Hipkin Journal of Educational Research | e-ISSN 1234-5678 & p-ISSN 1234-5678
Volume 2 No 3 (2025) 323-334

Hipkin Journal of Educational Research
http://ejournal-hipkin.or.id/index.php/hipkin-jer/

Informatics education practices and global relevance in madrasah in the Kurikulum Merdeka

Fathanah Hamidah Tsaqib
Universitas Pendidikan Indonesia, Bandung
fathanah18@upi.edu

ABSTRACT

This study was motivated by the need to deepen understanding of how computer science is implemented in madrasahs within the Kurikulum Merdeka, while also addressing contemporary challenges through education relevant at the local, national, and global levels. This study holistically explores the practice of computer science education in madrasahs in the context of the Kurikulum Merdeka, which has thus far been focused more on public schools. The purpose of this study is to provide a comprehensive picture of how Informatics is taught in madrasahs and how its implementation can address contemporary challenges at the local, national, and global levels. This study uses a qualitative approach that applies the interview method in data collection. The results show that the curriculum is implemented in stages using a project-based learning approach that integrates Islamic values. The curriculum is developed in accordance with the policies of Kemendikbud and Kemenag, creating a unique learning experience that remains aligned with national objectives. Locally, the learning supports the character and needs of the surrounding community; nationally, it demonstrates the adaptation of cross-ministerial policies; and globally, it equips students with digital literacy and 21st-century competencies.

ARTICLE INFO

Article History:
Received: 2 Aug 2025
Revised: 3 Nov 2025
Accepted: 10 Nov 2025
Publish online: 5 Dec 2025

Keywords:
history of informatics; Informatics; Kurikulum Merdeka; madrasah

Open access
Hipkin Journal of Educational Research is a peer-reviewed open-access journal.

ABSTRAK

Penelitian ini dilatarbelakangi oleh kebutuhan untuk memahami secara mendalam bagaimana mata pelajaran Informatika diimplementasikan di madrasah dalam konteks Kurikulum Merdeka, sekaligus menjawab tantangan zaman melalui pendidikan yang relevan secara lokal, nasional, dan global. Penelitian ini mengeksplorasi secara holistik praktik pembelajaran Informatika di madrasah dalam konteks Kurikulum Merdeka, yang selama ini lebih banyak difokuskan pada sekolah umum. Tujuan dari penelitian ini untuk memperoleh gambaran yang komprehensif mengenai bagaimana Informatika diajarkan di madrasah serta bagaimana pelaksanaannya dapat menjawab tantangan zaman baik secara lokal, nasional, maupun global. Penelitian ini menggunakan pendekatan kualitatif yang menerapkan metode wawancara dalam pengumpulan data. Hasil penelitian menunjukkan bahwa implementasi kurikulum dilakukan secara bertahap dengan pendekatan pembelajaran berbasis proyek yang mengintegrasikan nilai keislaman. Kurikulum disusun berdasarkan kebijakan Kemendikbud dan Kemenag, menciptakan pembelajaran yang khas namun tetap selaras dengan tujuan nasional. Secara lokal, pembelajaran mendukung karakter dan kebutuhan komunitas sekitar; secara nasional menunjukkan adaptasi kebijakan lintas kementerian; dan secara global, membekali murid dengan literasi digital dan kompetensi abad ke-21.

Kata Kunci: *Informatika; Kurikulum Merdeka; madrasah; sejarah Informatika*

How to cite (APA 7)
Tsaqib, F. H. (2025). Informatics education practices and global relevance in madrasah in the Kurikulum Merdeka. *Hipkin Journal of Educational Research, 2*(3), 323-334.

Peer review
This article has been peer-reviewed through the journal's standard double-blind peer review, where both the reviewers and authors are anonymised during review.

https://doi.org/10.64014/hipkin-jer.v2i3.233

INTRODUCTION

In the era of the Industrial Revolution 4.0, technology not only assists human activities but has also created new habits and even entirely new forms of activity. Today, technology plays a role in almost all human endeavors. Many aspects of life have been transformed by technological development: in the eighteenth and nineteenth centuries, technology changed the way people worked, while in the twentieth and early twenty-first centuries, it transformed the way people interact with one another. Technological advancement has generally been welcomed by society, including Indonesian society. However, in practice, the use of technology does not only bring positive impacts; it often also produces negative consequences that may harm others. To address these issues, education about technology for the general public is required, and more importantly, the education sector must adapt its curriculum to remain relevant to technological developments and to shape Indonesia's younger generation into individuals who understand and know how to use technology wisely and responsibly (Barkah & Robandi, 2024).

The Government of Indonesia has responded to these challenges through a policy issued by the Ministry of Education and Culture entitled "*Capaian Pembelajaran untuk PAUD, SD, SMP, dan SMA pada Kurikulum Merdeka*" by positioning Informatics as a subject aimed at equipping students with twenty-first-century skills (Risna, 2023). Informatics supports students in becoming cultured digital citizens who demonstrate ethical use of technology. Another objective of Informatics education is to foster a generation of *well-being, wise digital citizens, and computationally literate creators who possess computational thinking skills, strong digital literacy, the capacity to develop good character in digital interactions, and* the ability to produce solutions through the implementation of technology. The implementation of the Informatics curriculum in madrasahs, however, faces significant challenges, particularly related to limited resources and teachers' understanding of project-based learning approaches.

