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Digital-Collaboration-Based Change Management in the Implementation of the Merdeka Curriculum within the Framework of Civil Society 5.0

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Abstract

The national transformation toward a more adaptive and human-centered education system in the era of Civil Society 5.0 requires educational institutions, including madrasahs, to integrate digital technology into curriculum management processes. This study aims to analyze digital collaboration–based change management in the implementation of the Merdeka Curriculum at MAN Samarinda City. A qualitative case study approach was employed to identify the forms and mechanisms of digital collaboration, the supporting and inhibiting factors, and its contribution to strengthening school readiness for educational transformation. Data were collected through in-depth interviews, observations, and document analysis. The findings reveal that digital collaboration is manifested through the use of cloud-based platforms, online communication, collective development of teaching modules, and digital supervision that enhances transparency and effectiveness in curriculum management. Supporting factors include technological readiness, teachers' digital competence, a collaborative work culture, and adaptive leadership, while inhibiting factors involve infrastructure limitations, varying levels of digital skills, and resistance to change. The study also finds that digital collaboration enhances the school's adaptive capacity by strengthening digital competencies, expanding professional networks, and promoting knowledge-sharing practices that support the implementation of the Merdeka Curriculum. Overall, the conclusion affirm that digital collaboration is a crucial strategy for fostering an innovative and responsive educational ecosystem aligned with the demands of Civil Society 5.0.

Keywords: *Change Management, Merdeka Curriculum, Civil Society 5.0.*

Abstrak

Transformasi pendidikan nasional menuju sistem yang lebih adaptif dan humanis pada era Civil Society 5.0 menuntut lembaga pendidikan, termasuk madrasah, untuk mengintegrasikan teknologi digital dalam proses manajemen kurikulum. Penelitian ini bertujuan menganalisis manajemen perubahan berbasis kolaborasi digital pada penerapan Kurikulum Merdeka di MAN Kota Samarinda. Pendekatan kualitatif dengan studi kasus digunakan untuk mengidentifikasi bentuk mekanisme kolaborasi digital, faktor pendukung dan penghambat, serta kontribusinya terhadap kesiapan sekolah menghadapi perubahan. Data diperoleh melalui wawancara mendalam, observasi, dan analisis dokumen. Hasil penelitian menunjukkan bahwa kolaborasi digital terwujud melalui penggunaan platform cloud, komunikasi daring, penyusunan perangkat ajar kolektif, dan supervisi digital yang memperkuat transparansi serta efektivitas manajemen pembelajaran. Faktor pendukung meliputi kesiapan teknologi, kompetensi digital guru, budaya kerja kolaboratif, dan kepemimpinan adaptif; sementara hambatan mencakup

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keterbatasan infrastruktur, variasi kemampuan digital, dan resistensi terhadap perubahan. Penelitian ini juga menemukan bahwa kolaborasi digital meningkatkan kapasitas adaptif madrasah melalui penguatan kompetensi digital, perluasan jejaring profesional, dan mekanisme berbagi pengetahuan yang mendukung implementasi Kurikulum Merdeka. Berdasarkan hal tersebut, kesimpulan penelitian menegaskan bahwa kolaborasi digital merupakan strategi penting untuk menghadirkan ekosistem pendidikan yang inovatif, responsif, dan sesuai dengan tuntutan masyarakat 5.0.

Kata Kunci: Manajemen Perubahan; Kurikulum Merdeka, Civil Society 5.0.

INTRODUCTION

The shift in educational paradigms in an age of rapid technological acceleration demands that educational institutions adopt new approaches that are more collaborative, responsive, and data-driven (Bisma et al., 2023; Nur et al., 2020; Nurlaila et al., 2025; Rosdiani & Warmansyah, 2021). In this context, the transformation toward learning that leverages digital collaboration has become increasingly essential, especially as schools adapt to the Merdeka Curriculum, which emphasizes autonomy, creativity, and differentiated learning (Jin, 2019; Rozak, 2021; Wahyuningsari et al., 2022). At the madrasah level, this adaptation presents unique challenges because it requires integrating Islamic values with the fast-evolving demands of digital innovation (Meij & Merx, 2018). At MAN Samarinda City, the need to manage change systematically is growing more urgent, given the institution's responsibility to meet the needs of younger generations within the framework of Civil Society 5.0, an approach that is human-centered yet grounded in advanced technologies.

