

The Role of Digitalization of Learning Media in Shaping the Learning Discipline of Muhammadiyah Bogor High School Students

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ABSTRACT

The national goal of education emphasizes the development of high-quality Indonesian citizens individuals who are faithful to God Almighty, possess noble character, maintain discipline, work hard, act responsibly, and are intellectually as well as spiritually balanced. In line with these goals, the last two decades have witnessed a rapid transformation in the learning process through the digitalization of learning media. However, empirical studies that specifically address how digitalization contributes to students' learning discipline remain limited. Therefore, this study aims to scientifically analyze the role and concrete contribution of the digitalization of learning media in shaping the learning discipline of students at SMA Muhammadiyah Kota Bogor. This research employs a descriptive qualitative method to explore the phenomenon in depth. The research subjects include religious education teachers and students of grades X and XI. A total of 18 student informants participated in this study, consisting of eight students from grade X and ten students from grade XI. Data were collected through semi-structured interviews, direct classroom observation of digital learning practices, and document analysis of school digital learning guidelines and teacher lesson plans. Data were analyzed using the Miles and Huberman model, including data reduction, data display, and conclusion drawing/verification. The findings show that the digitalization of learning media plays a significant and positive role in reinforcing learning discipline among students. Concretely, digital platforms such as e-learning portals, digital attendance systems, and online assignment submissions encourage students to manage study time better and better, complete tasks punctually, and maintain active participation in learning. These improvements are strengthened through synergy between school policies, which mandate structured digital learning; teacher guidance, which integrates pedagogically appropriate media; and the consistent use of innovative digital tools that support student engagement. Overall, the study contributes evidence that digitalized learning environments can effectively cultivate learning discipline when supported by coordinated institutional practices.

Keywords: *Digital Learning Media, Learning Discipline, Learners*



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INTRODUCTION

Education is a set of lifelong learning experiences that encompasses all life situations that affect human development and knowledge. According to the Decree of the People's Consultative Assembly No. II/MPR/1988 concerning GBHN in Tharaba (2020), that the national goal of Indonesian education is to improve the quality of the population individuals who believe in and are devoted to God Almighty, posses noble character, are disciplined, hardworking, resilient, responsible, independent, intelligent, capable, physically and spiritually healthy. The implementation of education aims to develop knowledge and ability that prepare individuals for life. Therefore, education requires

not only mastery of academic competence but also the formation of character, including learning discipline which is a prerequisite for academic success and the formation of responsible individuals. School discipline influences attendance regularity, the accuracy of learning completion, assignments, and the motivation of involvement in learning, all of which directly affect the quality of learning.

In the last two decades, the global education landscape has undergone rapid transformation due to the digitalization of learning systems. Many countries are integrating digital platforms, interactive multimedia, and data-driven learning systems to improve student engagement and discipline. Digitalization enables the delivery of more varied and flexible materials, real-time monitoring of attendance and assignments, as well as more structured learning interactions as an optimization of relevant potential to strengthen discipline aspects when integrated pedagogically (Darmayasa et al., 2025). However, global studies also reveal challenges such as digital distraction does impair learning, excessive screen time, and inequality in technology access issues that increasingly demand strategic regulation and teacher readiness (George, 2024).

Several studies show that interactive digital learning media can increase student engagement and discipline, including improved punctuality, increased learning motivation and higher participation of students (Paling et al., 2024). Conversely, mixed findings appear in field studies that highlight risks of distractions such as uncontrolled use of mobile phones or social media which actually reduce students discipline. Therefore, the impact of digitalization on discipline is highly dependent on teacher synergy, instructional design, classroom management, and school-level technology policies (Mardhiah et al., 2025). These mixed findings indicate the need for more context-specific analyses.

Various studies in the Indonesian context also show a relationship between the use of digital media and student discipline. Structured and teacher-directed digital media tends to reduce learning difficulties, improve discipline, and encourage achievement (Yoga Armanda et al., 2025). Meanwhile, unregulated device or social media use risks decreasing students' focus and learning discipline. These findings suggest that digital intervention must be accompanied by clear regulations, character-building strategies, and teacher assistance. However, empirical evidence that specifically examines how digital learning media shape discipline in religious-based schools is still limited, creating an important empirical gap.

Within Muhammadiyah, there are initiatives and great attention to the digitalization of education from digital learning resource development programs to digital competency training for its teachers (Prasetyo et al., 2022). This is part of efforts to modernize learning and improve the quality of education based on Islamic values, character formation and technological advancement. The implementation of digital-based learning in Muhammadiyah schools creates opportunities to integrate technology with character building programs, including students learning discipline.