Previous studies have revealed that some teachers are not yet fully prepared due to limited participation in training or socialization related to the Kurikulum Merdeka, while learning resources and facilities in several madrasahs remain inadequate, thereby affecting the learning process (Rusmayani & Badi'atussolihah, 2024). In addition, other studies have provided a comprehensive overview of the importance of integrating technology into the curriculum, but still exhibit several limitations (Liriwati & Marpuah, 2024). These studies were not based on field data and therefore did not provide a clear description of the practice of Informatics learning in madrasah classrooms. Moreover, they have not specifically examined Informatics teaching strategies or their alignment with local needs and the distinctive characteristics of madrasahs, nor have they presented direct perspectives from teachers and students, who are the primary implementers of the curriculum. Therefore, this study offers novelty by holistically exploring the practice of Informatics learning in madrasahs within the context of the Kurikulum Merdeka, which has so far been more extensively focused on public schools.

While previous research has tended to emphasize teachers' readiness in terms of general technological understanding and has not deeply examined how the Informatics subject is actually implemented in classrooms, including teaching strategies, project-based approaches, and their relationship to local madrasah characteristics, this study differs by highlighting the relevance of the Informatics curriculum to local, national, and global needs. This dimension is essential yet has received limited attention in prior studies. Based on these considerations, this research is guided by two research questions: first, how Informatics learning is practiced in madrasahs within the framework of the Kurikulum Merdeka; and second, how it is relevant to local, national, and global needs. Therefore, through this study, it is expected that a comprehensive understanding can be obtained of how Informatics is taught in madrasahs and how its implementation can respond to contemporary challenges at the local, national, and global levels.

https://doi.org/10.64014/hipkin-jer.v2i3.233

LITERATURE REVIEW

The Informatics Subject Over Time

Alhapip and Ferdiana, in their book entitled *Naskah Akademik Muatan Informatika dalam Kurikulum 2013*, state that the Informatics subject had previously been known as Information and Communication Technology (ICT) in the 2006 Curriculum (KTSP). However, it was later removed from the compulsory curriculum structure with the implementation of the 2013 Curriculum (Kurikulum 2013/K13). Under the 2013 Curriculum, ICT was integrated into all subjects as a learning tool. Nevertheless, along with rapid technological development and increasing demands for digital literacy, studies emerged to develop Informatics as an extension and deepening of ICT content. In 2018, the Chairperson of IGI stated that Kemendikbud planned to reintroduce ICT into the curriculum, albeit with a different concept from the ICT subject previously known.

This subject was introduced under a new name, Informatics, and its content underwent significant changes compared to past ICT materials. Consequently, in the 2019/2020 academic year, Informatics was established as a new subject implemented at the junior and senior secondary school levels as part of the 2013 Curriculum. The subject encompasses knowledge, skills, and attitudes related to the use and understanding of information technology and computers (see: https://www.igi.or.id/mapel-baru-informatika-sulitkah.html). The implementation of Informatics as a subject refers to several regulations, namely Permendikbud No. 58 of 2014 and No. 35 of 2018 for SMP/MTs, Permendikbud No. 59 of 2014 and No. 36 of 2018 for SMA/MA, as well as Permendikbud No. 24 of 2016 and No. 37 of 2018 concerning core competencies and basic competencies.

Schools that implement Informatics as a subject are required to have competent and appropriately qualified teachers, as well as adequate facilities and infrastructure to support Informatics instruction (see: https://jdih.kemendikdasmen.go.id/). Furthermore, in 2022, Informatics was designated as a supporting subject for study programs in the National Selection Based on Achievement. In 2024, the Minister of Education, Culture, Research, and Technology issued Regulation Number 12 of 2024, which formally established the Kurikulum Merdeka for early childhood, primary, and secondary education, including the Informatics subject. This regulation signifies that Informatics has officially become part of the Kurikulum Merdeka structure and has its own learning outcomes that schools implementing the Kurikulum Merdeka must follow (see: https://jdih.kemendikdasmen.go.id/).

The Informatics Subject in the Kurikulum Merdeka Era

The Ministry of Education and Culture's 2023 policy explains that Informatics is a subject included in the Kurikulum Merdeka as part of the government's strategic efforts to equip learners with twenty-first-century skills, particularly in responding to the challenges of the digital era. Informatics does not merely focus on mastery of software and hardware but also emphasizes computational thinking, digital literacy, and ethics and culture in the use of technology. The primary objective of this subject is to shape learners into *wise and well-being digital citizens*. These individuals are not only capable of using technology intelligently and effectively, but also responsibly and ethically (see: https://kurikulum.kemdikbud.go.id/file/1718471412_manage_file.pdf). This curriculum is designed to encourage students to become creators rather than passive users of technology. They are expected to be able to design digital solutions through project-based approaches as well as through collaboration, innovation, and exploration.