National education policies in recent years have increasingly emphasized digital transformation and learning flexibility (Azmi et al., 2023; Khamidah & Sholichah, 2022; Rafita & Puspa Juwita, 2025; Zou et al., 2025). The Merdeka Curriculum emerges as a policy that provides greater freedom for schools and teachers to design teaching practices suited to students' needs, including the use of digital technologies (Azizah et al., 2023; Ridwanulloh et al., 2024, 2024; Warmansyah et al., 2025). The government also encourages schools to engage in change management through school transformation programs, digital educational platforms, and enhanced teacher capacity in learning technologies (Mahidin, 2023). In addition, the concept of Civil Society 5.0, aligned with national agendas, mandates the strengthening of citizens', including students' ability to use technology productively and ethically (Fazis & Febrian, 2023). For this reason, madrasahs must integrate these policies with internal strategies that are adaptive and collaborative.

At the school level, the implementation of the Merdeka Curriculum requires fundamental changes in teacher work patterns, curriculum governance, and the way schools manage the learning ecosystem (Ardianti & Amalia, 2022). Each school is expected to build a culture of digital collaboration that enables teachers to share practices, align teaching tools, and use learning data for decision-making (Mahmud et al., 2022). Challenges arise particularly for schools that have not fully developed their

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digital infrastructure or are not yet accustomed to structured change-management approaches (Yidana & Aboagye, 2018). At MAN Samarinda City, the success of change is largely determined by the ability of all members of the madrasah to work collectively, cultivate readiness for innovation, and utilize technology to strengthen the effectiveness of national policy implementation.

A number of previous studies offer insights relevant to this research. Lestari & Sulton (2025) found that effective change management requires situational diagnosis, intensive communication, and collaboration in designing curriculum models, especially in value-based institutions such as pesantren. Findings from Mohd Suid & Mohd Noor (2025) emphasize that strong change-management practices enhance teacher readiness and improve acceptance of school policies. Research by Sullanmaa et al., (2021) highlights the importance of knowledge sharing and curriculum coherence in driving the success of large-scale curriculum reforms. Meanwhile, Hifza et al., (2020) identified several barriers to change, including resistance, poor planning, and weak innovation. The study by Darmawati & Pulungan (2025) further reinforces the urgency of digital adaptation and curriculum flexibility in the era of the Industrial Revolution 4.0. These findings highlight the need for collaborative and digital-based approaches to managing curriculum change.

This study aims to identify forms and mechanisms of digital collaboration in change management, analyze the factors that support and hinder its effectiveness, and explain the contribution of digital collaboration in strengthening the madrasah's preparedness for educational transformation in the era of Civil Society 5.0 within the context of implementing the Merdeka Curriculum at MAN Samarinda City. Through this approach, the research not only seeks to portray the dynamics of curriculum adaptation at the school level but also provides deeper insights into how the integration of technology and collaborative work can enhance institutional capacity. Furthermore, the findings are expected to offer practical benefits for strengthening change-management practices in madrasahs and contribute to the body of knowledge on digital-collaboration-based change management in education.

METHODS

Research Design and Data Source

This study employs a qualitative approach with a case study design focusing on the implementation of digital-collaboration-based change management in the application of the Merdeka Curriculum at MAN 1 and MAN 2 Samarinda City. This design was selected to enable the researcher to understand the phenomenon in depth by exploring the context, processes, and dynamics occurring within each madrasah (Yin, 2018). The data sources include the principals, vice principals for curriculum, information technology coordinators, subject teachers, and education staff who are directly involved in the planning and implementation of the Merdeka Curriculum. Participants were selected purposively based on their roles and relevance to the change-

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management process, ensuring that the information obtained reflects real experiences and the complexity of implementation in the field (Taylor et al., 2016).

Instruments and Data Collection Procedures

The primary instrument of this research is the researcher themselves as a human instrument who collects data through in-depth interviews, participatory observations, and document analysis (Bogdan & Biklen, 1998). Semi-structured interviews were conducted to allow flexible yet focused exploration of information related to change management and digital collaboration (Christensen & Johnson, 2017). Observations were carried out in various madrasah activities, including curriculum meetings, the use of digital platforms, and technology-based learning practices. The documents examined include curriculum implementation plans, internal institutional policies, teaching modules, evaluation reports, and other digital documentation. The data-collection procedures were conducted in stages, beginning with contextual familiarization, interview scheduling, direct observation, and verification of information through source triangulation to ensure the consistency and validity of the findings (Taylor et al., 2016).

Data Analysis Techniques and Ethical Considerations

Data analysis was carried out using an interactive model that includes the processes of data collection, data condensation, data display, and iterative conclusion drawing (Miles et al., 2014). Each piece of information obtained was reduced to identify patterns, themes, and categories related to digital collaboration, change strategies, resistance, and the effectiveness of curriculum implementation. The data were then presented in the form of matrices, thematic narratives, and inter-category relationships to provide a comprehensive picture of the dynamics of change in both madrasahs. In terms of research ethics, all participants were informed about the purpose of the study, their right to refuse or withdraw from participation, and the guarantee of confidentiality of their identities. The researcher ensured that the processes of data collection and analysis were conducted transparently and in a manner that respects the social, cultural, and professional integrity of the participants.

