

Technological Differentiation for Inclusive and Adaptive Islamic Education for Students with Disabilities

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Abstract

Inclusive education in Islam affirms every santri's right to access religious learning; however, this study specifically focuses on inclusive Islamic education for students with disabilities in pesantrens and Islamic schools. In practice, these institutions face persistent challenges, including limited physical accessibility, scarcity of adaptive learning materials, insufficient teacher competencies, and social stigma toward students with special needs. This study aims to theoretically and practically identify approaches, research trends, and gaps related to the integration of differentiated learning and digital technology in inclusive Islamic education. Using a qualitative library research method, this study systematically reviews and thematically analyzes selected peer-reviewed literature published between 2019 and 2024, focusing on differentiated instruction, educational technology in Islamic education, and inclusive practices for students with disabilities. The findings indicate that integrating differentiated content, process, product, and learning environments with digital tools such as e-learning platforms, audio-based tafsir applications, gamified fiqh learning, and assistive media (Braille materials and sign-language videos) enhances learning motivation, conceptual understanding, and classroom participation. Documented case studies show improved student engagement, better access to religious texts, and more adaptive instructional practices. Nevertheless, limited technological infrastructure, low teacher digital literacy, and a lack of locally grounded empirical research remain significant challenges. These findings underscore the importance of technology-based differentiated learning for strengthening inclusive Islamic education and informing adaptive curricula, teacher development, and inclusive educational policies.

Keywords: *Inclusive Islamic Education; Differentiated Instruction; Educational Technology; Students with Disabilities*

Abstrak

Pendidikan inklusif dalam Islam menegaskan hak setiap santri untuk memperoleh pembelajaran keagamaan; namun, penelitian ini secara khusus berfokus pada pendidikan Islam inklusif bagi santri penyandang disabilitas di pesantren dan sekolah Islam. Dalam praktiknya, lembaga-lembaga tersebut masih menghadapi berbagai tantangan, antara lain keterbatasan akses fisik, kelangkaan bahan ajar adaptif, kompetensi guru yang belum memadai, serta stigma sosial terhadap peserta didik berkebutuhan khusus. Penelitian ini

bertujuan untuk mengidentifikasi secara teoretis dan praktis pendekatan, tren penelitian, serta celah riset terkait integrasi pembelajaran berdiferensiasi dan teknologi digital dalam pendidikan Islam inklusif. Penelitian ini menggunakan metode studi kepustakaan kualitatif dengan menelaah dan menganalisis secara tematik literatur ilmiah bereputasi yang diterbitkan pada periode 2019–2024, dengan fokus pada pembelajaran berdiferensiasi, teknologi pendidikan dalam pendidikan Islam, serta praktik inklusif bagi santri penyandang disabilitas. Hasil kajian menunjukkan bahwa integrasi diferensiasi konten, proses, produk, dan lingkungan belajar dengan perangkat digital seperti platform e-learning, aplikasi tafsir berbasis audio, pembelajaran fikih berbasis gim, serta media asistif (bahan Braille dan video bahasa isyarat) dapat meningkatkan motivasi belajar, pemahaman konseptual, dan partisipasi kelas. Studi kasus terdokumentasi menunjukkan peningkatan keterlibatan santri, akses yang lebih baik terhadap teks-teks keagamaan, serta praktik pembelajaran yang lebih adaptif. Meskipun demikian, keterbatasan infrastruktur teknologi, rendahnya literasi digital guru, dan minimnya penelitian empiris berbasis lokal masih menjadi tantangan utama. Temuan ini menegaskan pentingnya pembelajaran berdiferensiasi berbasis teknologi sebagai kerangka strategis untuk memperkuat pendidikan Islam inklusif serta sebagai dasar pengembangan kurikulum adaptif, peningkatan kompetensi guru, dan perumusan kebijakan pendidikan yang inklusif.