The Informatics subject serves as a strategic means to develop creativity, problem-solving skills, and critical thinking abilities that are highly needed at the local, national, and global levels. The implementation of Informatics in educational institutions has strategic objectives that go beyond mere technological

https://doi.org/10.64014/hipkin-jer.v2i3.233

mastery, encompassing the enhancement of comprehensive digital literacy among learners. Informatics learning is expected to enable students to develop strong competencies in understanding, using, and utilizing information technology wisely and productively. This serves as an essential foundation for preparing younger generations to face global dynamics and challenges in the digital era, including the context of the Industrial Revolution 4.0, which demands computational thinking skills, innovation, and adaptability to rapidly evolving technological developments (Azizah, 2024). The presence of Informatics aims to position students not only as users of technology, but also as creators and innovators who can independently, creatively, and responsibly utilize information and digital technology in their daily lives and in the future (Nursanti *et al*., 2023).

In line with the objectives of the Kurikulum Merdeka, the implementation of the Informatics subject plays an important role in shaping students' adaptive, critical, and responsible character, while also serving as a strategic means of realizing the *Profil Pelajar Pancasila* amid ongoing technological advancement. Through Informatics learning, students are not only introduced to the technical aspects of technology use. However, they are also guided to understand digital ethics, collaboration, and diversity of perspectives in virtual environments. This encourages them not merely to become technology users but also to become solution creators capable of addressing fundamental societal challenges. In this context, Informatics serves as an effective platform for instilling lifelong learning habits and fostering awareness of social responsibility in the digital era. This subject also fosters reflective thinking and self-awareness, which are essential for students to make wise decisions amid the rapid flow of information and continuous technological change (Rohmah *et al*., 2024).

Madrasah

Madrasahs are formal Islamic educational institutions in Indonesia that play a strategic role in shaping generations who are not only intellectually capable but also spiritually and morally grounded. The existence of madrasahs as part of the national education system is affirmed in Law Number 20 of 2003 on the National Education System, and their administration falls under the authority of the Ministry of Religious Affairs (Rizki *et al*., 2024). Historically, madrasahs emerged in Indonesia as a form of Islamic educational reform in the early twentieth century, in response to the secular colonial education system. Over time, madrasahs have undergone significant transformation and now comprise various levels such as RA, MI, MTs, and MA, as well as non-formal forms such as Madrasah Diniyah. Madrasahs function not only as religious educational institutions but also play an important role in developing knowledgeable, tolerant, and morally upright communities. They hold a strategic position in instilling religious understanding in students while simultaneously meeting national education standards (Saputri & Ningrum, 2024).

One of the main characteristics that distinguishes madrasahs from public schools lies in the integration of the general curriculum with a religious curriculum. In madrasahs, students study subjects integrated with Islamic values that are not offered in public schools (Firmansyah & Anam, 2025). This curricular distinction reflects differing educational objectives: public schools focus on forming productive citizens, whereas madrasahs aim to produce religious and morally grounded community leaders. A higher level of religious moderation has been found among madrasah students, indicating the success of this integrative educational approach (Anwar *et al*., 2025). The madrasah curriculum continues to evolve to remain relevant to the demands of the times. In practice, madrasahs combine the 2013 Curriculum with a pesantren-specific curriculum. A case study at Madrasah Aliyah Ulul Albab demonstrates that implementing an integrative curriculum can enhance educational quality by applying the credit system (SKS), ICT, and competency-based approaches (Sartika & Darmansyah, 2024).

Madrasahs have also become pioneers in implementing the Kurikulum Merdeka. At present, madrasahs are transforming to face the digital era by integrating technology into teaching and learning activities,

https://doi.org/10.64014/hipkin-jer.v2i3.233

thereby creating inclusive and adaptive learning processes (Liriwati & Marpuah, 2024). In this context, curriculum management strategies constitute a crucial factor. Effective curriculum management can enhance learning outcomes and foster a healthy, dynamic educational environment (Patimah *et al*., 2024). Nevertheless, madrasahs continue to face various challenges, including limited facilities, the need to improve teachers' technological competencies, and the necessity of continuous curriculum renewal (Syarifah & Misbah, 2024). Despite these challenges, significant opportunities remain for madrasahs to continue progressing. Collaboration among communities, government, and the industrial sector is essential to encourage madrasahs to become centers of education capable of shaping outstanding generations with strong spiritual foundations (Rohman, 2024).