RESULTS AND DISCUSSIN

Results

Forms and Mechanisms of Digital Collaboration in Change Management for the Implementation of the Merdeka Curriculum at MAN Samarinda City

Digital collaboration in the implementation of the Merdeka Curriculum at MAN Samarinda City has developed as a response to the need for curriculum adaptation in an era of technological transformation. The change process occurs not only at the level of curriculum planning but also in learning governance, internal communication, and academic data management. The madrasah strives to build a digital ecosystem that enables all teachers and education personnel to work in an integrated manner, allowing

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curriculum implementation to proceed without depending solely on face-to-face coordination. This digital collaboration serves as a connector between national policy visions and school practices, while also becoming the foundation for driving more focused and sustainable change management.

The digital collaboration model developed by the two madrasahs originated from the need to quickly and uniformly align the Merdeka Curriculum implementation plan. Google Workspace, WhatsApp Groups, and internal e-learning platforms were used as coordination hubs among teachers, curriculum vice principals, and information technology teams. Through these platforms, teachers could upload teaching materials, receive feedback, and make revisions without needing to be physically present. This mechanism helps schools reduce communication barriers and speed up the synchronization process of learning tools. Cloud-based systems also allow teachers to access curriculum documents whenever needed, making the process of preparing and updating materials more systematic.

> *"We centralize all teaching materials in Google Drive so teachers can access them easily. Coordination is faster because revisions can be done immediately without waiting for in-person meetings." (Interview, Deputy Head of Madrasah for Curriculum Affairs)*

Digital collaboration is also reflected in the structured and rotational process of developing teaching modules. Teachers from similar subject areas form virtual working groups tasked with discussing learning outcomes, designing formative assessments, and evaluating material suitability with student characteristics. This process is carried out through regular online meetings and active discussion forums throughout the day. The presence of digital discussion spaces enables teachers to share references, provide feedback, and adjust teaching approaches based on assessment results uploaded to the LMS. Thus, digital collaboration not only facilitates communication but also encourages active involvement of all teachers in curriculum development.

> *"We usually discuss the teaching modules through Google Meet. After that, we continue in the WhatsApp group to share instrument samples or revise the learning outcomes." (Interview, Teacher)*

Digital-collaboration-based change management at both madrasahs emphasizes the importance of needs analysis as an initial step. The curriculum team uses digital forms to map teacher readiness, technological skills, and challenges they face in accessing online learning tools. This data is used to design support strategies, including digital platform training and workshops on teaching module development. The use of digital instruments makes the mapping process faster, measurable, and actionable. With a data dashboard, the madrasah can assess each teacher’s progress and prioritize interventions based on their individual needs.

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"We use Google Forms to measure teacher readiness. The results really help determine who needs special assistance." (Interview, Administrative Staff)

To ensure that digital collaboration runs effectively, the madrasah has built a periodic monitoring system for teaching tools. Each teacher is required to upload teaching modules, assessments, and learning journals into designated folders organized by subject and class. The curriculum team then provides feedback through the direct comment feature on the documents. This system allows supervision processes to become more objective because all teaching tools are well-documented and can be reviewed at any time. It also strengthens accountability, as teachers can see suggested changes and follow up without waiting for face-to-face supervision.

"Supervision is much easier now because everything is on Drive. We just leave comments, and teachers can revise them right away." (Interview, Deputy Head of Madrasah for Curriculum Affairs)

Digital collaboration is further demonstrated through the sharing of best practices via internal webinars and learning community forums. Every month, teachers who successfully implement innovative learning methods share their experiences in online sessions. These activities allow teachers to learn new approaches, identify potential challenges, and explore relevant solutions for their classrooms. Webinar documentation is uploaded to the madrasah's digital channels so that teachers who missed the sessions can revisit the material. This mechanism not only enhances teachers' pedagogical capacity but also fosters a sustainable collective learning culture.

"If a teacher successfully tries a new method, we ask them to share it through an internal webinar so others can learn too." (Interview, Head of the Madrasah)

Digital collaboration is also reflected in the use of LMS for class management and assessment. Teachers post materials, exercises, and differentiated projects according to students' needs. Students, meanwhile, can submit assignments, respond to tasks, and view their learning progress through automated features. Data collected from the LMS helps teachers analyze student achievement and adjust teaching strategies for the next session. This mechanism creates more structured, transparent, and documented interactions between teachers and students, helping the madrasah ensure that the principles of the Merdeka Curriculum are consistently applied.