Kata Kunci: Pendidikan Islam Inklusif; Pembelajaran Diferensiasi; Teknologi Pendidikan; Santri Difabel

INTRODUCTION

Islamic teachings emphasize the principles of equality (*al-musāwāh*) and justice (*al-'adl*), affirming that all human beings are equal before Allah and possess the same right to acquire knowledge regardless of social background or physical condition. These values are explicitly reflected in the Qur'an and Hadith, which position education as a fundamental right and obligation for all Muslims. Within this normative framework, inclusive education becomes an essential manifestation of Islamic ethics, particularly in Islamic educational institutions such as pesantren and madrasah, which play a central role in shaping religious understanding and moral character.

Inclusive education in Islamic contexts is not merely concerned with access but also with the provision of learning environments that respect diversity, promote participation, and accommodate the needs of students with special needs. Previous studies have emphasized that Islamic perspectives on human equality provide a strong theological basis for inclusive educational practices (Parnawi & Syahrani, 2024). However, despite this strong normative

foundation, the implementation of inclusive education in pesantren and Islamic schools remains uneven and limited, especially for students with disabilities.

Empirically, pesantren and Islamic educational institutions face persistent structural and pedagogical challenges in implementing inclusive education. Many institutions lack disability-friendly infrastructure, such as ramps, accessible classrooms, and adaptive learning spaces. In addition, inclusive learning resources such as Braille textbooks, audio-based religious materials, and sign-language-supported instructional media are still scarce. Teacher-related challenges are equally significant. Islamic Religious Education (PAI) teachers often have limited competencies in inclusive pedagogy, differentiated instruction, and the effective use of educational technology to support diverse learners (Ansori, 2021). These limitations highlight a critical gap between inclusive educational ideals and classroom realities.

Several case studies further illustrate these challenges. The Darul Ashom Yogyakarta Islamic Boarding School for the Deaf has developed sign language-based teaching materials as part of its inclusive education initiative. However, the program has not yet reached its optimal effectiveness due to a shortage of trained educators and limited institutional capacity (Silvia, 2024). Similarly, the Ainul Yakin Gunungkidul pesantren is only able to accommodate students with specific types of disabilities, leaving other students with special needs insufficiently served (Muntakhib & Ta'rif, 2023). These cases suggest that inclusive practices in pesantren are often fragmented, dependent on local initiatives, and not supported by systematic instructional frameworks.

From a theoretical perspective, differentiated learning provides a relevant pedagogical framework for addressing learner diversity. Differentiated learning emphasizes variations in content, process, product, and learning environment to accommodate students' readiness, interests, and learning profiles. When combined with the principles of inclusive education, differentiated learning offers a flexible approach that allows students with disabilities to participate meaningfully in the same learning environment as their peers. In recent years, digital technology has further strengthened this framework by enabling learning materials to be delivered in multiple formats textual, auditory, and visual—thus enhancing accessibility and adaptability.

Previous studies have shown that digital technology can improve learning quality and access in Islamic education. The use of interactive quizzes,

multimedia content, and on-demand video interpretations has been found to enhance student motivation and conceptual understanding (Khofifah et al., 2024). Moreover, information technology plays a crucial role in expanding access to Islamic education in remote and underserved areas (Muzaini et al., 2024). Within the Indonesian context, differentiated learning approaches promoted through the Merdeka Belajar curriculum framework provide additional flexibility in learning objectives, processes, and outcomes, making instruction more responsive to students' needs and abilities (Nasution et al., 2023).

Despite the growing body of literature on inclusive education, differentiated learning, and educational technology, existing studies tend to examine these domains separately. There remains a limited number of comprehensive reviews that systematically analyze the integration of digital technology and differentiated learning within inclusive Islamic education, particularly in pesantren settings and with a specific focus on students with disabilities. This gap indicates a lack of synthesized knowledge that could guide educators, institutions, and policymakers in developing inclusive and adaptive instructional strategies grounded in both pedagogical theory and Islamic educational contexts.

