



Navigating Educational Disruption: Challenges and Opportunities for Differentiated Learning in Islamic Primary Education

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Abstract:

This study aims to examine the challenges and opportunities in implementing differentiated learning in Madrasah Ibtidaiyah during the era of disruption and to identify technological innovations that can support personalized learning. This study employed a qualitative research design using a case study approach. Data were collected through in-depth interviews with 14 teachers, classroom observations, and document analysis. The data were analyzed thematically to identify patterns related to the implementation of differentiated learning, challenges encountered by teachers, and opportunities for technological integration. The findings reveal several major challenges, including limited teacher competencies, inadequate technological infrastructure, time constraints, and large class sizes. Despite these challenges, significant opportunities exist through digital transformation, the implementation of the Merdeka Curriculum, and the use of collaborative digital learning platforms. These developments can facilitate more flexible, personalized, and student-centered learning practices. The study implies that successful implementation of differentiated learning requires strengthening teacher competencies, improving digital infrastructure, providing adequate institutional support, and integrating technology strategically. Policy support and continuous professional development are essential for creating sustainable conditions for student-centered education in diverse classrooms.

INTRODUCTION

The global education landscape is experiencing substantial transformation as technological development, social change, and emerging pedagogical paradigms reshape how learning is understood and delivered (Rokhimawan et al., 2025). Education is increasingly expected to respond to learners who differ in readiness, interests, abilities, learning preferences, and social backgrounds (Mufarokah et al., 2025). Differentiated learning has therefore become increasingly important because it promotes instructional practices that recognize and accommodate these individual differences rather than treating students as a homogeneous group (Ahmed et al., 2024). This issue extends beyond academic achievement because inclusive and responsive education can contribute to students' engagement, motivation, confidence, and long-term learning development. Evidence indicates that differentiated learning can improve student participation and academic outcomes across diverse educational settings (Badriyah et al., 2025). Consequently, developing educational systems capable of responding to learner diversity is essential for achieving equitable, inclusive, and student-centered education.

The importance of differentiated learning has become more pronounced during an era of educational disruption characterized by Industry 4.0, digital transformation, and the rapid emergence of new learning technologies (Yuen et al., 2023). The COVID-19 pandemic accelerated this transformation by compelling educational institutions to adopt digital technologies and reconsider conventional teaching practices (Zulaiha, 2025). These developments demonstrate that education systems must become more flexible and adaptive to changing learning conditions. For Islamic education, the challenge is particularly significant because technological innovation must be integrated without weakening religious values and educational traditions. Madrasah Ibtidaiyah, which combines general education with Islamic learning, represents an important context in which these changes intersect (Zul et al., 2026). The integration of differentiated learning can therefore support broader educational goals by enabling institutions to respond to learner diversity while simultaneously adapting Islamic education to contemporary technological and pedagogical developments.

Despite these opportunities, many educational institutions continue to experience difficulties in providing learning that adequately accommodates student diversity. Implementing differentiated instruction requires teachers to identify students' readiness, interests, and learning profiles and then adjust content, processes, products, and learning environments (Siregar et al., 2025). In practice, however, teachers may face limitations in pedagogical competence, digital literacy, instructional time, infrastructure, and institutional support (Ratnawulan et al., 2026). These challenges become more complex in Madrasah Ibtidaiyah because teachers must integrate national educational expectations with Islamic religious learning (Farisia et al., 2025). Previous research has identified persistent problems involving teacher competencies, resource availability, and institutional support in implementing differentiated instruction (Hakim & Mu'id, 2025). Thus, the broader problem is not merely whether differentiated learning is desirable, but whether educational institutions possess sufficient capacity and support to implement it effectively and sustainably.

