paper-based examinations, digital transformation seeks to establish intelligent assessment ecosystems that utilize learning analytics, educational data mining, and evidence-based decision-making to improve educational quality continuously. Consequently, ICT integration has become a central pillar in achieving the objectives of educational transformation under the Merdeka Curriculum (Artama, 2024; Saidah & Muhid, 2025).

The rapid development of educational technology has encouraged schools to adopt a wide range of digital assessment platforms designed to improve the effectiveness and quality of classroom evaluation. Interactive applications such as Google Forms, Quizizz, Kahoot, Microsoft Forms, and various Learning Management Systems (LMS) have become increasingly popular because they provide automated scoring, instant feedback, flexible access, and engaging assessment environments. Empirical studies have demonstrated that these platforms not only simplify teachers' administrative tasks but also improve students' concentration, motivation, and classroom participation, with several studies reporting learning engagement improvements of up to 78% (Artama, 2024). In addition to classroom-based applications, Indonesia has introduced web-based school management systems such as e-Rapor, which integrate students' assessment data into the national educational database (Dapodik). This integration enhances transparency, accountability, and data consistency while enabling school leaders to utilize comprehensive educational data for evidence-based planning, monitoring, and strategic decision-making. Consequently, digital assessment is increasingly recognized as an essential component of educational governance that extends beyond classroom evaluation toward broader institutional quality assurance and educational management (Ariyanti, 2020; Teguh Trianung Djoko S., 2025). Nevertheless, the true value of digital transformation lies not merely in replacing paper-based examinations with electronic platforms but in developing intelligent assessment systems capable of utilizing learning analytics, predictive data analysis, and adaptive feedback to support personalized learning pathways and continuous instructional improvement (Saidah & Muhid, 2025).

Despite these promising developments, the practical implementation of digital assessment across Indonesian schools remains far from optimal. A substantial gap persists between the ambitious policy objectives articulated in the Merdeka Curriculum and the realities experienced by teachers in diverse educational settings. Numerous studies indicate that the primary barriers to successful digital transformation are not limited to technological infrastructure but

are deeply rooted in human resource capacity, organizational culture, and institutional readiness. Significant disparities in teachers' digital literacy, particularly between urban and rural schools, continue to influence the quality of technology integration into classroom assessment. Furthermore, many educators still rely heavily on conventional summative assessment practices because they are more familiar with traditional evaluation methods and often perceive formative and diagnostic assessments as additional administrative responsibilities rather than pedagogical necessities. The implementation of e-Rapor has also generated concerns regarding increased administrative workloads, particularly for teachers who must input large volumes of assessment data while simultaneously fulfilling instructional responsibilities. These challenges are further exacerbated by demographic factors, as many senior teachers encounter difficulties adapting to rapidly evolving digital technologies without sustained professional development and technical assistance (Asiah, 2026; Ariyanti, 2020; Ramdhani, 2024). In addition, unequal internet connectivity and limited digital infrastructure in rural and remote regions continue to restrict equitable access to technology-supported assessment, preventing many schools from fully realizing the intended benefits of diagnostic and formative assessment practices (Ramalia & Syamsurizal, 2025; Sayekti, 2022). Consequently, assessment reform frequently becomes a procedural requirement rather than a meaningful instrument for improving teaching quality and student learning outcomes.

Although numerous studies have investigated educational technology, digital learning, and curriculum reform in Indonesia, comprehensive reviews specifically synthesizing evidence on digital assessment implementation within the context of the Merdeka Curriculum remain relatively scarce. Existing research is predominantly fragmented, localized, and focused on individual case studies, limiting the development of a broader understanding of national implementation patterns, emerging trends, and persistent challenges. Moreover, previous literature has rarely integrated discussions concerning teachers' digital readiness, the effectiveness of digital assessment platforms, organizational support, educational policy, and technological infrastructure into a single analytical framework. This fragmentation creates a significant research gap that warrants systematic investigation. Therefore, this study employs a Systematic Literature Review (SLR) to synthesize findings from scientific publications published between 2019 and 2026, with the objective of providing a comprehensive overview of the current landscape of digital assessment transformation in Indonesia. Specifically, the review aims to identify emerging trends in digital assessment practices, evaluate the effectiveness of existing digital platforms, analyze the principal challenges encountered during implementation, and examine teachers' readiness to adapt to technology-enhanced assessment systems under the Merdeka Curriculum. By consolidating evidence from diverse empirical studies, this research seeks to contribute to both theoretical discourse and practical policymaking regarding the future development of inclusive, evidence-based, and sustainable digital assessment systems capable of supporting educational transformation in Indonesia.