"The LMS helps us monitor student progress directly. Assignment and quiz data are automatically recorded, so the analysis is faster." (Interview, Teacher)

In terms of organizational communication, digital collaboration enables more efficient coordination across units. The principal, vice principals, teachers, and administrative data operators can exchange information in real time. This mechanism accelerates the resolution of administrative issues such as schedule adjustments, class changes, and student data updates. Structured communication groups also make it easier

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for the madrasah management to issue policies or important announcements without waiting for formal meetings. The availability of fast and accurate information becomes a decisive factor in establishing change management responsive to national policy developments.

> *"If there's a sudden change, we just announce it through the group. The information reaches all teachers right away without waiting for a meeting." (Interview, Head of the Madrasah)*

Digital collaboration in the two madrasahs is further strengthened through integrated documentation and curriculum archives. Every activity, from curriculum meetings to learning evaluations, is stored in digital form for easy retrieval when needed. Cloud-based storage allows internal audits to become more transparent and helps the madrasah conduct annual reflections on the achievements of Merdeka Curriculum implementation. This digital documentation also functions as institutional memory, ensuring smooth adaptation even when leadership or teaching staff changes, as all guidelines and learning records are neatly stored and easily accessible.

> *"Digital archives are very helpful during teacher transitions. They can simply review the documentation, so they don't start from zero." (Interview, Administrative Staff)*

The forms and mechanisms of digital collaboration at MAN Samarinda City indicate that change management is not solely dependent on administrative strategies, but also on the establishment of a digital ecosystem that facilitates communication, coordination, and collective learning. The use of digital platforms accelerates curriculum synchronization, enhances supervision efficiency, and strengthens teacher involvement in developing teaching modules. These findings affirm that digital collaboration is a crucial foundation in the implementation of the Merdeka Curriculum, especially as madrasahs move toward the characteristics of Civil Society 5.0, which demands intelligent, technology-based collaboration.

Supporting and Inhibiting Factors Affecting the Effectiveness of Digital Collaboration–Based Change Management in the Implementation of the Merdeka Curriculum at MAN Samarinda City

The effectiveness of digital collaboration–based change management in implementing the Merdeka Curriculum at the Islamic Senior High Schools (MAN) in Samarinda is shaped by multiple factors that influence the direction, pace, and quality of curriculum adaptation. Each school benefits from internal support such as visionary leadership, teacher readiness, and adequate digital infrastructure, yet also faces challenges including disparities in technological literacy and resistance to change. Understanding these supporting and inhibiting factors is essential to determine whether digital collaboration can function effectively or instead become obstructed during

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implementation. Field findings reveal a combination of interacting dynamics across human, policy, and technological dimensions.

One of the primary supporting factors is the commitment of school leaders who consistently promote digital transformation. Leadership that is open to innovation helps teachers feel more confident using technology and encourages them to adopt new strategies aligned with the Merdeka Curriculum. The principals not only provide direction but also participate directly in monitoring and guiding the use of digital platforms. This support offers stability and a clear roadmap for the curriculum team, enabling them to mobilize teachers in a structured manner. Such leadership also fosters a collaborative work culture, particularly in aligning teaching materials and facilitating cross-unit communication.

> *"If the leadership hadn't pushed us from the beginning, we probably wouldn't have adapted this quickly. The principal constantly reminds us of the importance of digital transformation." (Interview, Teacher)*

The availability of digital infrastructure is another important supporting factor. MAN 1 and MAN 2 Samarinda have computer laboratories, stable internet connections, and adequate laptops to support digital learning processes. Access to these devices allows teachers to work more productively by enabling them to develop teaching modules, upload documents, and participate in online training with minimal technical barriers. Adequate infrastructure also enhances the effectiveness of the LMS in managing learning activities. When networks run smoothly and devices can be shared efficiently, digital collaboration becomes more streamlined and less burdensome.

> *"The infrastructure is much better now. A stable internet connection allows us to access the LMS and Drive without disruption." (Interview, Administrative Staff)*

Another supporting factor is the improvement in teachers' digital literacy through regular workshops and mentoring. Training on platforms such as Google Workspace, assessment applications, and the LMS helps teachers understand the benefits of technology in simplifying both administrative and pedagogical tasks. The higher their digital competence, the faster teachers can adjust to the change management process. These trainings also encourage the formation of internal learning groups that actively discuss technical solutions and digital teaching practices. Thus, digital literacy becomes more than a technical skill, it fosters collaboration among teachers.

> *"The mentoring makes us more confident. Now many teachers help each other when digital problems arise." (Interview, Teacher)*

On the other hand, the uneven digital competence among teachers is a significant barrier. Not all teachers are equally prepared to adapt, especially those accustomed to traditional teaching methods. This lack of readiness slows the development of teaching modules and the use of the LMS. Some teachers require more time to understand how digital platforms work, leading to delays in synchronizing teaching materials. This

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technological gap also requires the curriculum team to provide additional support to ensure all teachers achieve a similar level of competence.