The challenges become more visible in the educational practices of Madrasah Ibtidaiyah, where educators are required to respond simultaneously to curriculum transformation, technological change, and diverse student needs (Haddade et al., 2024). Historically, many madrasahs have relied heavily on conventional face-to-face instruction and religious learning practices, including memorization-based activities (Ismail et al., 2025). The era of disruption has required teachers to adapt these practices through digital technologies and more flexible instructional strategies. However, limited technological infrastructure remains a significant obstacle (Hamdanah, 2025), while insufficient preparation for digital pedagogy can restrict teachers' ability to design innovative learning experiences (Al Fath & Putri, 2024). Resistance to pedagogical change may further complicate implementation (Amalia et al., 2025). At the same time, the growing availability of educational technology, online platforms, and digital resources provides opportunities to personalize learning (Pahrudin et al., 2025). This contrasting situation illustrates the need to understand how opportunities can be translated into effective classroom practices.

Previous studies have established the potential of differentiated learning to improve student engagement, motivation, and achievement, while research on Indonesian education has increasingly examined its relationship with the Merdeka Curriculum (Putra et al., 2025). Other studies have highlighted the importance of teacher competence, technological resources, and institutional support in facilitating differentiated instruction (Muhlas et al., 2024). Research has also examined the

challenges of digital transformation and teacher readiness in Islamic educational contexts (Al Fath & Putri, 2024; Hamdanah, 2025). Nevertheless, these studies tend to address differentiated learning, digital transformation, or Islamic education as relatively separate issues. Limited attention has been given to their intersection within Madrasah Ibtidaiyah during an era of disruption. Consequently, the existing literature provides insufficient empirical understanding of how teachers negotiate the simultaneous demands of differentiated pedagogy, technological change, curriculum reform, and Islamic educational values. Addressing this gap is important for developing contextually appropriate strategies for sustainable educational transformation (Chigbu & Makapela, 2025; Tafese & Kopp, 2025).

The state of the art of this research lies in integrating differentiated learning, technological transformation, and Islamic primary education within a single analytical framework. Rather than viewing technology merely as a teaching aid, this study positions technological innovation as a potential enabling mechanism for addressing learner diversity and supporting differentiated instructional practices. The study also considers the implementation of the Merdeka Curriculum as an institutional opportunity for strengthening student-centered education while recognizing the distinctive demands of Islamic learning. This perspective is important because effective differentiation requires more than individual teacher initiative; it depends on the interaction between teacher capacity, technological resources, curriculum flexibility, classroom conditions, and institutional support. By examining these dimensions simultaneously, the study seeks to produce a more comprehensive understanding of the conditions that enable or constrain differentiated learning. This contribution is important for developing practical and sustainable models of educational innovation in Islamic primary education.

The research problem addressed in this study is how educators can implement differentiated learning effectively amid technological disruption, diverse student characteristics, and existing institutional constraints. The study argues that the challenges of differentiated learning cannot be resolved solely through the introduction of new technologies or curriculum policies. Instead, meaningful implementation requires the strategic integration of teacher competence, appropriate digital resources, flexible curriculum practices, collaborative learning environments, and sustained institutional support. The preliminary argument is that technology can create enabling conditions for personalized learning when it is accompanied by adequate teacher preparation and supportive educational policies. Similarly, the Merdeka Curriculum can provide greater flexibility for differentiation when educators have sufficient capacity to translate its principles into classroom practice. Therefore, this research investigates the barriers and opportunities surrounding differentiated learning and argues that systemic support, rather than isolated technological adoption, is essential for achieving sustainable student-centered education in Madrasah Ibtidaiyah.

RESEARCH METHODS

This study employed a qualitative research design using a multiple case study approach to examine the implementation of differentiated learning in Madrasah Ibtidaiyah (Pahrudin et al., 2025). A qualitative approach was selected because it enables researchers to obtain a rich and contextualized understanding of educational practices, experiences, and challenges within their natural settings (Ismail et al., 2025). The multiple case study design was considered appropriate because it allowed the study to explore differentiated learning across several institutional contexts and identify similarities and

differences in implementation. The research was conducted in three Madrasah Ibtidaiyah institutions in South Jakarta, Indonesia. These institutions were purposively selected because they provided relevant contexts for examining the implementation of differentiated learning and represented variations in institutional characteristics. The selection of the research sites was intended to provide a broader understanding of how teachers respond to curriculum transformation, student diversity, and technological developments within Islamic primary education.