METHODS

This study employed a Systematic Literature Review (SLR) to systematically identify, evaluate, and synthesize scientific publications related to the implementation of digital assessment in Indonesian education. The SLR approach was selected because it provides a transparent, rigorous, and replicable procedure for reviewing existing literature while minimizing selection bias. By integrating evidence from previous empirical studies, this method enables a comprehensive understanding of research trends, implementation challenges, and emerging issues concerning digital assessment practices. Furthermore, the systematic review approach allows the findings of individual studies to be consolidated into a coherent body of knowledge, thereby providing stronger evidence for educational policy and future research.

The selection of articles was guided by predefined inclusion and exclusion criteria to ensure the relevance, quality, and credibility of the reviewed literature. The inclusion criteria consisted of peer-reviewed articles published between 2019 and 2026 that addressed one or more of the following topics: digital learning assessment, digital educational evaluation, the implementation of e-Rapor, teachers' digital literacy, or data-driven educational management within Indonesian educational institutions. Both empirical research and review studies, including systematic literature reviews relevant to the objectives of this research, were considered eligible for inclusion. Conversely, publications released before 2019 were excluded, as were studies whose primary focus was unrelated to educational assessment or school-based evaluation, except for information system studies that provided conceptually relevant insights into educational data management. In addition, opinion papers, unpublished theses and dissertations, conference abstracts, and other forms of non-peer-reviewed or gray literature were excluded to maintain the scientific quality and reliability of the review.

The literature search resulted in the identification of 20 eligible scientific articles obtained from several reputable academic databases, including Google Scholar, ScienceDirect, IEEE Xplore, and the Garuda Digital Reference Portal. The search strategy employed combinations of predefined keywords connected through Boolean operators such as AND, OR, and NOT to maximize search accuracy and ensure comprehensive coverage of relevant publications. After the screening process, each selected article was examined using the Reading Code Organization Sheet (RCOS), a structured analytical framework designed to organize and extract essential information systematically. The framework classified the literature according to seven analytical components: author and publication year, principal findings, primary research themes, reported implementation challenges, identified research gaps, recommendations for future studies, and critical observations made by the reviewers. Subsequently, the extracted data were synthesized through narrative thematic analysis by grouping studies according to similar themes and research characteristics. This synthesis facilitated the identification of recurring patterns, dominant research trends, implementation barriers, and future opportunities in digital assessment practices while providing comprehensive evidence to answer the research questions formulated in this study.

RESULTS & DISCUSSION

Trends in Digital Assessment Platforms and Their Effectiveness

Based on the reviewed literature, the integration of information technology into educational assessment systems has demonstrated a significant positive impact on both the quality of interactive learning and the efficiency of educational data management. The use of web-based platforms and online assessment applications, such as Google Forms, Quizizz, and Kahoot, has been shown to improve time efficiency, facilitate automated data processing, and provide more engaging and visually appealing learning experiences for students (Barus, 2024; Artama, 2024). The empirical evidence synthesized in this review indicates that approximately 78% of students reported higher levels of concentration, motivation, and emotional engagement when participating in technology-supported assessments compared with conventional paper-based examinations, which are often perceived as repetitive and less stimulating (Barus, 2024). At a broader educational level, the integration of Information and Communication Technology (ICT) has also enabled teachers to present complex learning concepts in more interactive and accessible ways, thereby enhancing students' understanding and participation throughout the learning process (Barus, 2024).