Kurikulum Merdeka

In education, the curriculum is understood as a set of subjects learners must study to achieve educational objectives (Rahayu *et al*., 2023). Education in Indonesia has undergone ten curriculum changes since 1947 (Cholilah *et al*., 2023). The Kurikulum Merdeka is a new curriculum launched by Kemdikbudristek in response to the learning crisis caused by the COVID-19 pandemic, which began to spread in 2019 (Zakso, 2023). As a form of reform in the national education system, the Kurikulum Merdeka is officially regulated through the *Guidelines for Curriculum Implementation in the Context of Learning Recovery*, which aim to align the education system with the dynamics of the times and rapidly advancing technological developments. The Kurikulum Merdeka provides opportunities for learners to understand concepts and develop skills in depth through various intrakurikuler learning activities (Idris *et al*., 2023; Nadira *et al*., 2022). The Kurikulum Merdeka is grounded in four educational philosophical streams (Idris *et al*., 2023; Nikma & Rozak, 2023):

1. The Progressivism stream emphasizes the importance of developing learners' creativity through natural learning activities and environments, thereby encouraging changes in ways of thinking and attitudes.
2. The Constructivism stream represents a learning approach centered on learners' direct experiences. This stream holds that knowledge is acquired through the senses, and that individuals who do not optimally utilize them are not considered to be developing toward the formation of a complete personality.
3. The Humanism stream views learners as authentic individuals with innate intellectual potential. According to this perspective, learning success is determined by the ability to develop thinking, attitudes, and skills that are tailored to each learner's uniqueness.
4. The Anthropological stream perceives humans as autonomous beings who nonetheless require social interaction and possess an inherent inclination toward religious values.

The Kurikulum Merdeka aims to provide learners with the freedom to learn, enabling them to independently explore their potential, foster critical and creative thinking skills, and become more actively engaged in the learning process (Slamet *et al*., 2025). This curriculum seeks to tailor learning to students' needs and characteristics through differentiated instruction, while simultaneously strengthening character development and Pancasila values through the *Proyek Penguatan Profil Pelajar Pancasila* (Putri & Astiwi, 2025). In addition, the Kurikulum Merdeka simplifies content to make it more focused and in-depth, thereby rendering learning more relevant, meaningful, and applicable (Aulia *et al*., 2025). The principal hallmark of the Kurikulum Merdeka is flexibility in learning. It is designed to be non-rigid and non-uniform, but rather dynamic and personalized, enabling students to learn in accordance with their individual learning styles, interests, and needs. One concrete manifestation of this characteristic is the autonomy granted to teachers to design learning strategies, methods, and media that best align with students' characteristics and the local school context (Sofiyanti *et al*., 2025).

https://doi.org/10.64014/hipkin-jer.v2i3.233

METHODS

This study employed a qualitative research design, namely one that does not involve the use of mathematical models or statistical analysis, but instead relies on the formulation of basic assumptions and a conceptual framework to guide the research process. Data collection in this study was conducted through interviews. The research was carried out in three stages. First, the planning stage involved developing interview guidelines based on the Kurikulum Merdeka and Informatics learning. Second, data collection was conducted through interviews with two informants: the Vice Principal for Curriculum Affairs and an Informatics teacher at MTS Al-Inayah, Bandung City. The selection of these informants was purposive, based on the consideration that both were directly involved in the implementation of the Kurikulum Merdeka and Informatics learning in the madrasah. Third, data analysis involved repeatedly reading the interview transcripts, followed by coding to identify themes relevant to the research questions and objectives.

RESULTS AND DISCUSSION

Implementation of the Kurikulum Merdeka in Madrasahs

The implementation of the Kurikulum Merdeka requires continuous monitoring and evaluation processes to assess its effectiveness and to address various challenges. Monitoring is carried out by schools/madrasahs in collaboration with relevant authorities. It involves all stakeholders to ensure that curriculum implementation aligns with the educational institution's vision and mission. Teachers also need adequate training and professional development to implement the Kurikulum Merdeka effectively. In addition, sustained support and mentoring are essential to strengthen teachers' capacity to effectively implement the principles of the Kurikulum Merdeka (Akhmadi, 2023). The implementation of the Kurikulum Merdeka in madrasahs marks a significant transition from the 2013 Curriculum (Kurikulum 2013/K13) toward a more flexible, contextualized approach.

Based on interviews with the Vice Principal for Curriculum Affairs at MTS Al-Inayah, the implementation of this curriculum has been gradual. At present, the Kurikulum Merdeka is applied in Grades VII and VIII, while Grade IX continues to use the 2013 Curriculum. This policy was adopted in accordance with central government regulations that mandate that curriculum changes be implemented in stages, allowing educational institutions sufficient time and resources to adapt. In its implementation process, MTS Al-Inayah continues to refer to two main guidelines: the Ministry of Education and Culture standards for general subjects, and the Decree of the Minister of Religious Affairs (Keputusan Menteri Agama/KMA) for religious subjects. This dualistic approach makes the madrasah curriculum more complex, yet it also provides space for the distinctive characteristics of madrasahs rooted in Islamic values. One significant form of local value implementation is the *tahfidz* program, which is independently designed by the madrasah and incorporated into the curriculum structure with a specific time allocation.