Data were collected through three complementary techniques: semi-structured interviews, classroom observations, and document analysis. Participants included 14 teachers who were purposively selected based on their involvement in or experience with differentiated learning and their willingness to participate in the study. Semi-structured interviews, lasting approximately 60 minutes, explored teachers’ understanding of differentiated learning, instructional strategies, implementation challenges, technological use, and perceived opportunities during the era of disruption. Classroom observations, conducted for approximately 90 minutes per session, focused on teachers’ instructional practices, student engagement, classroom differentiation, and technology integration. Document analysis examined lesson plans, assessment materials, student work, and relevant institutional policies. The use of multiple data collection techniques enabled the researcher to obtain information from different perspectives and contexts. Data triangulation across interviews, observations, and documents was employed to strengthen the credibility and trustworthiness of the findings.

Data analysis followed a systematic qualitative process involving data condensation, data display, and verification of conclusions. The analysis was informed by the procedures described by Farisia et al. (2025), while Pahrudin et al. (2025) provided additional support for systematic qualitative data analysis. During data condensation, interview transcripts, observation notes, and documents were carefully reviewed, coded, categorized, and reduced to information relevant to the research objectives. The condensed data were subsequently organized and displayed in thematic categories to facilitate the identification of relationships, patterns, similarities, and differences across cases. The final stage involved verifying emerging interpretations by comparing findings across data sources and research sites. Triangulation was used to strengthen the validity of the interpretations, while member checking was conducted by confirming key interpretations with participating teachers. This analytical process enabled the study to identify major themes concerning the challenges, opportunities, and enabling conditions associated with differentiated learning implementation.

Table 1. Research Framework and Data Collection Instruments

Component	Description	Data Source
Research Design	Qualitative case study approach	Three Madrasah Ibtidaiyah institutions
Participants	14 teachers (4 per madrasah)	Purposeful sampling technique
Interview Protocol	Semi-structured interviews (60 min)	Teachers' perspectives and experiences
Observation Guide	Classroom observation (90 min/session)	Instructional practices and engagement
Document Analysis	Lesson plans, assessments, policies	Institutional documents and artifacts

Source: Researcher's Processed Data (2026)

Table 1 shows the research framework and data collection instruments used to obtain and organize the empirical data. The table summarizes the research design, participant characteristics, sampling technique, interview protocol, observation guide, and document analysis procedures. It also indicates the primary data sources associated with each research component. Semi-structured interviews were used to capture teachers' perspectives and experiences, and classroom observations documented instructional practices and student engagement. In contrast, document analysis provided supporting evidence from lesson plans, assessments, institutional policies, and other relevant educational artifacts. Together, these instruments provided complementary sources of evidence that supported data triangulation. The framework presented in Table 1 therefore illustrates the alignment between the research design, data collection techniques, participants, and sources of evidence used to investigate differentiated learning implementation.

RESULTS AND DISCUSSION

Results

The findings of this study reveal a complex landscape of challenges and opportunities in implementing differentiated learning at Madrasah Ibtidaiyah during the era of disruption. Analysis of interview data, classroom observations, and documents identified four primary categories of challenges: teacher competency limitations, infrastructure constraints, time and workload pressures, and institutional factors. At the same time, three major areas of opportunity emerged: technological innovation potential, curriculum policy support, and collaborative learning ecosystems. Beyond these seven thematic dimensions, the data reveal a deeper pattern in which Madrasah Ibtidaiyah teachers actively interpret and negotiate the relationship between educational traditions and innovation. Teachers were not passive recipients of educational disruption but actively adapted their instructional practices to changing conditions. This dual positioning constrained by limited resources while simultaneously demonstrating resourcefulness provides an important context for understanding the challenges and opportunities identified in the study.