At the institutional level, digital innovation has been reflected in the implementation of electronic student reporting systems, commonly known as e-Rapor. The introduction of this web-based information system has fundamentally transformed teachers' administrative practices by replacing manual documentation procedures, which were frequently vulnerable to recording errors and inconsistencies, with more accurate, transparent, and accountable digital reporting systems (Ariyanti, 2020; Dewi & Sukiman, 2019). One of the principal strengths of e-Rapor lies in its capability to synchronize assessment data automatically and in real time with Indonesia's national educational database, Dapodik (Ariyanti, 2020). This integration has contributed to the establishment of a data-driven management ecosystem within schools by improving data accessibility, strengthening school leaders' capacity for evidence-based decision-making, enhancing institutional accountability, and supporting collaborative educational planning at multiple administrative levels (Teguh Trianung Djoko S., 2025).

From a technical perspective, the effectiveness of digital assessment and educational information systems is closely associated with the quality of software architecture and system development processes. The reviewed studies indicate that the development of educational management systems in Indonesia has predominantly adopted web-based platforms designed through structured Software Development Life Cycle (SDLC) methodologies, including the Waterfall, Joint Application Development (JAD), Agile, and Prototype models (Angelina, 2024). These development frameworks provide systematic procedures for requirement analysis, system design, implementation, testing, deployment, and maintenance, thereby ensuring that digital platforms operate reliably and efficiently. Well-designed system architecture plays a crucial role in replacing outdated administrative systems, reducing operational inefficiencies, and improving the overall quality of educational information management (Angelina, 2024).

Recent literature further indicates a substantial shift toward integrating authentic assessment with learning analytics to create more sophisticated digital assessment ecosystems (Saidah & Muhid, 2025). Rather than merely converting conventional paper-based examinations into digital formats, contemporary digital assessment seeks to utilize students' digital learning footprints to generate comprehensive evidence regarding learning progress, behavioral patterns, and competency development. Learning analytics enables educators to identify individual learning difficulties, monitor student engagement, provide personalized feedback, and implement timely instructional interventions based on empirical evidence. Consequently, digital assessment evolves beyond simple technological substitution into an adaptive, evidence-based evaluation system capable of minimizing subjective judgment while supporting more holistic, personalized, and equitable educational assessment practices (Saidah & Muhid, 2025).

Emerging Trends in Assessment Practices under the Merdeka Curriculum

The implementation of the Merdeka Curriculum in Indonesia has stimulated a substantial pedagogical transformation and contributed to a significant increase in scholarly publications focusing on the development of process-oriented assessment instruments, particularly diagnostic and formative assessments (Andreansyah, 2025). Traditional evaluation practices, which predominantly emphasized summative assessment conducted at the end of instructional units, are gradually being replaced by competency-based learning approaches supported by continuous formative assessment. Within this educational paradigm, lesson planning is expected to become more adaptive, flexible, and responsive to students' learning progress through the integration of ongoing evaluative reflection. Consequently, assessment is no longer regarded merely as a mechanism for measuring learning outcomes but as an essential component of the instructional process that continuously informs teaching strategies and supports students' competency development (Malakiano, 2025).

Diagnostic assessment has been widely adopted to identify students' individual characteristics, preferred learning styles, and prior knowledge before instructional activities begin. By providing comprehensive information regarding students' learning readiness, diagnostic assessment enables teachers to design differentiated learning experiences that accommodate diverse educational needs and learning profiles. In science and mathematics education, researchers have increasingly employed validated multi-tier diagnostic instruments, including two-tier, three-tier, and four-tier diagnostic tests, to identify students' misconceptions and conceptual understanding with greater accuracy (Nugroho, 2023). Studies published between

2017 and 2025 demonstrate a remarkable increase in research related to diagnostic assessment, particularly following the nationwide implementation of the Merdeka Curriculum in 2022 (Andreansyah, 2025). At the same time, digital formative assessment has gained increasing recognition for its ability to provide immediate feedback that strengthens students' critical thinking, self-regulated learning, metacognitive awareness, and overall engagement in the learning process. As a result, formative assessment has evolved from functioning solely as an evaluative instrument into a strategic pedagogical approach that actively supports student-centered learning and continuous instructional improvement (Ramdhani, 2024).