Therefore, this study aims to theoretically and practically identify and analyze approaches, research trends, and gaps related to the integration of digital technology and differentiated learning in inclusive Islamic education for students with disabilities. The significance of this research lies in its contribution to consolidating fragmented findings into a coherent conceptual framework and providing practical insights for adaptive curriculum development, inclusive institutional policies, and the professional development of PAI teachers. By addressing these issues, this study seeks to support the advancement of more equitable, inclusive, and contextually relevant Islamic education practices.

RESEARCH METHOD

This study employs a qualitative research design using a library research approach to explore scholarly perspectives and research findings related to differentiated learning, digital technology integration, and inclusive Islamic education for students with disabilities in Islamic boarding schools. Library research is appropriate for examining the development of concepts, theories, and educational practices documented in academic literature (Zed, 2008). Data

collection was conducted through a systematic literature search using reputable academic databases, including Google Scholar, DOAJ, Scopus, and national journal portals. The search process applied relevant keywords such as *inclusive Islamic education, differentiated instruction, educational technology in Islamic Religious Education (PAI), students with disabilities, and pesantren*. The inclusion criteria consisted of peer-reviewed journal articles, academic books, conference proceedings, and official policy documents published between 2015 and 2025, written in Indonesian or English. Publications that were non-academic, opinion-based, outdated, or not directly related to the context of Islamic Religious Education were excluded to ensure the relevance and credibility of the data.

Data analysis was conducted using a thematic content analysis approach. The analytical procedure involved several stages: (1) careful and repeated reading of selected texts to gain a comprehensive understanding, (2) identification of meaningful units and key ideas relevant to the research focus, (3) categorization of these ideas into thematic groups, and (4) interpretative synthesis to compare patterns, similarities, and differences across studies (Sugiyono, 2017). To enhance analytical rigor, themes were continuously refined through cross-referencing between sources and alignment with the research objectives. The findings of the analysis were organized into three main thematic areas: differentiated instruction in Islamic Religious Education, the integration of digital technology in Islamic education, and inclusive educational practices for students with disabilities in Islamic boarding schools. This methodological framework ensures transparency, coherence, and theoretical depth in addressing the research questions.

RESEARCH FINDINGS AND DISCUSSION

Differentiated Learning in Islamic Religious Education: Conceptual Foundations and Empirical Findings

Differentiated learning is an instructional approach that adapts content, process, product, and learning environment to meet the diverse needs of learners. Tomlinson, (1999) defines differentiated instruction as a teacher's effort to design multiple learning pathways so that all students can achieve expected competencies. Its core principles include student readiness, interests, and learning profiles (Hall et al., 2003). This approach recognizes that students possess varied strengths and challenges, necessitating a flexible pedagogical

framework that moves beyond a one-size-fits-all model (Wulandari et al., 2024). In the context of Islamic Religious Education, differentiated learning aligns with the principles of inclusive education by acknowledging the diverse learning needs and abilities of students, including those with disabilities, and has been identified as a key strategy for implementing flexible curricula (Ghani et al., 2023; Rosfiani et al., 2025). This approach not only supports learners with varying academic aptitudes but also accommodates diverse cultural and religious backgrounds, fostering an equitable learning environment (Samsudin, 2025). The implementation of differentiated instruction in Islamic Religious Education enables educators to tailor teaching strategies, content delivery, and assessment methods to suit individual student requirements, thereby enhancing comprehension and engagement with religious values and teachings (Dirman et al., 2025).

Research findings from recent Islamic education studies indicate that differentiated learning plays a significant role in accommodating students' varied levels of understanding, particularly in core PAI subjects such as aqidah, fiqh, and akhlaq. Apriliyani, (2024) demonstrates that when instructional materials are aligned with students' readiness and interests, the internalization of Islamic values becomes more meaningful. Similarly, Ridwan & Umarella, (2024) report improved comprehension of PAI subjects following the implementation of differentiated strategies within the Merdeka Belajar Curriculum at MTs Diniyah Puteri Pekanbaru.