In the current phase of educational transformation, several Muhammadiyah schools have also begun adopting artificial intelligence (AI). However, the success of AI-driven learning depends heavily on supporting infrastructure and human resource readiness, especially teachers (Huda, 2024). This means that teachers must be able to understand the potential of AI to support project-based learning, analyze student learning outcome data, and create a more interactive and personalized learning environment. Local factors such as the availability of infrastructure, the principal support, teacher readiness, and student characteristics at SMA Muhammadiyah in Bogor need to be analyzed more deeply to produce contextual and applicable policy recommendations.

Based on the explanations above, this research is important because it fills the gap between the national policy of learning digitalization and real practices in religious-based schools such as SMA Muhammadiyah in Bogor. Therefore, this research aims not only to map digitalization practices and learning discipline levels but also to produce applicable recommendations such as platform management models, device-use regulations, and character-building strategies. Through this approach, digitalization is expected to become a tool for strengthening student discipline not merely

technology adoption. For this reason, the researcher is interested in analyzing the role of digital learning media in shaping the learning discipline of Muhammadiyah high school students in Bogor.

METHOD

This study employs a qualitative descriptive research design. The qualitative approach is grounded in post-positivist philosophy, aiming to explore and understand natural social phenomena in depth. The researcher acts as the main instrument, focusing on meaning, context, and interpretation rather than generalization (Sugiyono, 2024). This design is appropriate for examining how the digitalization of learning media influences students' learning discipline in real classroom settings. The research was conducted at SMA Muhammadiyah Bogor, located at Jl. Merdeka No.118, South Bogor District, Bogor City, West Java, postal code 16132. Participants consisted of two religious education teachers, and 18 students from grades X and XI (eight students from Grade X and ten students from Grade XI).

The study used a purposive sampling technique, selecting participants based on specific criteria relevant to the research focus (Tajik et al., 2025). However these criteria include: 1) Students who actively participate in digitally integrated learning activities, 2) Teachers who regularly use digital media in instructional processes, and 3) Individuals (school citizens) considered capable of providing rich information on the role of digital learning in shaping student discipline.

Data were gathered using three techniques to ensure triangulation: observation means direct observation of learning activities involving the use of digital media in classrooms. Interviews like semi-structured interviews with teachers and student informants to explore their experiences, perceptions, and behavioral changes related to digital learning. Then document studies by examination of school regulations, digital learning guidelines, lesson plans, and digital learning platform records. And data research were analyzed using the Miles and Huberman interactive model, consisting of: 1) Data Reduction: Selecting, simplifying, and organizing raw data from interviews, observations, and documents. 2) Data Display: Presenting organized data in descriptive narratives, tables, or thematic categories. 3) Conclusion Drawing and Verification: Interpreting patterns, identifying relationships between digital learning media and student discipline, and verifying findings through continuous comparison during the research process (Hashimov, 2015).

RESULTS AND DISCUSSION

The Role of Digitalization of Digital Learning Media at SMA Muhammadiyah Bogor School policies and support

Policy direction and school support are one of the keys to the success of digitizing learning media in the school environment. Based on the findings of research at SMA Muhammadiyah in Bogor, the principal has a strong commitment to support digital transformation through progressive and adaptive policies to the development of educational technology. This aligns with the theory of transformational educational leadership (Bush, 2020), which emphasizes that principals who are visionary and adaptive tend to drive innovation and change in their institutions. As the principal stated *"saya pribadi melihat bahwa setiap guru dan siswa harus memanfaatkan teknologi bukan hanya sekadar alat bantu, tapi juga budaya belajar yang berkesinambungan"*. So this support is not only administrative, but also strategic in creating a modern and efficient learning ecosystem. School policies that are pro-equity in the equal distribution of technological functions in learning are reflected in several concrete steps, such as the provision of digital infrastructure, the procurement of ICT (information and communication technology) devices, and teacher training in the use of digital-based learning media. This is in line with the government's policy stated in Permendikbud No. 22 of 2016 concerning primary and secondary education process standards, which emphasizes the importance of using information technology to improve the quality of learning. Thus, the policy of school principals is an implementive form of national policy in the context of digital-based education (Novita Sari et al., 2025).