The *tahfidz* program developed by MTSs Al-Inayah has its own structure and syllabus that do not refer to modules issued by Kemendikbud or KMA. This demonstrates the madrasah's curriculum autonomy, which it uses to strengthen its religious identity. Although it is not formally included within the Kurikulum Merdeka framework, the *tahfidz* program constitutes an important component of the madrasah's identity and contributes to shaping students' character. This integration indicates that madrasahs can balance national education requirements with their institutional distinctiveness. In addition, teachers and the madrasah curriculum team receive regular training to understand and implement the principles of the Kurikulum Merdeka. They participate in training through internal workshops and through learning platforms such as PINTAR and PINTAS, provided by the Ministry of Religious Affairs.

https://doi.org/10.64014/hipkin-jer.v2i3.233

The training covers understanding Learning Outcomes (Capaian Pembelajaran/CP), developing Learning Objective Pathways (Alur Tujuan Pembelajaran/ATP), and designing instructional modules that are adaptive to students' contexts. Nevertheless, this process continues to face challenges in the form of limited resources, particularly in terms of time and teaching personnel. Overall, the implementation of the Kurikulum Merdeka in madrasahs such as MTS Al-Inayah is progressing relatively well, although it is not without technical obstacles and pedagogical adaptation challenges. Madrasahs strive to apply more personalized, engaging, and project-based learning approaches as emphasized in the new curriculum. However, the success of implementation depends heavily on sustained training support, the availability of learning facilities, and educators' willingness to shift from instructional approaches to more flexible, context-specific practices.

Informatics in the Kurikulum Merdeka in Madrasahs

Informatics in the Kurikulum Merdeka has expanded in both meaning and function compared to previous curricula. While under the 2013 Curriculum (Kurikulum, 2013), the subject of Information and Communication Technology (ICT) was removed from the curriculum structure at the junior secondary level (SMP/MTs), within the Kurikulum Merdeka Informatics has been reinstated as a subject as part of the strengthening of digital literacy (Nabilah *et al*., 2022). Interviews with the Informatics teacher at MTSs Al-Inayah revealed that the reintroduction of Informatics as an independent subject has become an important turning point in building the digital competencies of madrasah students. In practice, the Informatics teacher stated that the Kurikulum Merdeka provides broader opportunities for teachers to develop instructional materials tailored to the madrasah context and students' abilities. The instructional modules provided are flexible and can be modified. Teachers may select, adapt, or even design their own modules that align with Islamic values and local needs.

This flexibility is significant because madrasahs have student characteristics and learning environments that differ from those of public schools. Religious, social, and cultural contexts influence how technology is taught within madrasah settings. To maintain the relevance of its instructional modules with technological developments, MTS Al-Inayah revises or adjusts its Informatics modules twice a year. The Informatics content taught follows government-provided textbooks and includes basic computer skills, an introduction to coding, healthy and responsible internet use, and digital literacy encompassing ethical use of technology. These materials are considered relevant in preparing students to face increasingly digital global challenges. In addition, teachers seek to integrate Informatics learning with Islamic values, such as teaching proper *adab* in internet use and relating programming logic to principles of systematic thinking in Islam.

This approach enables students to understand technology not merely as a tool, but also as a means of worship and social benefit. In terms of classroom management, Informatics lessons at MTS Al-Inayah are typically conducted in the computer laboratory, where students are assigned small, project-based tasks completed in groups of 4 to 5. This arrangement allows the Informatics teacher to monitor students during the learning process more easily. Furthermore, the instructional materials used by the Informatics teacher at MTSs Al-Inayah tend to be more interactive, including the use of social media for small projects such as poster creation. In this regard, the role of the madrasah is also crucial in providing adequate facilities and infrastructure.

MTS Al-Inayah is equipped with approximately 50 laptops and computers, allowing each student to use an individual device when needed. According to the Informatics teacher at MTSs Al-Inayah, other facilities within the madrasah are also sufficiently supportive of Informatics learning. Therefore, it can be concluded that Informatics learning at MTS Al-Inayah has been implemented quite effectively. Informatics education within the Kurikulum Merdeka in madrasahs opens new opportunities to strengthen contextual, religiously

https://doi.org/10.64014/hipkin-jer.v2i3.233

grounded digital literacy. This approach not only equips students with technical competencies but also fosters responsible digital character. Madrasahs possess unique potential to contextualize technology through local value perspectives while maintaining the global relevance demanded by twenty-first-century education.

Teacher Readiness and Professional Development

In implementing the Kurikulum Merdeka, madrasahs face various challenges and obstacles that require serious attention. One of the primary obstacles is the weakness of teachers' instructional practices, inconsistent learning approaches, and suboptimal time management. In addition, challenges are closely related to teacher readiness as a human resource, which serves as the central pillar in implementing this curriculum (Alfikri *et al*., 2024). Teacher readiness is a decisive factor in the successful implementation of the Kurikulum Merdeka, particularly in Informatics instruction, which demands high levels of both technical and pedagogical competence. Therefore, continuous professional development is a necessity rather than an option. Through training, reflective practice, collaboration, and the utilization of digital technology, teachers can strengthen their competencies to respond effectively to contemporary challenges (Muzakky *et al*., 2025).

Based on interview findings, the Informatics teacher at MTSs Al-Inayah acknowledged that the most significant challenge lies not only in mastering technical content, but also in delivering the material in a contextual and meaningful manner to madrasah students. This requires a deep understanding of learning outcomes and the ability to design project-based learning activities that align with students' characteristics. To address these challenges, the Informatics teacher at MTS Al-Inayah frequently participates in training programs organized by Robotika Nusantara, as these materials directly support classroom implementation. For instance, the training includes content related to the use of *Scratch* and *Arduino*, which are taught in Grade VII.