Challenges in Implementing Differentiated Learning

Teacher competency emerged as the most significant barrier to implementing differentiated learning. Analysis of interview data revealed that 75% of participating teachers possessed limited understanding of differentiation principles beyond superficial adaptations, such as varying worksheet difficulty levels. Most teachers reported receiving minimal pre-service training in differentiated instruction and expressed uncertainty about how to address diverse learner needs within single classroom sessions simultaneously. One teacher stated, "We know every student is different, but how to teach 30 different students in 35 minutes remains unclear." The findings indicate that teachers recognized the importance of addressing student diversity but experienced difficulties translating this understanding into systematic differentiated instructional practices.

Infrastructure limitations presented substantial obstacles, particularly regarding differences in technological access across the three research sites. Classroom observations documented disparities in internet connectivity, device availability, and technical support. The urban madrasah maintained adequate internet connectivity and

device availability, while the suburban and rural madrasahs experienced intermittent connectivity and shared device access among multiple students. These infrastructure challenges were compounded by limited technical support and maintenance resources, creating barriers to consistent technology integration for differentiated learning purposes.

Observed Dimension	Urban Madrasah	Suburban Madrasah	Rural Madrasah
Internet Connectivity	High Adequate	Moderate Intermittent	Low Limited
Device Availability	High Adequate	Moderate Intermittent	Low Limited
Technical Support	Moderate Intermittent	Low Limited	Low Limited
Differentiation Confidence	High Adequate	Moderate Intermittent	Moderate Intermittent

Rating scale (derived from classroom observation & interview coding):

High/Adequate

Moderate/Intermittent

Low/Limited

Figure 1. Comparative Technology and Resource Profile Across Urban, Suburban, and Rural Madrasah Ibtidaiyah Research Sites

Source: Researcher's Processed Data (2026), based on triangulated classroom observation and interview coding.

Figure 1 shows the comparative conditions of the three research sites across four observed dimensions: internet connectivity, device availability, technical support, and teachers' self-reported confidence in differentiating instruction. The urban madrasah demonstrated relatively stronger conditions in technological access and support, while the suburban and rural madrasahs experienced greater limitations. The gradient from urban to rural sites illustrates that infrastructural readiness was unevenly distributed across institutions operating under the same national educational policy framework. The figure also presents teachers' confidence as an additional dimension of comparison, allowing the technological and human aspects of differentiated learning readiness to be viewed together.

Time constraints and workload pressures significantly impeded differentiation efforts. Teachers consistently reported that planning for differentiated instruction required substantially more preparation time than traditional whole-class instruction. With average class sizes ranging from 28 to 35 students, teachers struggled to design multiple learning pathways, create tiered assignments, and provide individualized feedback within available timeframes. The demanding administrative requirements associated with dual curriculum implementation, involving national subjects and Islamic religious studies, further exacerbated workload pressures. These conditions left limited capacity for teachers to consistently develop and implement innovative pedagogical approaches.

Institutional and curriculum integration challenges further compounded the difficulties of differentiation. Document analysis of lesson plans and madrasah policies indicated that the dual mandate of national curriculum standards and Islamic religious

studies imposed rigid content-coverage expectations that left limited room for flexible, needs-based grouping. Several madrasah leaders reported that standardized assessment requirements, particularly in preparation for national examinations, discouraged teachers from departing too far from uniform instructional sequences, even when they recognized the pedagogical value of differentiation. One head teacher explained, “Our biggest dilemma is balancing competency-based assessment with the demand to prepare students for standardized tests.” The findings demonstrate that institutional structures, curriculum requirements, and assessment expectations formed important contextual constraints on differentiated instruction.

Collectively, the four interlocking challenges teacher competency, infrastructure, time and workload, and institutional structure were identified alongside corresponding opportunities for strengthening differentiated learning implementation.