In practice, differentiation in PAI manifests through four interrelated dimensions (Tomlinson, 2001; Hall et al., 2003). Findings show that content differentiation such as providing simplified tafsir texts for beginners and advanced interpretations for more capable learners helps reduce cognitive overload. Process differentiation, including group discussions, fiqh case studies, and worship simulations, enables teachers to respond to varied learning styles. Product differentiation allows students to demonstrate learning through diverse outputs, such as reflective writing, multimedia projects, or virtual mosque explorations. Learning environment differentiation, such as creating discussion corners, Qur'an reading spaces, and quiet zones, fosters a classroom atmosphere responsive to individual needs.

From an Islamic pedagogical perspective, these findings align with Al-Faruqi, (1989) assertion that religious curricula must be contextualized according

to learners' cultural backgrounds, cognitive levels, and life experiences. Al-Qaradawi, (1999) further emphasizes pedagogical flexibility, encouraging teachers to employ varied methods discussion, case analysis, and dramatization to ensure deeper internalization of Islamic values.

Overall, the findings confirm that differentiated learning is not merely a pedagogical option but a necessity in Islamic Religious Education, particularly within the framework of Merdeka Belajar, as it supports equity, relevance, and meaningful learning outcomes.

Digital Technology in Islamic Education: Learning Innovation and Classroom Impact

The findings indicate that digital technology has significantly transformed Islamic Religious Education, making religious content more interactive, accessible, and adaptable to students' learning profiles. The shift from traditional lecture-based approaches toward digital platforms allows students to access Qur'anic, hadith, and fiqh resources flexibly (Yansyah et al., 2025).

Several studies report that Learning Management Systems (LMS) such as Google Classroom and Moodle enhance instructional organization and student discipline by providing structured access to learning materials and assessments (Yansyah et al., 2025). Multimedia-based learning tools animated Qur'anic videos, interactive quizzes, and worship simulations have been shown to increase student motivation and retention, particularly for abstract concepts in fiqh and akhlaq (Salsabila et al., 2022).

More inclusive applications are evident in the use of audio-based tafsir and sign-language-supported media. Efendi, (2024) finds that audio tafsir combined with sign language videos improves accessibility for deaf students while preserving the authenticity of religious narratives. Gamification strategies such as points, badges, and leaderboards also demonstrate positive effects on student participation and engagement in PAI learning (Mahmud & Tamuri, 2023).

Despite these positive outcomes, the findings also reveal persistent challenges, including limited internet access in remote pesantren, uneven teacher digital competence, and concerns over maintaining the accuracy of online religious content (Burhanudin & Septianti, 2024). These constraints indicate that

technology integration must be accompanied by sustained teacher training and institutional support.

Thus, technology in Islamic education functions not merely as a supplementary tool, but as a catalyst for differentiated and inclusive learning, provided it is grounded in sound pedagogy and Islamic values.

Inclusive Education for Students with Disabilities in Pesantren: Current Conditions and Challenges

Findings from policy analysis and empirical studies reveal that inclusive education in pesantren is strongly supported by national and international legal frameworks, including the 1945 Constitution, Law No. 20 of 2003, Law No. 8 of 2016, PP No. 13 of 2020, and international commitments such as the Salamanca Declaration and the CRPD.

At the institutional level, recent regulations issued by the Ministry of Religious Affairs mandate the provision of reasonable accommodations, including Braille Qur'ans, sign language materials, ramps, and disability-friendly facilities. These policies reflect Islamic ethical principles emphasizing human dignity, compassion, and mutual assistance, as articulated in the Qur'an and Hadith.

However, research findings consistently highlight significant implementation gaps. Many pesantren still lack multisensory learning materials, accessible infrastructure, and teachers trained in inclusive pedagogical strategies (Hasmiza & Muhtarom, 2022; Parnawi & Syahrani, 2024). Social stigma toward students with disabilities also remains a critical barrier, limiting participation and family support.

These findings suggest that inclusive education in pesantren remains uneven, requiring systematic efforts to bridge policy commitments and classroom realities through curriculum adaptation, infrastructure improvement, and teacher professional development.