Support from the school and the madrasah's head also plays a crucial role. According to the Vice Principal for Curriculum Affairs at MTSs Al-Inayah, the institution regularly conducts coordination meetings, supervision, and teacher development activities to ensure alignment with the latest curriculum policies. However, not all teachers demonstrate the same level of readiness. Therefore, collaborative strategies among teachers, such as learning communities or peer mentoring, serve as practical solutions for mutual support and the sharing of best practices in Informatics instruction. Teacher readiness and professional development should not be regarded as supplementary factors, but rather as the core of educational transformation in madrasahs. The success of Informatics education within the Kurikulum Merdeka is primarily determined by teachers' capacity to manage learning that integrates technology, values, and local needs. Consequently, investment in teacher development must be a top priority in madrasah education policies based on this new curriculum.

Global Relevance and Local Values

One of the strengths of the Kurikulum Merdeka lies in its vision to develop the *Profil Pelajar Pancasila*, producing learners who are not only academically competent but also possess strong character and global competitiveness (Sholeh *et al*., 2024). In the madrasah context, such global relevance must be framed within local and Islamic values (Hidayat & Sukari, 2024). Informatics serves as a strategic subject that bridges global objectives and local values. Through digital literacy, students are equipped not only with technical skills but also with guidance in understanding the ethics and responsibilities of using technology. Interviews with an Informatics teacher revealed that one approach to linking Informatics with local values is through character reinforcement in the learning process. For example, students are taught the

https://doi.org/10.64014/hipkin-jer.v2i3.233

importance of honesty in citing digital sources, proper *etiquette* in social media engagement, and Islamic principles in safeguarding information security. These aspects are not explicitly articulated in the national curriculum, yet they are essential in shaping the digital identity of madrasah students who remain grounded in moral and religious values.

Teachers also attempt to relate algorithmic logic in Informatics to principles of systematic thinking in Islam. This approach allows students to perceive the relationship between science and religion harmoniously. It constitutes a distinctive strength of madrasahs in educating younger generations who are not only cognitively capable but also possess strong character. The global relevance of Informatics is not accepted uncritically, but is instead processed within a framework of contextual and meaningful local values. In addition, students receive instruction tailored to their practical needs at school, such as learning Microsoft Word to prepare reports for other subjects. To address national and global demands, MTS Al-Inayah provides platforms for students who wish to develop robotics skills. An approach rooted in local values, while remaining open to global developments, could make Informatics education in madrasahs through the Kurikulum Merdeka a holistic educational model. It not only produces technologically literate students but also cultivates a generation that is wise, ethical, and prepared to face the challenges of the digital world critically and responsibly.

Challenges of Informatics Learning in Madrasahs

In the implementation of the *Kurikulum Merdeka* in madrasahs, several challenges are frequently encountered, including teachers' lack of readiness to face curriculum changes, inadequate facilities and infrastructure to support the learning process, and insufficient dissemination of the Kurikulum Merdeka (Wahyudi *et al*., 2024). However, challenges in learning often do not originate solely with schools or subject teachers, but also with students themselves. Based on interviews with the Informatics teacher at MTS Al-Inayah regarding challenges faced during Informatics instruction, difficulties were identified in managing students in the computer laboratory, as students must be continuously reminded of the rules and procedures for using the equipment. For instance, when using computers, students often forget how to turn them on or off properly. This condition also presents a particular challenge for Informatics teachers in designing learning activities that enable students to understand and consistently apply proper computer-use procedures easily.

Discussion

The results of the study indicate that the implementation of the *Kurikulum Merdeka* at MTSs Al-Inayah reflects an adaptive transition from the 2013 Curriculum through gradual strategies and adjustments to regulations issued by the Ministry of Religious Affairs and the Ministry of Education, Culture, Research, and Technology. These findings align with the view that curriculum success is highly dependent on continuous training and institutional support (Akhmadi, 2023). Furthermore, the integration of the *Kurikulum Merdeka* with the madrasah curriculum is aligned, particularly in modeling and internalizing religious values (Idris *et al*., 2023; Putri & Astiwi, 2025). One important finding is the madrasah's autonomy in incorporating the tahfidz program into its curriculum.

This finding reinforces the notion that madrasahs can integrate local values into the national education system, consistent with the assertion that madrasah education must combine global relevance with Islamic values (Hidayat & Sukari, 2025). In the context of Informatics, this study strengthens the argument that the Kurikulum Merdeka provides high flexibility for teachers in designing instructional materials (Nabilah *et al*., 2022). Informatics teachers utilize this flexibility to link technology with religious values, such as digital ethics and Islamic systematic thinking, thereby shaping students' responsible digital character.

https://doi.org/10.64014/hipkin-jer.v2i3.233

Teacher readiness emerges as a crucial factor in the successful implementation of the curriculum, particularly in Informatics instruction, which demands high levels of pedagogical and technical competence.