Table 2. Challenges and Opportunities Matrix for Differentiated Learning Implementation

Dimension	Key Challenges	Emerging Opportunities
Teacher Competency	Limited training in differentiation strategies; insufficient pedagogical content knowledge	Growing professional development programs; online learning communities; peer mentoring initiatives
Infrastructure	Inadequate internet connectivity; limited device availability; technical support gaps	Government digital infrastructure investment; mobile learning opportunities; offline educational apps
Time Management	Heavy administrative workload; large class sizes; limited preparation time	Shared resource platforms; collaborative lesson planning; technology-assisted assessment tools
Curriculum Integration	Dual curriculum demands; rigid assessment requirements; standardization pressures	Merdeka Curriculum flexibility; competency-based assessment; integration of Islamic values with modern pedagogy

Source: Researcher's Processed Data (2026)

Table 2 shows the four major dimensions of challenges and their corresponding emerging opportunities identified from the research data. Teacher competency is associated with limitations in differentiation training and pedagogical content knowledge, alongside opportunities for professional development, online learning communities, and peer mentoring. Infrastructure challenges include inadequate connectivity, limited device availability, and technical support gaps, while government infrastructure investment, mobile learning, and offline educational applications represent potential opportunities. Time management challenges involve administrative workload, large class sizes, and limited preparation time, with shared resources, collaborative lesson planning, and technology-assisted assessment identified as opportunities. Curriculum integration challenges involve dual curriculum demands, rigid assessment requirements, and standardization pressures. In contrast, curriculum flexibility, competency-based assessment, and the integration of Islamic values with modern pedagogy provide corresponding opportunities.

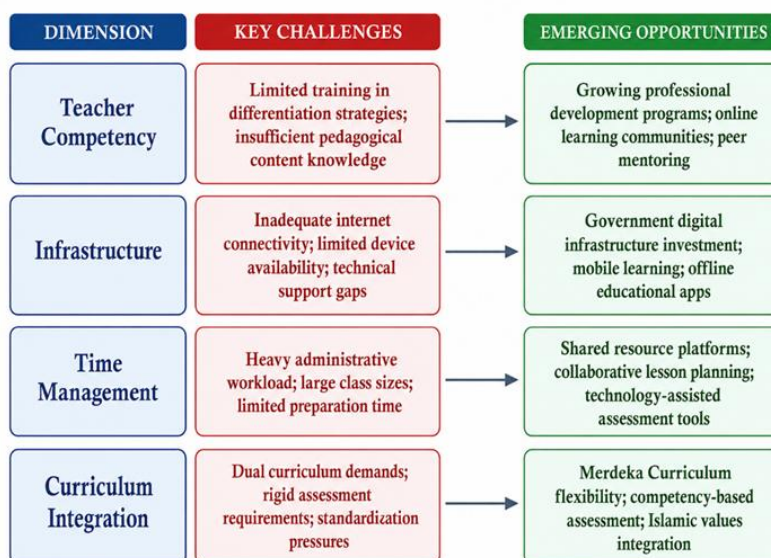


Figure 2. Visual Synthesis of the Challenges–Opportunities Matrix for Differentiated Learning Implementation.

Source: Researcher's Processed Data (2026), adapted from Table 2

Figure 2 shows the relationship between the four major challenge dimensions and their corresponding opportunities. Teacher competency is connected to professional development, online learning communities, and peer mentoring. Infrastructure limitations are connected to digital infrastructure investment, mobile learning, and offline educational applications. Time and workload pressures correspond to shared resources, collaborative lesson planning, and technology-assisted assessment. Curriculum integration challenges correspond to the flexibility of the Merdeka Curriculum, competency-based assessment, and the integration of Islamic values with modern pedagogy. The figure visually synthesizes the findings presented in Table 2 and demonstrates that potential areas for institutional and pedagogical response accompany each identified challenge.

Opportunities in the Era of Disruption

Despite significant challenges, the era of disruption presented substantial opportunities for educational transformation. The research data showed that teachers who successfully integrated technology used mobile applications, educational platforms, and multimedia resources to provide multiple learning pathways. Adaptive learning software enabled individualized pacing, while collaborative online tools facilitated peer interaction across different readiness levels. The availability of digital resources therefore provided teachers with additional possibilities for adapting learning materials and activities to students' diverse needs.

The implementation of the Merdeka Curriculum also created favorable conditions for differentiated learning. Analysis of madrasah documents revealed that teachers at all three research sites were experimenting with project-based learning, inquiry approaches, and flexible grouping strategies consistent with differentiation principles. The curriculum's emphasis on competency development and character formation provided teachers with opportunities to organize learning activities according to students' needs while maintaining the integration of religious values within the learning process.