Integration of Differentiated Learning and Technology: Inclusive Practices, Implications, and Future Directions

The integration of differentiated learning strategies with digital technology emerges as a key finding across reviewed studies. Research shows that digital modules with varying levels of difficulty enable individualized learning paths, allowing students to progress according to their abilities (Marom,

2019). This approach is particularly effective for students with disabilities when combined with Braille texts, audio tafsir, and sign language videos (Melnea, 2022).

Project-based and peer-learning models such as mixed-ability groups designing wudhu tutorials or creating *tausiyah* vlogs have been found to foster empathy, collaboration, and deeper conceptual understanding. Visual media, structured repetition, and scaffolding techniques further enhance comprehension and memory retention among students with special needs (Ansori, 2021; Hudamahya, 2025).

Nevertheless, significant research gaps remain, particularly the lack of locally grounded empirical studies on inclusive differentiation models in traditional pesantren. Limited infrastructure and insufficient teacher training also hinder sustainability (Hasmiza & Muhtarom, 2022; Bahrudin et al., 2024).

From a practical and policy perspective, the findings underscore the need for institutional commitment to inclusive curriculum standards, budget allocation for assistive technology, and systematic professional development for PAI teachers. Collaboration with universities, NGOs, and technology developers is crucial to ensure pedagogical rigor and religious authenticity.

Findings from policy oriented studies indicate that inclusive Islamic education in Indonesia is strongly shaped by international and national legal frameworks, including the Salamanca Declaration (UNESCO, 1994), which encourages every country to implement inclusive education as an integral part of the national education system. The ratification of the UN Convention on the Rights of Persons with Disabilities (CRPD, 2006) reinforces the government's obligation to create a learning environment that is welcoming to all, including through the establishment of Disability Service Units in educational institutions.

At the level of madrasahs and pesantren, the Ministry of Religious Affairs has issued several regulations to promote inclusivity. The Director General of Islamic Education's Decree No. 1262 of 2024 on Technical Guidelines for Child-Friendly Care in Pesantren mandates the development of a Roadmap for Child-Friendly Pesantren. This is reinforced by Ministerial Decree No. 91 of 2025 on the Roadmap for the Development of Child-Friendly Pesantren Programs, which requires pesantren to provide Braille Qur'ans, sign language Qur'ans, Braille Islamic texts, wheelchair facilities, ramps, and specialized assistance for students with disabilities.

Compliance with these regulations is also grounded in the values of the Qur'an and Hadith. Allah's command in Surah al-Hujurat verse 13 affirms that

human dignity in the sight of Allah is measured by piety, not physical condition or social status. Surah al-Maidah verse 2 calls Muslims to help one another in goodness and piety, while a Hadith narrated by Muslim states that Allah shows mercy to those who are merciful forming the ethical foundation for implementing inclusive education services.

Nevertheless, challenges remain. Standard Islamic Religious Education (PAI) curricula often lack multisensory materials such as Braille texts, audio interpretations, or sign language videos. Pesantren infrastructure is frequently hindered by stairs without ramps, narrow hallways, and inaccessible toilets, despite Regulation No. 48 of 2023 from the Ministry of Education, Culture, Research, and Technology requiring disability-friendly facilities. Additionally, teacher competence in inclusive strategies and assistive technologies such as screen readers or multisensory methods needs to be improved through ongoing training.

To address these issues, pesantren must develop adaptive curricula in accordance with Law No. 20 of 2003 on the National Education System and Government Regulation No. 13 of 2020 on Reasonable Accommodations for Students with Disabilities. The National Education Law governs the general education system, while PP 13/2020 provides more specific provisions for accommodating students with disabilities. As part of implementing these mandates, pesantren must include Braille, audio, and sign language materials, and apply the principles of Universal Design for Learning. Infrastructure must be renovated to meet the standards of Regulation No. 48/2023 and Ministerial Decree No. 91/2025, including ramps, handrails, and accessible toilets. PAI teachers should undergo inclusive Training of Trainers programs and collaborate with special education (SLB) teachers to build support networks. Local governments, the Ministry of Religious Affairs, the Ministry of Education and Culture, and disability-focused NGOs must work together in budget allocation, scholarship provision, and monitoring the implementation of regulations.