> *"There are still teachers who are not familiar with using laptops or the LMS, so we frequently need to assist them to avoid falling behind." (Interview, Deputy Head of Madrasah for Curriculum Affairs)*

Resistance to change also emerges as a non-technical barrier affecting the effectiveness of digital collaboration. Some teachers feel that using technology increases their workload and forces them to adjust long-established teaching styles. They perceive policy changes as too rapid and lacking sufficient time for gradual adaptation. Such attitudes influence their motivation and the quality of their engagement in digital collaboration forums. When resistance is not addressed systematically, the change management process slows down and requires additional effort from school leaders and the curriculum team.

> *"There are teachers who still object. They say the changes are too fast and the workload keeps increasing." (Interview, Deputy Head of Madrasah for Curriculum Affairs)*

Another challenge comes from teachers' increased workload due to curriculum adjustments, digital administration, and project-based thematic learning. Requirements to upload teaching materials, create digital journals, and assess assignments through the LMS make some teachers feel overwhelmed, especially those with heavy teaching schedules. An unbalanced workload affects their consistency in participating in digital collaboration activities. This situation highlights the need for time management support and administrative load adjustments so teachers can focus on core tasks without experiencing digital fatigue.

> *"Digital administration does help, but when teaching hours are heavy, it feels very difficult to upload all documents on time." (Interview, Teacher)*

Observation records also reveal technical obstacles such as LMS server issues or limited cloud storage capacity that occasionally disrupt teacher workflows. When digital platforms encounter problems, teachers cannot access teaching materials or upload student assignments, delaying the learning process. Although not a daily occurrence, these issues significantly affect teachers' comfort in relying on digital systems. This underscores the need for stable technical support, including server maintenance, increased storage capacity, and responsive IT assistance.

> *"Sometimes the Drive is full or the LMS is slow. When that happens, our work gets delayed." (Interview, Teacher)*

Observations also found that limited integration between national digital systems and internal school systems sometimes complicates reporting processes. For example, assessment scores created in the LMS do not automatically connect to the national

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digital report card system, requiring teachers to enter data twice. This duplication reduces efficiency and leads some teachers to feel that technology does not fully simplify their work. Limited system integration also affects the consistency of using certain applications because teachers prefer methods they find more practical, even if not integrated with the digital change management system.

> *"Scores from the LMS don't automatically transfer to the report card system, so we have to input everything twice. This adds to the workload." (Interview, Administrative Staff)*

Overall, the effectiveness of digital collaboration–based change management is shaped by a combination of supporting factors, such as visionary leadership, adequate infrastructure, and improved digital literacy and inhibiting factors, including resistance to change, technological skill disparities, heavy workloads, and technical disruptions. These findings affirm that the success of implementing the Merdeka Curriculum depends not only on the availability of technology but also on human readiness and supporting systems that ensure digital collaboration operates consistently and sustainably.

The Contribution of Digital Collaboration in Strengthening School Readiness for Educational Transformation in the Civil Society 5.0 Era in the Implementation of the Merdeka Curriculum at MAN Samarinda City

The contribution of digital collaboration in strengthening the readiness of MAN 1 and MAN 2 Samarinda to face educational transformation in the Civil Society 5.0 era is reflected in the schools' ability to utilize technology as a tool for coordination, learning, and decision-making. This era requires educational institutions to develop adaptive, responsive, and data-driven work patterns in order to meet students' holistic needs. In the context of implementing the Merdeka Curriculum, digital collaboration not only facilitates the synchronization of teaching materials but also fosters a culture of collective learning that accelerates innovation at both teacher and institutional levels. The findings reveal that digital collaboration plays a strategic role in enhancing the structural, technical, and pedagogical readiness of the schools.

Digital collaboration strengthens school readiness by improving teachers' capacity to use educational technologies. Through platforms for sharing best practices, online training, and virtual working groups, teachers become increasingly accustomed to using technology as part of their daily work processes. This capability aligns with the principles of Civil Society 5.0, which positions technology as a tool to enhance human productivity rather than replace the role of teachers. Such capacity development enables teachers to adapt learning models to student needs through more flexible and data-informed teaching modules.

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> *"Teachers now use technology not just out of obligation, but as part of their working habit. This makes them more prepared to face any change." (Interview, Deputy Head of Madrasah for Curriculum Affairs)*

At the institutional level, digital collaboration strengthens structural readiness through integrated documentation and communication systems. When all curriculum documents, supervision reports, and student progress data are stored digitally, the processes of monitoring and decision-making become faster and more accurate. School principals can assess the progress of Merdeka Curriculum implementation in real time and provide guidance based on data rather than assumptions. This aligns with the character of Civil Society 5.0, which emphasizes data as the foundation of social and educational innovation. Digital documentation also helps schools adapt to teacher turnover and policy changes because all learning records are stored sustainably.