Collaborative professional learning communities emerged as another important opportunity. Teachers who participated in peer observation groups and shared resource repositories reported increased confidence in implementing differentiated strategies. The shift toward online and hybrid professional development during and after the pandemic expanded access to training resources. Digital platforms enabled asynchronous collaboration, allowing teachers to share differentiated lesson plans, assessment rubrics, and instructional videos across geographical boundaries. These collaborative networks provided opportunities to strengthen professional capacity and share instructional practices.

Taken together, the three research sites revealed a graded pattern of readiness rather than a uniform trajectory toward differentiated practice. The urban madrasah, benefiting from stronger connectivity and more frequent exposure to professional development, advanced furthest toward technology-mediated differentiation. The suburban site occupied an intermediate position, characterized by partial infrastructure and emerging teacher confidence that depended heavily on individual initiative rather than institutional support. The rural madrasah, despite facing the most severe resource constraints, demonstrated notable resourcefulness through low-technology differentiation strategies, including flexible small-group rotations, peer-tutoring arrangements, and locally produced print materials that required minimal digital infrastructure.

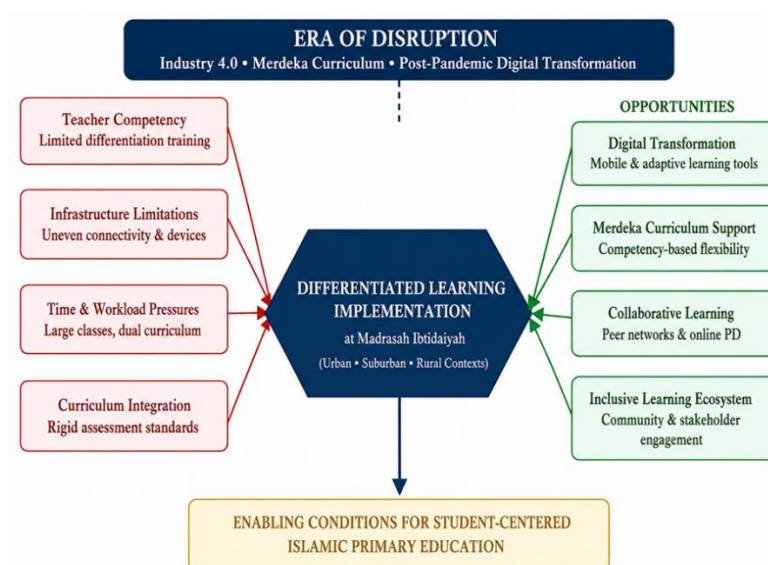


Figure 3. Conceptual Framework for Differentiated Learning Implementation in the Era of Disruption.

Source: Researcher's Processed Data (2026)

Figure 3 shows the conceptual framework developed from the patterns identified across the three research sites. The framework connects the four major challenges—teacher competency, infrastructure, time and workload, and institutional factors—with the three major opportunity areas: technological innovation, curriculum policy support, and collaborative learning ecosystems. It also represents the graded pattern of implementation identified across the urban, suburban, and rural madrasahs. The urban site demonstrated stronger technology-mediated differentiation, and the suburban site

showed an intermediate pattern characterized by emerging teacher confidence and partial infrastructure. In contrast, the rural site demonstrated greater reliance on low-technology strategies. The framework therefore captures the interaction between institutional constraints, available resources, teacher adaptation, and differentiated learning practices.

The findings further indicate that differentiated learning implementation during the disruption era was not solely determined by technological access. Teachers in different institutional contexts demonstrated localized pedagogical creativity in responding to their available resources. The urban madrasah relied more extensively on technology-mediated approaches, whereas the suburban and rural madrasahs developed alternative strategies based on their respective conditions. Leadership support and institutional culture also appeared to influence teachers' ability to experiment with differentiated learning. These findings demonstrate that the implementation process involved continuous adaptation to institutional circumstances rather than a single standardized pathway.