To address the challenges of inclusivity in education, Islamic boarding schools (pesantren) need to develop adaptive curricula that refer to Law No. 20 of 2003 on the National Education System and Government Regulation No. 13 of 2020 on Reasonable Accommodation for Students with Disabilities. The National Education Law regulates the general education system, while PP 13/2020 provides specific guidelines regarding the provision of facilities and educational services for students with special needs.

As part of implementing the mandates of these two regulations, pesantren must integrate inclusive learning materials such as Braille, audio interpretations of the Qur'an, and sign language videos, while also applying the principles of Universal Design for Learning. In addition, physical infrastructure must be adjusted to meet the standards set by the Ministry of Education Regulation No. 48 of 2023 and Ministerial Decree No. 91 of 2025, including the provision of ramps, handrails, and disability-friendly toilets.

Islamic Religious Education (PAI) teachers also need to participate in Training of Trainers programs focused on inclusive learning, and establish collaboration with teachers from special education schools (SLB) to build support networks. On the other hand, synergy between local governments, the Ministry of Religious Affairs, the Ministry of Education, and disability-focused NGOs is essential in terms of budget allocation, scholarship provision, and continuous policy monitoring.

When regulations align with the values of Islamic justice, inclusive pesantren are not merely fulfilling legal obligations, they are realizing the vision of *rahmatan lil-'alamin*. With consistent implementation, pesantren can become learning spaces that honor diversity and unlock the potential of every student, both with and without disabilities, to grow in knowledge, faith, and benefit to the community.

In the effort to realize inclusive religious education for students with disabilities, one of the most pressing challenges lies in adapting curricula and teaching materials to be truly accessible. Conventional curricula often overlook special needs, making it necessary to provide Braille texts for blind students and sign language videos for deaf students so that every learner can participate equally (Silvia, 2024).

In terms of facilities, many pesantren still lack disability-friendly infrastructure. Physical access to the pesantren mosque is often hindered by stairs without ramps, narrow hallways, or slippery floors. Ideal classrooms for students with special needs with wide corridors, adjustable desks and chairs, and accessible toilets remain a dream in many institutions (Hasmiza & Muhtarom, 2022).

The competence of Islamic Religious Education (PAI) teachers is also a critical barrier. Not all educators possess the knowledge or skills in inclusive teaching strategies and assistive technologies. Many teachers are unfamiliar with tools such as screen readers, text-to-speech applications, or multisensory teaching methods that can bridge diverse learning needs (Parnawi & Syahrani, 2024).

Furthermore, societal stigma and perceptions often become invisible walls that limit the participation of students with disabilities. Views that underestimate their abilities or deem them “unfit” for intensive religious activities undermine their confidence and discourage families from supporting full involvement in pesantren life.

To realize inclusive principles, synergy is needed among pesantren institutions, teachers, fellow students, families, and stakeholders to create a learning environment that is responsive and respectful of diversity. Through close collaboration, pesantren can become spaces that not only educate, but also shape students into inclusive, tolerant individuals ready to live harmoniously in a pluralistic society.

Integration of Differentiation and Technology

Literature reviews reveal that the integration of differentiated learning strategies with digital technology in Islamic Religious Education is increasingly being developed to enhance student engagement. Salsabila et al., (2022) emphasize that implementing learning models that combine content tailored to students’ readiness with digital media, such as interactive tafsir videos and online quiz platforms can accommodate various learning styles while enabling teachers to assess individual progress in real time. This integration not only diversifies learning materials but also accelerates feedback, making the differentiation of processes and products more dynamic and accurate.

Several case studies highlight best practices in Islamic educational institutions. For example, Madrasah Aliyah Nurul Iman successfully developed digital modules for fiqh lessons, divided into varying levels of difficulty, allowing students who require deeper understanding to access advanced materials independently. Marom, (2019) notes that collaboration between Islamic scholars, PAI teachers, and technology developers has produced e-learning applications aligned with Islamic principles and facilitated creative project tasks, such as creating *tausiyah* vlogs that are assessed using differentiated rubrics for each ability group.