Despite these encouraging developments, the synthesis of the reviewed literature reveals a considerable discrepancy between the ideal principles promoted by educational policy and the realities of classroom implementation across Indonesian schools. One of the most persistent challenges is the continued dominance of summative assessment practices. Evidence from numerous elementary schools indicates that teachers still rely primarily on end-of-unit examinations, while the implementation of formative and diagnostic assessment remains relatively limited. In many cases, assessment activities are conducted merely to satisfy administrative requirements rather than to generate meaningful feedback capable of improving teaching quality and student learning outcomes. This practice contradicts the fundamental philosophy of the Merdeka Curriculum, which emphasizes continuous monitoring of individual learning growth and competency development instead of relying exclusively on final achievement scores (Sayekti, 2022).

Another important gap identified in the literature concerns the unequal distribution of research and implementation across educational levels and geographical contexts. Existing studies on diagnostic assessment are heavily concentrated in elementary and junior secondary education, whereas investigations conducted in senior secondary schools and higher education institutions remain relatively limited (Nugroho, 2023). Furthermore, the majority of instrument development studies have focused primarily on product validation within research and development (R&D) frameworks without examining the long-term educational impact of these assessment instruments on students' academic achievement, conceptual understanding, or competency development through longitudinal research designs (Andreansyah, 2025). This imbalance indicates the need for more comprehensive empirical investigations that evaluate the sustainability, scalability,

and long-term effectiveness of digital diagnostic and formative assessment across diverse educational contexts in Indonesia.

Teacher Readiness and Challenges in the Implementation of Digital Assessment

The successful implementation of digital assessment extends far beyond the availability of technological infrastructure. Although adequate hardware, software, and internet connectivity constitute important prerequisites, the literature consistently demonstrates that human resources and organizational dynamics remain the most influential determinants of sustainable digital transformation in education (Asiah, 2026; Rukmana, 2023). In particular, teachers serve as the primary agents responsible for translating educational policies into classroom practice. Consequently, the effectiveness of digital assessment depends largely on teachers' professional identity, digital literacy, pedagogical competence, and willingness to embrace educational innovation. Without sufficient human capacity, even the most sophisticated digital platforms are unlikely to produce meaningful improvements in teaching quality or student learning outcomes.

Within the context of the Merdeka Curriculum, teachers are expected not only to master digital technologies but also to integrate technological, pedagogical, and disciplinary knowledge simultaneously. This expectation aligns with the Technological Pedagogical Content Knowledge (TPACK) framework, which emphasizes the integration of technology with effective instructional strategies and subject-matter expertise (Nugroho, 2023). Teachers are therefore required to design authentic assessment activities, utilize digital platforms effectively, interpret assessment data accurately, and employ the results to improve instructional planning. Such responsibilities require continuous professional development because digital assessment demands competencies that extend beyond technical skills to include pedagogical decision-making, data interpretation, and reflective teaching practices.

The synthesis of the reviewed studies indicates that teachers' readiness to implement digital assessment remains highly heterogeneous across Indonesia. Considerable disparities persist in digital literacy, assessment competence, and familiarity with authentic assessment approaches (Asiah, 2026). Many teachers continue to experience difficulties in designing diverse assessment instruments capable of measuring higher-order thinking skills, problem-solving abilities, creativity, and collaborative learning outcomes. Furthermore, a substantial proportion of educators still perceive assessment primarily as a mechanism for assigning grades rather than as a formative process that supports learning improvement. Consequently, assessment results are often underutilized as evidence for instructional reflection, curriculum adaptation, and individualized learning support, thereby limiting the pedagogical value of digital assessment initiatives (Ramalia & Syamsurizal, 2025; Sayekti, 2022).

Several studies also emphasize that these competency gaps could be substantially reduced through sustained professional learning communities and collaborative capacity-building programs. Professional organizations such as the

Kelompok Kerja Guru (KKG) provide valuable opportunities for teachers to exchange experiences, discuss classroom challenges, develop innovative assessment instruments, and strengthen their digital competencies through peer learning. Rather than relying solely on short-term technical workshops, continuous collaborative learning enables teachers to gradually build confidence in integrating digital technologies into authentic classroom assessment while simultaneously fostering a culture of reflective professional practice (Malakiano, 2025). Accordingly, strengthening professional learning communities should be considered a strategic priority for supporting the long-term implementation of digital assessment reforms.