> *"With digital documents, we can evaluate curriculum progress at any time. Complete data makes decisions more precise." (Interview, Head of the Madrasah)*

Digital collaboration also supports school readiness in creating a more inclusive learning environment that responds to students' diverse needs. Through digital platforms, teachers can design differentiated assignments, provide faster feedback, and monitor individual student development. This system enables schools to offer more personalized learning services in line with the Merdeka Curriculum and the human-centered principles of Civil Society 5.0. In addition, parental involvement increases because academic information is more easily accessible online, making three-way communication between schools, teachers, and families more effective.

> *"With the LMS, we can see each student's needs and adjust their assignments. Parents also find it easier to monitor their child's progress." (Interview, Teacher)*

Digital collaboration contributes significantly to strengthening the readiness of MAN Samarinda to navigate educational transformation in the Civil Society 5.0 era. Through enhanced teacher digital capacity, data-driven management structures, and more responsive learning systems, the schools have built an adaptive foundation aligned with the demands of the Merdeka Curriculum. These findings indicate that digital collaboration is not merely a supporting tool but a key strategy in ensuring the sustainability of educational innovation within the madrasah.

Discussion

Forms and Mechanisms of Digital Collaboration in Change Management for the Implementation of the Merdeka Curriculum

Digital collaboration at MAN Samarinda City operates through the use of cloud-based platforms, online communication, and integrated management of teaching

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materials. This pattern aligns with Lewin's (1964) change management theory, which emphasizes the need for an "unfreezing" phase through the provision of information and open communication before change is implemented. The use of Google Workspace and the LMS supports this "unfreezing" process by creating spaces for knowledge sharing and aligning teachers' perceptions regarding the need for change. Thus, digital collaboration functions not only as a technical tool but also as a psychological mechanism to prepare teachers to accept the ideas of the Merdeka Curriculum.

Intensive digital communication among teachers and the curriculum team reflects a change-management practice consistent with Kotter's model, particularly the stages of "building a guiding coalition" and "communicating the vision." Kotter (2012) argues that change succeeds only when an organization builds a coalition with a shared goal and maintains open communication flows. At MAN Samarinda City, digital forums such as WhatsApp groups, Google Meet, and LMS discussion rooms serve as key platforms for building this coalition. This approach reduces coordination barriers and ensures that every teacher plays a role in supporting curriculum transformation, making the process feel more collaborative than directive.

Digital collaboration in developing teaching modules demonstrates characteristics of knowledge sharing as described by Takeuchi & Nonaka (1995) in the theory of knowledge creation. The exchange of best practices, peer feedback, and real-time document revision illustrate the stages of externalization and combination, transforming teachers' tacit knowledge into documented explicit knowledge (Purnomo et al., 2024). This mechanism allows the schools to produce richer and more relevant teaching modules based on the combined experiences of multiple teachers. Theoretically, this strengthens the organization's capacity to generate sustainable curriculum innovation.

The findings show that the use of digital forms to map teachers' needs reflects a change-management practice aligned with McKillip's (1990) needs assessment model. This model asserts that effective change must begin with systematic needs mapping to identify gaps between ideal and actual conditions. Through digital mapping, the schools can determine the type of assistance, training, and platform strengthening required by teachers (Zubaidah et al., 2020). This approach demonstrates that digital collaboration is not merely operational but also strategic, as it forms the basis for decision-making in change management.

The digital supervision system implemented by the schools is strongly aligned with School-Based Management (SBM) theory, which emphasizes transparency, accountability, and efficiency in school governance (Ela et al., 2023). Cloud-based storage of teaching materials, digital feedback, and document-based monitoring enhance transparency in the learning process. Additionally, digital supervision increases accountability because all revisions are recorded (Hariyati et al., 2021). Compared with traditional supervision, relying on momentary observations digital supervision provides

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a longitudinal picture of teacher development and their teaching materials, thereby strengthening the continuity of Merdeka Curriculum implementation.

Data analysis reveals that the practice of sharing best practices and conducting internal webinars aligns with the principles of communities of practice developed by Wenger (1998). In such communities, members share experiences, reflect on practice, and develop competencies through social interaction. Digital activities at MAN Samarinda City show that online discussion spaces serve not only as document-exchange platforms but also as learning environments that encourage innovation. This strengthens the organization's capacity to meet the demands of the Merdeka Curriculum, which requires high levels of creativity and flexibility from teachers (Maulana et al., 2023; Ramchand, 2014).