The integration of differentiated learning strategies with digital technology in Islamic Religious Education is now widely pursued to improve student engagement and achievement. Salsabila et al., (2022) demonstrate that combining content tailored to students’ readiness from basic to advanced modules with digital media like interactive tafsir videos and online quiz platforms can address diverse learning styles while helping teachers conduct

real-time individual assessments. With instant feedback, differentiation in both learning methods and products becomes more dynamic and precise (Salsabila et al., 2022).

At Madrasah Aliyah Nurul Iman, for instance, the development of digital fiqh modules is divided into several difficulty levels, enabling students who need additional depth to access advanced materials independently without waiting for face-to-face sessions (Marom, 2019). Collaboration between Islamic scholars, PAI teachers, and technology developers has resulted in e-learning applications that not only present text and audio but also support creative projects, such as producing *tausiyah* vlogs assessed using differentiated rubrics for each ability group (Marom, 2019).

A similar approach is applied to students with disabilities, where adapting learning materials becomes crucial. The modification of the Qur'an into Braille for blind students, complete with special punctuation to minimize tajwid errors and enhance comprehension, is essential. Additionally, the combination of audio tafsir synchronized with sign language videos has proven effective in helping deaf students understand the context of verses, creating an inclusive multisensory learning experience (Melnea, 2022).

In practice, thematic project-based learning increasingly attracts students with disabilities. Small groups consisting of regular and disabled students work on tasks such as designing 3D models of ablution areas or creating sign language tutorial videos for *wudhu*. This form of peer learning not only enriches understanding of *fiqh* content but also fosters empathy, tolerance, and shared responsibility. To strengthen procedural memory, Ansori, (2021) applied structured repetition techniques at SLB C TPA Jember. Through gradual drilling repeating recitations and prayers until mastered confusion during more complex material can be minimized. Ansori also utilized scaffolding to break down concepts like *tazkiyatun nafs* into stages: from recognizing basic emotions, practicing short *dhikr*, to reflective discussions linking theory with personal experience (Hudamahya, 2025).

Visual media plays a vital role. *Fiqh* flashcards featuring illustrations of prayer procedures with concise bullet points, along with animated moral lessons on honesty, patience, and mutual assistance, have been shown to improve cognitive understanding among students with special needs by up to 30 percent (Ansori, 2021). In this context, teachers serve as facilitators and mediators: adjusting the pace of instruction, selecting evaluation methods from oral quizzes

to project portfolios and providing individualized feedback according to each student's learning style (Wathoni, 2018).

Sustainability and Collaboration

The sustainability of this strategy depends on cross-sector collaboration. Parents are involved in planning the Individualized Education Plan (IEP), while pesantren allocate budgets for assistive devices such as tablets equipped with text-to-speech applications (Setiawan, 2022). Synergy among teachers, families, technology providers, and policymakers ensures that interventions do not stop at the classroom door but continue to support students at home and within their communities.

Overall, the integration of differentiation and technology in Islamic Religious Education (PAI) requires a combination of material modification, process adaptation, memory reinforcement techniques, visual media, and active teacher involvement. Reksiana et al. (2024) highlight the importance of regular teacher training, development of locally relevant content, and empirical evaluation. With this comprehensive framework, Islamic Religious Education can become truly inclusive and empowering for every student.

Thus, the combination of modified learning materials, adapted learning processes, memory reinforcement techniques, visual media, and active teacher roles creates a comprehensive learning model for students with disabilities. In addition, regular training for educators, development of relevant local content, and periodic empirical evaluation are needed to refine the approaches used in the learning process. This framework makes religious education in pesantren genuinely inclusive and empowering for all students.

Gaps and Challenges

Despite positive developments, studies reveal several research gaps and implementation barriers. Local research on disability-inclusive learning in pesantren remains limited, especially empirical studies on differentiation models adopted by traditional religious institutions (Sunandar & Baidowi, 2018). This results in a lack of practical references for PAI teachers seeking to implement technology-based inclusive strategies.