Another major challenge identified throughout the reviewed literature concerns demographic differences among teachers, particularly those associated with age and professional experience. Senior teachers frequently encounter greater difficulties adapting to newly introduced digital platforms than their younger counterparts. Many experienced educators began their professional careers during an era dominated by paper-based administrative systems and therefore possess relatively limited exposure to contemporary educational technologies. The transition to digital reporting systems such as e-Rapor often requires them to acquire unfamiliar technological skills while simultaneously maintaining their existing instructional responsibilities. This situation may generate resistance toward technological innovation, not because of negative attitudes toward educational reform, but because of insufficient digital confidence and limited opportunities for systematic training (Dewi & Sukiman, 2019). Consequently, sustainable professional development programs, including In-House Training (IHT), mentoring systems, and individualized technical assistance, are essential for supporting teachers throughout the digital transformation process.

Administrative workload constitutes another persistent barrier affecting teachers' willingness to adopt digital assessment comprehensively. Although digital reporting systems have substantially improved data accuracy and institutional accountability, they have simultaneously introduced additional administrative responsibilities for classroom teachers. The implementation of e-Rapor requires subject teachers to record numerical scores, competency descriptions, behavioral observations, and various assessment indicators for every individual student. While these procedures enhance the completeness of educational data, they also consume considerable amounts of teachers' professional time (Ariyanti, 2020). As a result, many educators report spending more time completing administrative documentation than designing meaningful feedback, preparing innovative instructional activities, or conducting individualized learning interventions. This imbalance ultimately reduces the pedagogical benefits expected from digital assessment because teachers become increasingly occupied with compliance-oriented administrative tasks rather than student-centered instructional improvement (Ramdhani, 2024).

Beyond infrastructure, organizational culture has emerged as another decisive factor influencing the success of digital transformation. Educational institutions frequently invest substantial financial resources in purchasing digital technologies without simultaneously preparing organizational structures, communication

patterns, leadership strategies, and institutional cultures capable of supporting technological innovation. Sustainable digital transformation requires collaborative leadership, trust among stakeholders, effective communication, continuous professional learning, and institutional commitment to evidence-based decision-making.

CONCLUSION

The digital transformation of assessment systems in Indonesia is no longer merely a technological option but has become a fundamental pillar supporting the successful implementation of the student-centered Merdeka Curriculum. The synthesis of the reviewed literature demonstrates that integrating digital technologies through interactive assessment platforms and the e-Rapor system has generated substantial educational benefits. The adoption of digital assessment tools has been associated with increased student engagement, improved concentration, and higher learning motivation, with several empirical studies reporting improvements of up to 78%. At the institutional level, the implementation of e-Rapor has facilitated the development of a data-driven management ecosystem by enhancing the transparency, accuracy, and accountability of educational data reporting through direct integration with the national Dapodik database. These findings indicate that digital assessment has evolved beyond the simple digitization of conventional evaluation practices to become an essential component of educational governance and evidence-based decision-making.

Despite these encouraging developments, the reviewed evidence reveals a substantial gap between the policy aspirations of the Merdeka Curriculum and its practical implementation across Indonesian schools. From a pedagogical perspective, assessment practices continue to be dominated by traditional summative evaluation, limiting the effective utilization of diagnostic and formative assessment as instruments for improving teaching and learning. From a socio-demographic and geographical perspective, considerable disparities remain in teachers' digital literacy and technological readiness, particularly between urban and rural schools, while senior teachers frequently encounter greater challenges in adapting to rapidly evolving digital technologies.

At the organizational level, although digital reporting systems have improved institutional accountability, the complexity of e-Rapor has also increased teachers' administrative workload, thereby reducing the time available for instructional planning and meaningful feedback. Furthermore, the existing body of research on digital assessment in Indonesia remains methodologically constrained by its predominant focus on cognitive outcomes, its reliance on relatively small-scale case studies, and its tendency to propose highly conceptual or future-oriented technological solutions that often overlook the practical realities of schools operating under limited technological infrastructure.

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