Compared with the study by Sullanmaa et al., (2021), digital collaboration at MAN Samarinda City shows similarities in creating curriculum coherence through knowledge sharing. Sullanmaa emphasize that knowledge sharing contributes to consistent curriculum, reform implementation, an insight that aligns with the schools' digital synchronization of teaching materials. Meanwhile, findings from Lestari & Sulton (2025) on the importance of communication in change processes are also reflected in the schools' digital coordination patterns. Thus, this study reinforces the literature that effective communication and digital document-sharing systems are key to successful curriculum reform.

In conclusion, the digital collaboration mechanisms identified in this study demonstrate the integration of technical, managerial, and social dimensions of change management. Digital collaboration not only facilitates document management but also cultivates a professional culture that supports cooperation, reflection, and innovation. These findings reinforce the perspective of Hifza et al., (2020), which states that successful change depends on an organization's ability to overcome resistance and build a strong coalition. Through digital collaboration, MAN Kota Samarinda has successfully created an adaptive and responsive interaction space, enabling the smooth integration of the Merdeka Curriculum into everyday school practices.

Supporting and Inhibiting Factors for the Effectiveness of Digital Collaboration–Based Change Management

The effectiveness of digital collaboration–based change management at MAN Samarinda City is strongly influenced by technological readiness, teachers' digital competence, and the school's managerial commitment. This analysis can be explained through Davis's (1989) Technology Acceptance Model (TAM), which states that technology use is shaped by perceived usefulness and perceived ease of use. Teachers who perceive digital platforms as beneficial tend to be more open to curriculum changes. This is reflected in teachers' enthusiasm for using Google Workspace and the LMS to develop teaching modules. However, teachers who feel their digital skills are still limited tend to be more cautious in adopting new technologies.

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Beyond TAM, Diffusion of Innovations theory Rogers's (2010) provides a strong explanation for variations in teachers' responses to digital updates. Rogers categorizes technology users as innovators, early adopters, early majority, late majority, and laggards. Field findings show that some teachers at MAN Samarinda City act as early adopters, actively seeking tutorials and leading the digital adaptation process. Meanwhile, members of the late majority require more intensive assistance to understand digital platforms used in preparing teaching materials. These adoption categories directly influence the speed at which digital innovations spread during the implementation of the Merdeka Curriculum.

Another supporting factor is the strong collaborative work culture, which can be explained through Senge's (2006) Organizational Learning theory. According to Senge, learning organizations grow when their members can collaborate, innovate, and understand a shared vision. The use of digital platforms at MAN Samarinda City facilitates the development of this collective learning culture through discussion forums, digital classrooms, and collaborative development of teaching materials. A work environment that encourages mutual learning enhances the effectiveness of change management because teachers feel supported in exploring new learning strategies aligned with the demands of the Merdeka Curriculum (Fathurrahman et al., 2022).

However, this study also finds that technical barriers such as unstable internet connectivity and limited devices remain significant challenges. Referring to the Socio-Technical Systems (STS) theory by Pasmore et al., (2019), successful innovation depends on the alignment between social components (teachers, leadership, work culture) and technical components (digital infrastructure, hardware, applications). Imbalances between these elements can hinder the effectiveness of change management (Lu et al., 2025). The technical obstacles present at MAN Samarinda City reflect this misalignment, especially when teachers need to upload teaching materials or join online meetings simultaneously.

Teachers' psychological readiness is also a determining factor, which can be analyzed through Ajzen's (1991) Theory of Planned Behavior (TPB). TPB explains that a person's intention to act is influenced by attitudes, subjective norms, and perceived behavioral control. In this study, teachers with positive attitudes toward the Merdeka Curriculum and strong social support from colleagues were more prepared to participate in digital collaboration. Conversely, those who felt they lacked control over technology use showed higher levels of resistance (Hadi, 2022). This condition can slow down the expected transformation process.

Compared with the findings of Hifza et al., (2020), the results of this study reinforce that resistance to change often emerges from inadequate planning and insufficient attention to human factors. In the context of MAN Samarinda, supporting factors such as digital leadership, continuous training, and a collaborative culture help reduce resistance. Meanwhile, Sullanmaa et al., (2021) emphasize the importance of knowledge sharing in successful curriculum reform, an aspect also observed in these

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schools. Thus, both theoretical analysis and field findings indicate that the effectiveness of digital collaboration based change management is shaped by the synergy among technical, psychological, social, and structural factors.