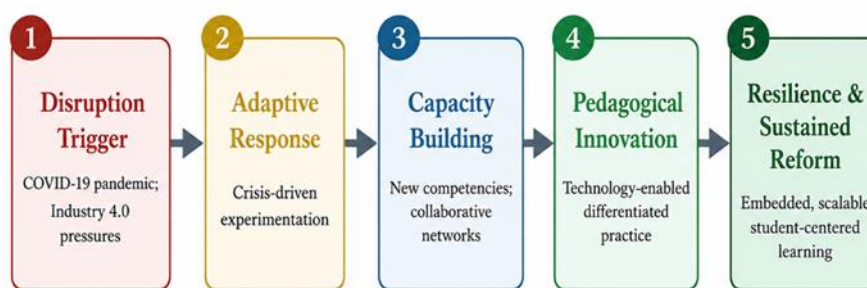


Figure 4. A Catalytic Model of Disruption-Driven Pedagogical Change
Source: Researcher's Processed Data (2026).

Figure 4 shows a five-stage catalytic model derived from the findings, consisting of disruption trigger, adaptive response, capacity building, pedagogical innovation, and sustained resilience. The model represents the progression of educational responses observed during the disruption era. The disruption trigger created pressure for teachers and institutions to reconsider established practices. Adaptive responses involved adjustments to instructional methods and learning resources, followed by capacity building through professional learning and experience. These processes supported the emergence of pedagogical innovations, including technology-mediated differentiation and low-technology adaptive strategies. The final stage, sustained resilience, represents the development of practices that can continue beyond the immediate disruption. The model also reflects that madrasahs may progress through these stages at different rates depending on infrastructure, teacher competence, institutional support, and local conditions.

Discussion

The findings demonstrate that teacher competency was the most significant barrier to implementing differentiated learning, with 75% of participating teachers showing limited understanding beyond basic adaptations. This finding is consistent with Putra et al. (2025), who identified competency gaps among Indonesian primary school teachers. However, the present study extends this finding by showing that competency

limitations are linked to classroom conditions, particularly large class sizes, limited preparation time, and the demands of integrating general and Islamic subjects. Teachers understood that students differed in readiness and learning needs but struggled to translate this awareness into systematic instructional differentiation. Theoretically, this finding supports an ecological understanding of teacher competence in which pedagogical knowledge interacts with classroom and institutional conditions. Practically, professional development should therefore emphasize applied skills, including differentiated assessment, flexible grouping, tiered learning activities, and classroom management. Continuous mentoring and peer collaboration are also needed to transform conceptual understanding into sustainable classroom practices.

The infrastructure findings are consistent with previous studies that identify unequal technological access as a major challenge in educational transformation. Badriyah et al. (2025) highlighted infrastructure limitations, while Isnaeni et al. (2025) emphasized disparities in technological access across educational settings. The present findings confirm these concerns, particularly through differences in connectivity, device availability, and technical support among the three madrasahs. Nevertheless, the rural site demonstrated that limited technology did not completely prevent differentiated learning. Teachers used flexible small-group rotations, peer tutoring, and locally produced print materials to respond to diverse learners. This finding differs from technology-centered assumptions that digital access is the primary condition for personalization. Theoretically, it suggests that differentiated learning should be understood through a broader socio-technical perspective. Practically, policymakers should combine infrastructure investment with low-bandwidth resources, offline applications, teacher training, and technical assistance to prevent technological inequality from becoming an educational inequality.

The findings concerning time, workload, and curriculum integration complement previous research on the implementation of differentiated learning and curriculum reform. Siregar et al. (2025) emphasized institutional and curriculum-related challenges, while Lailiyah et al. (2024) highlighted the flexibility provided by the Merdeka Curriculum. The present study confirms that the Merdeka Curriculum created opportunities for project-based learning, inquiry activities, and flexible grouping. However, teachers continued to experience pressure from content coverage, standardized assessments, and the dual curriculum requirements of general and Islamic education. This finding reveals a gap between policy-level flexibility and classroom-level implementation. Theoretically, curriculum reform should therefore be viewed as an institutional process rather than merely a formal policy change. Practically, differentiated learning requires alignment between curriculum objectives, assessment systems, workload arrangements, and classroom expectations. Without such alignment, teachers may possess formal flexibility but remain constrained by institutional demands.