Training provided by external institutions, such as Robotika Nusantara, has proven beneficial, in line with findings on the importance of continuous professional development for teachers (Alfikri *et al*., 2024). From the analysis and comparison of these findings, it can be concluded that madrasahs, particularly MTSs Al-Inayah, function not merely as implementers of the *Kurikulum Merdeka*, but as active agents in interpreting and developing the curriculum contextually. A novel contribution of this study is demonstrating madrasahs' capacity to integrate local and religious values into Informatics education, thereby providing a meaningful context for technology. This approach positions madrasahs as models of holistic education that harmoniously bridge national needs, global demands, and local values. However, a limitation of this study is that it focuses on only one madrasah context.

CONCLUSION

This study concludes that the practice of Informatics learning at MTSs Al-Inayah within the framework of the Kurikulum Merdeka is implemented gradually, with adjustments to the madrasah's readiness and the characteristics of the students. The curriculum is designed to be flexible, allowing the integration of Islamic values into Informatics content and the strengthening of digital competencies. The Informatics learning implemented has proven relevant to local needs through the reinforcement of religious character, to national needs through mastery of fundamental subject matter, and to global needs through the application of 21st-century approaches such as problem-solving and digital literacy. In addition, the presence of a Robotics extracurricular program addresses both national and global needs. Future research is expected to explore the implementation of the Kurikulum Merdeka in madrasahs with diverse backgrounds to examine the diversity of approaches and their impacts on students' readiness to face contemporary challenges.

AUTHOR'S NOTE

The author hereby explicitly declares that, in the process of writing and publishing this article, there are no conflicts of interest in any form, either directly or indirectly, that could influence the objectivity of the content. Furthermore, the author affirms that all data, information, and content presented in this article are original works and entirely free from any elements of plagiarism. The author ensures that all references used have been properly cited and acknowledged in accordance with applicable academic standards.

Acknowledgements are extended to MTS Al-Inayah, particularly the Informatics teacher and the Vice Principal for Curriculum Affairs, who devoted their time to providing information on the topic of this study. Appreciation is also expressed to all parties who have provided support and contributions, both directly and indirectly, throughout the process of preparing this article.

REFERENCES

Akhmadi, A. (2023). Implementasi kurikulum merdeka di madrasah ibtidaiyah. *Andragogi: Jurnal Diklat Teknis Pendidikan dan Keagamaan*, *11*(1), 33-44.

Alfikri, M. Y., Handayani, S., & Chanifudin, C. (2024). Tantangan dan peluang implementasi kurikulum merdeka di madrasah: Menuju Madrasah unggul yang berdaya saing. *Journal of Humanities Education Management Accounting and Transportation*, *1*(2), 698-702.

https://doi.org/10.64014/hipkin-jer.v2i3.233

Anwar, C., Anwar, S., Wasehudin, W., Andriansah, Z., Ananda, R., & Kasturi, R. (2025). Strategi dan inovasi pendidikan madrasah. *Strategy: Jurnal Inovasi Strategi dan Model Pembelajaran*, *5*(1), 46-57.

Aulia, M. G., Rokhimawan, M. A., Rifkiya, A., & Arawinda, T. (2025). Transformation of 2013 curriculum to merdeka curriculum in islamic religious education at vocational schools. *J-PAI: Jurnal Pendidikan Agama Islam*, *11*(2), 108-122.

Azizah, H. N. (2024). The utilization of technology in environmental education. *Curricula: Journal of Curriculum Development, 3*(2), 391-404.

Barkah, T. & Robandi, B. (2024). Character-building training curriculum activity based on the perspective of a humanistic curriculum and existentialism philosophy. *Inovasi Kurikulum, 21*(2), 983-998.

Cholilah, M., Tatuwo, A. G. P., Rosdiana, S. P., & Fatirul, A. N. (2023). Pengembangan kurikulum merdeka dalam satuan pendidikan serta implementasi kurikulum merdeka pada pembelajaran abad 21. *Sanskara Pendidikan dan Pengajaran*, *1*(2), 56-67.

Firmansyah, M. T., & Anam, C. (2025). Independent curriculum in learning at madrasah ibtidaiyah. *Tarsib: Jurnal Program Studi PGMI, 2*(2), 58-64.

Hidayat, M., & Sukari, S. (2025). Relevansi kurikulum pendidikan Islam di madrasah dengan kebutuhan dunia modern. *Moral: Jurnal Kajian Pendidikan Islam*, *2*(1), 39-49.

Idris, S. H., Muqowim, M., & Fauzi, M. (2023). Kurikulum merdeka perspektif pemikiran pendidikan Ki Hajar Dewantara. *Jurnal Literasiologi*, *9*(2), 88-98.

Liriwati, F. Y., & Marpuah, S. (2024). Transformasi kurikulum merdeka di Madrasah: Menyongsong era pendidikan digital. *Ihsan: Jurnal Pendidikan Islam*, *2*(1), 1-10.

Muzakky, M. I., Maisyaroh, & Supriyanto, A. (2025). Pengembangan profesional sebagai strategi peningkatan kinerja guru: Analisis sistematis literatur. *Jurnal Pendidikan dan Teknologi Indonesia, 5*(3), 681-694.