Technical obstacles also frequently arise in pesantren, including limited internet infrastructure and low teacher competence in using digital tools for differentiation (Hasmiza & Muhtarom, 2022). Moreover, the need for specialized training in adaptive curriculum development has not been evenly addressed;

only a small number of institutions offer inclusive workshops for PAI teachers. Without sustained training support and institutional policy backing, educational innovation risks stagnation and limited impact (Bahrudin et al., 2024).

In the context of Islamic education in Indonesia, research findings affirm that collaboration between differentiated learning and digital technology produces models responsive to student diversity. Access to digital modules tailored to ability levels and learning styles, such as interactive tafsir videos and online quizzes enriches PAI learning practices in both urban and rural madrasahs and pesantren. Findings on the effectiveness of Braille materials, audio tafsir, and fiqh simulations for students with disabilities show that technology integration is not merely supplementary but a central pillar in realizing educational justice. The success of initiatives at Madrasah Aliyah Nurul Iman and SLB C TPA Jember underscores the importance of a collaborative ecosystem involving scholars, educators, and tech developers to ensure content remains religiously authentic and pedagogically innovative (Marom, 2019).

The potential for developing inclusive learning models in the Islamic education sector is vast, especially when supported by adaptive curriculum design and the use of assistive technology. A hybrid model combining differentiated face-to-face learning with adaptive e-learning platforms allows PAI teachers to design individualized learning paths—for example, an “advanced track” for deeper tafsir study or a “basic track” for beginners, along with text and audio features for verse translation tailored to blind or deaf students. By utilizing learning analytics, teachers can monitor each student’s progress and proactively adjust interventions. This approach can also be enriched by moral gamification and simple AI tools that provide personalized feedback on creative tasks such as *tausiyah* vlog production, making the learning experience more inclusive and meaningful for all learners.

From a policy standpoint, implementing inclusive learning models requires institutional and governmental commitment to develop curriculum standards that include guidelines for differentiation and assistive technology in PAI. Regulations should encourage budget allocation for digital infrastructure in pesantren and Islamic schools, and integrate inclusive training into certification programs and professional development for PAI teachers. Such training should cover Universal Design for Learning (UDL), scaffolding techniques for students with disabilities, and digital media literacy. Additionally, policymakers need to build partnerships with universities, research institutions, and the private sector to ensure the availability of PAI content that is both academically sound and

religiously valid. With a strong policy foundation and continuous improvement in teacher professionalism, Islamic education in Indonesia can evolve into an inclusive learning space that honors diversity and upholds the principle of justice.

CONCLUSION

This study concludes that differentiated learning supported by digital technology is effective in addressing student diversity in Islamic Religious Education (PAI), including students with special needs. By adapting learning content, processes, outputs, and learning environments, and integrating digital media, PAI learning becomes more engaging, accessible, and meaningful. Strategies such as Braille Qur'ans, audio-based tafsir, sign-language-supported media, educational fiqh games, and peer learning contribute to fair and inclusive religious education.

The main strength of this approach lies in its flexibility, allowing students to learn according to their abilities while remaining within a shared Islamic learning environment. Technology also expands access to religious knowledge and supports teachers in implementing differentiated instruction. However, this study identifies several limitations, including uneven availability of digital infrastructure, limited teacher competence in inclusive pedagogy, and a lack of empirical studies focusing on traditional pesantren contexts.

Future research should examine the application of technology-based differentiated learning across various Islamic educational institutions, especially pesantren. Further studies are also needed to develop adaptive PAI curricula that incorporate Universal Design for Learning principles and assistive technologies. From a policy perspective, inclusive Islamic education requires institutional commitment in the form of funding, infrastructure development, and continuous professional training for PAI teachers.

Overall, inclusive Islamic education can be realized through the integration of effective teaching practices, digital technology, and Islamic values. Collaboration among educators, scholars, policymakers, and educational technology developers is essential to ensure that PAI learning promotes justice, accessibility, and respect for diversity.

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