The Contribution of Digital Collaboration to School Readiness in Facing Educational Transformation in the Era of Civil Society 5.0

Digital collaboration plays a major role in strengthening schools' readiness to face educational transformation in the Civil Society 5.0 era, which demands the integration of humans and technology in the learning process. This analysis can be understood through the Digital Competence Framework for Educators (DigCompEdu) by Christine (2017), which explains that teachers must possess digital competence to design, implement, and evaluate technology-based learning. At MAN Samarinda City, digital collaboration in developing teaching materials, sharing resources, and monitoring learning provides teachers with direct experience in continuously developing these dimensions of digital competence. This has been proven to increase the institution's readiness to adapt to an increasingly digital educational ecosystem (Sakarina et al., 2022).

The contribution of digital collaboration can also be explained through the knowledge-based view (KBV) by Grant (1996), which states that knowledge is a key strategic resource for organizations. Schools that are able to manage knowledge through digital platforms are better prepared to innovate and respond to policy changes (Purnomo et al., 2024). Practice at MAN Samarinda City shows that digital information exchange among teachers accelerates adaptation to the Merdeka Curriculum, because knowledge circulates not only through formal training but also through online discussions, joint revisions, and digital reflections. This mechanism makes educational organizations more responsive and adaptive to the demands of the Civil Society 5.0 era.

Digital collaboration also strengthens school readiness by enhancing social cohesion, which can be examined using Putnam (2001) Social Capital theory. In school organizations, social capital is reflected in trust, professional networks, and collaborative norms built among teachers as they work together through digital platforms. At MAN Samarinda City, collaborative activities such as jointly developing teaching modules, internal digital mentoring, and open supervision strengthen professional networks among educators. The social cohesion formed through these digital interactions fosters a collective spirit to improve learning quality and embrace curriculum changes more positively.

The connection between digital collaboration and school readiness is also aligned with Heifetz (1998) Adaptive Leadership theory, which emphasizes the importance of an organization's capacity to adapt through collective learning when facing complex change. Implementing the Merdeka Curriculum is an adaptive shift that requires teachers to move beyond old habits and attempt new approaches (Neliwati et al., 2024). Digital collaboration practices at MAN Samarinda City facilitate this adaptive process, as teachers can support one another, exchange ideas, and find

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solutions together to the challenges of applying the new curriculum. Thus, digital collaboration enhances the school's adaptive capacity in responding to the demands of the Civil Society 5.0 era.

From a governance perspective, the contribution of digital collaboration can be analyzed through Bass & Riggio's (2006) Transformational Leadership Theory, which highlights the role of leadership in fostering innovation, intrinsic motivation, and organizational change. School leaders who actively encourage the use of technology in curriculum management help build an innovative and future-oriented work environment. Such leadership strengthens school readiness for major changes, especially when supervision, meetings, and academic planning can be carried out digitally (Junaedi et al., 2023). By combining transformational leadership with digital collaboration, schools can move more quickly in developing a learning culture aligned with the characteristics of Civil Society 5.0.

Reflecting on the findings of Darmawati & Pulungan (2025) regarding the need for educational adaptation to the Industrial Revolution 4.0, this study expands the understanding that the Civil Society 5.0 era demands more than digitalization, it requires the integration of human values, collaboration, and social innovation. Digital collaboration at MAN Samarinda City has proven not only to improve teachers' technological abilities but also to strengthen empathy, cooperation, and creativity, which form the core of the 5.0 concept. Thus, digital collaboration makes a significant contribution to preparing schools for a future of education grounded not only in technology but also in human-centered societal values.

CONCLUSION

This study demonstrates that digital collaboration plays a central role in change management for the implementation of the Merdeka Curriculum at MAN Samarinda City. The forms and mechanisms of digital collaboration applied not only include the use of cloud-based platforms, online communication, and data-driven coordination, but also the development of a collaborative ecosystem that enables teachers to share knowledge, collectively develop teaching materials, and continuously monitor learning progress. Through these mechanisms, the school successfully created a transformation process that is more structured, participatory, and adaptive in responding to national curriculum changes. The supporting factors that enhance the effectiveness of digital collaboration–based change management include technological readiness, teachers' digital competence, a collaborative work culture, and leadership that is responsive to innovation. Meanwhile, the inhibiting factors identified include infrastructural limitations, digital competence gaps, and teacher resistance to change. The combination of these supporting and inhibiting factors indicates that the success of change management is determined not only by technological sophistication but also by the psychological, social, and structural readiness of all school elements. This study also emphasizes that digital collaboration contributes to strengthening school readiness for educational transformation in the Civil Society 5.0 era. The integration of technology

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into the learning process and curriculum management enhances teachers' digital competence, builds social cohesion through professional networks, and accelerates adaptation to changes in educational policy. This demonstrates that the school is not only capable of adopting the Merdeka Curriculum technically but is also able to transform into a more innovative, reflective organization that is prepared to meet the demands of a human-centered and technology-based 5.0 society.

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