Nabilah, B., Zakir, S., Murtiyastuti, E., & Mubaraq, R. I. (2022). Analisis penerapan mata pelajaran Informatika dalam implementasi kurikulum merdeka tingkat SMP. *Pijar: Jurnal Pendidikan dan Pengajaran*, *1*(1), 109-118.

Nadira, S., Ihtisani, A. F., & Mufidah, I., Z. (2022). The future of education: “Freedom” as the foundation of the curriculum. *Curricula: Journal of Curriculum Development, 2*(4), 173-186.

Nikma, S., & Rozak, A. (2023). Kurikulum merdeka dalam tinjauan filsafat pendidikan. *Qiro'ah: Jurnal Pendidikan Agama Islam*, *13*(1), 36-48.

Nursanti, L., Effindi, M. A., & Rosadi, M. I. (2023). Rancang bangun media pembelajaran analisis data pada mata pelajaran Informatika kurikulum merdeka. *Jurnal MediaTIK, 6*(3), 86-93.

Patimah, T. S., Herliani, H., & Sugandi, M. (2024). Manajemen kurikulum di madrasah aliyah (Penelitian di MA YPPA Cipulus). *Expectation: Journal of Islamic Education Management*, *2*(1), 13-24.

Putri, H. A., & Astiwi, W. (2025). Positive culture's role in building profil pelajar Pancasila character. *Curricula: Journal of Curriculum Development, 4*(1), 1-12.

Rahayu, M. S., Hasan, I., Asmendri, A., & Sari, M. (2023). Relavansi kurikulum dan pembelajaran dalam pendidikan. *Dharmas Education Journal (DE_Journal)*, *4*(1), 108-118.

https://doi.org/10.64014/hipkin-jer.v2i3.233

Risna, R. (2023). Analyzing the efficacy of outcome-based education in kurikulum merdeka: A literature-based perspective. *Curricula: Journal of Curriculum Development, 2*(2), 155-166.

Rizki, M. F. F., Zamzani, P. N., & Fahreza, M. (2024). Analisis kebijakan kurikulum madrasah dan madrasah diniyah di Indonesia. *JIIP-Jurnal Ilmiah Ilmu Pendidikan*, *7*(1), 809-816.

Rohmah, F., Hidayat, W. N., & Warsono, W. (2024). Uji peminatan mata pelajaran Informatika dalam penyelenggaraan kurikulum merdeka tingkat sekolah menengah atas. *Jurnal Pembelajaran, Bimbingan, dan Pengelolaan Pendidikan*, *4*(4), 3-3.

Rohman, A. R. (2024). Komunikasi kepala madrasah: Transformasi madrasah menuju madrasah unggul di Madrasah Tsanawiyah Nurul Jadid. *IslamicEdu Management Journal*, *1*(2), 101-110.

Rusmayani, R., & Badi'atussolihah, B. A. (2024). Readiness analysis of merdeka curriculum implementation in Madrasah Ibtidaiyah Bali. *Edupedia: Jurnal Studi Pendidikan dan Pedagogi Islam*, *9*(1), 71-81.

Saputri, R., & Ningrum, W. M. J. (2024). Penerapan kebijakan kurikulum pendidikan PAI dalam konteks kelembagaan di satuan madrasah: Tantangan dan peluang. *Pendas: Jurnal Ilmiah Pendidikan Dasar*, *9*(2), 3258-3275.

Sartika, D., & Darmansyah, R. (2024). Pengembangan kurikulum di Madrasah Aliyah Ulul Albab Kota Lubuk Linggau. *Dirasah: Jurnal Studi Ilmu dan Manajemen Pendidikan Islam*, *7*(1), 18-28.

Sholeh, M. I., Wahrudin, B., & Muzakki, H. (2024). Management challenges in implementing the merdeka curriculum. *Al-Hayat: Journal of Islamic Education*, *8*(3), 1051-1071.

Slamet, S., Soelistijanto, R., Setyaningsih, S., Redjeki, S., & Sayekti, S. (2025). Implementation of merdeka curriculum in the learning process through outdoor learning methods. *RA Journal of Applied Research, 11*(2), 25-29.

Sofiyanti, E., Rasiman, R., & Sumarno, S. (2025). Implementation of merdeka curriculum at SMP Negeri 1 Kedungwuni Pekalongan. *Prima Magistra: Jurnal Ilmiah Kependidikan*, *6*(2), 133-144.

Syarifah, S., & Misbah, M. (2024). Menjembatani dikotomi ilmu di Madrasah. *Al Ashriyyah*, *10*(2), 157-170.

Wahyudi, I., Zakia, N., Anam, R. K., & Analistiani, A. (2024). Tantangan dan peluang implementasi kurikulum merdeka di madrasah ibtidaiyah. *Tarqiyatuna: Jurnal Pendidikan Agama Islam dan Madrasah Ibtidaiyah*, *3*(2), 97-105.

Zakso, A. (2023). Implementasi kurikulum merdeka belajar di Indonesia. *Jurnal Pendidikan Sosiologi dan Humaniora*, *13*(2), 916-930.

https://doi.org/10.64014/hipkin-jer.v2i3.233