The findings also demonstrate the importance of collaborative professional learning as an enabling condition for differentiated instruction. Teachers involved in peer observation, shared resource repositories, and online professional development reported greater confidence in developing differentiated learning practices. This finding complements research emphasizing the importance of teacher development and collaborative learning in educational transformation. The contribution of the present study is to demonstrate how digital professional communities can partially overcome geographical limitations and extend professional learning opportunities to teachers in

resource-constrained contexts. Theoretically, teacher competence can therefore be understood not only as an individual capacity but also as a socially constructed and continuously developed capacity within professional networks. Practically, madrasah administrators should institutionalize peer mentoring, collaborative lesson planning, resource sharing, and regular professional learning activities. Such mechanisms can strengthen teachers' capacity while reducing the individual workload associated with designing differentiated learning materials and assessment activities.

The state of the art of this study lies in integrating teacher competency, infrastructure, workload, curriculum integration, technological innovation, policy support, and professional collaboration within a single framework for understanding differentiated learning in Islamic primary education. Previous studies have examined these dimensions largely as separate concerns, including teacher digital competence (Al Fath & Putri, 2024), infrastructure limitations (Hamdanah, 2025), differentiated learning implementation (Rokhimawan et al., 2025), and curriculum transformation (Lailiyah et al., 2024). The present study contributes a more integrated perspective by demonstrating that differentiated learning emerges through interactions among these dimensions. It also extends the understanding of educational disruption by showing that disruption may function as a catalyst for pedagogical innovation when teachers receive adequate institutional support. This interpretation is consistent with Shulkhah and Mustoip (2026), while the present study adds an Islamic primary education perspective in which technological and low-technology innovations coexist.

The principal contribution of this research is the development of a context-sensitive understanding of differentiated learning implementation in Madrasah Ibtidaiyah. The findings indicate that successful differentiation depends not simply on technology, curriculum policy, or teacher competence individually, but on the interaction among these elements within particular institutional contexts (Ahmed et al., 2024; Yuen et al., 2023). This perspective has theoretical implications for educational change in religious school settings because Islamic educational values, technological transformation, and differentiated pedagogy must operate within the same educational ecosystem (Mutmainnah, 2025). It also creates possibilities for incorporating diverse learning modalities into Islamic learning, including Quranic recitation, Islamic storytelling, and collaborative religious inquiry (Maulana & Adnan, 2026). Practically, the findings imply that policymakers should prioritize teacher development, equitable infrastructure, flexible assessment, collaborative professional learning, and context-sensitive technological solutions. The study therefore contributes a framework in which disruption is understood not only as a constraint but also as an opportunity for adaptive and sustainable pedagogical transformation.

CONCLUSION

This study demonstrates that implementing differentiated learning in Madrasah Ibtidaiyah is shaped by interactions among teacher competency, infrastructure, time and workload, and institutional conditions, while technological innovation, curriculum flexibility, and professional collaboration provide important enabling opportunities. The main lesson is that educational disruption should not be viewed solely as a constraint but also as an opportunity to strengthen adaptive, student-centered, and context-sensitive pedagogical practices. The study contributes to the scholarship on Islamic primary education by providing an integrated understanding of how differentiated learning can develop within the intersection of pedagogical reform, technological transformation, and

Islamic educational contexts. Its practical contribution lies in emphasizing that sustainable differentiation requires not only technology but also teacher capacity, institutional support, and collaborative professional learning. However, the study is limited by its qualitative case study design, relatively small number of participants, and focus on three Madrasah Ibtidaiyah institutions, which limits the generalizability of the findings. Future research should employ longitudinal and comparative approaches involving broader geographical contexts and examine the long-term effects of differentiated learning on student engagement, achievement, and culturally responsive learning outcomes in Islamic education.

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