However, SMA Muhammadiyah in Bogor has also developed a learning system that

integrates various digital platforms, such as the use of e-learning materials, online-based daily exams, and academic communication through online learning applications. This policy not only makes it easier for students to access learning materials, but also forms a culture of independent learning and discipline in students, because they are required to manage their learning time efficiently and be responsible for every assignment given. Furthermore, school support is also manifested in the form of collaboration with external communities, such as educational technology institutions and digital communities for students. In terms of organizational culture, the digitalization policy at SMA Muhammadiyah in Bogor has formed a learning atmosphere that is adaptive, creative, and responsive to development. Students are not only users of technology, but also active learners who use technology as a means of self-development, especially through digital-related hobbies.

This study finds that the school's digitalization policy indirectly shapes student learning discipline. Through structured digital platforms, students become accustomed to fixed schedules, clear deadlines, and transparent learning monitoring. According to Bandura's social cognitive theory, structured digital environments encourage behavioral regulation through modeling and reinforcement. It will help a lot for the students' development (Airin & Md Sharif, 2024). Overall, the policies and support of the principal at SMA Muhammadiyah in Bogor are an important foundation for the implementation of digitalization of learning media. This support has encouraged the development of an effective technology-based learning system, while strengthening students' learning discipline and responsibility. Thus, the role of school principals and institutional policies play a determinant role in the successful implementation of education digitalization at the secondary school level.

The role of teachers in digitizing learning

Teachers have a central role in the process of implementing the digitalization of learning media in schools (Putri, 2023). In the context of SMA Muhammadiyah Bogor, the findings of the study show that teachers have shown significant adaptation to technological developments, by starting to integrate various digital media into the learning process. This transformation shows a paradigm shift from conventional learning to modern learning based on information technology. This aligns with TPACK theory by Mishra & Koehler (2006), which states that successful integration of digital media requires teachers to combine technological, pedagogical, and content knowledge.

Teachers at SMA Muhammadiyah Bogor not only play the role of delivering material, but also as facilitators and innovators in utilizing digital technology. A senior religion teacher says *"ketika siswa mengakses materi di Youtube itu bukan hanya untuk formalitas menggunakan teknologi, akan tetapi juga melatih kedisiplinan siswa untuk menghasilkan review yang sesuai dan bermakna tepat waktu"*. So the students actively accessed digital materials on their own devices under teacher guidance, showing high engagement and adherence to digital task procedures. The teacher develops e-learning-based learning strategies through platforms such as YouTube, Google Classroom, and other interactive applications. With this approach, learning becomes more engaging, flexible, and contextual. In this case, it is natural that teachers today are required to have digital pedagogic competencies in order to be able to create learning experiences that are relevant to the needs of students in the era of information technology (Azzahra et al., 2024), noting that teacher readiness strongly affects digital learning success.

In addition to the use of learning videos through YouTube, teachers also implement an online assignment and evaluation system. This not only simplifies the learning administration process, but also trains students to be responsible and disciplined in managing assignment completion time. Online assignments encourage students to develop self-regulated learning, which is the ability to manage and motivate themselves in the learning process. According to Zimmerman & Schunk (2011), self-regulated learning is an important indicator of learning discipline, which can grow through structured and systematic digital learning. This is consistent with findings from the field: digital assignments with fixed deadlines increased students' discipline, online assessments required students to manage time independently and use of gadgets for productive purposes (accessing references, collaborating with friends online) so it's basically promoted digital discipline.

The role of teachers is also seen in optimizing the use of gadgets as a productive learning medium. Instead of restricting its use, teachers at SMA Muhammadiyah Bogor have started to direct students to use digital devices for educational purposes, such as accessing scientific reference sources, creating learning content, and collaborating with peers online. This approach shows that teachers have understood the importance of digital literacy in forming a disciplined and responsible learning character.

Interestingly, some teachers have also begun to introduce how to use Artificial Intelligence (AI) properly and correctly in learning activities. This shows that there is a new pedagogic awareness that AI is not just a tool, but a learning medium that needs to be integrated ethically and educationally. According to Hakeu et al., (2023), as long as teachers provide guidance so that students understand the limitations, ethics, and potential of AI technology in learning. So it will automatically support their creativity and learning productivity.

In addition, teachers play the role of agents of change in creating a collaborative digital learning environment. Teachers not only adjust teaching methods, but also encourage students' active participation in designing technology-based projects. Through this approach, teachers have certainly built discipline, responsibility, and learning independence of students. As stated by Mulyasa (2021), teachers play a strategic role in shaping a digital learning culture that is oriented towards mastering 21st century skills, namely critical thinking, creativity, collaboration, and communication or abbreviated as the 4C. By evidence from the YouTube projects and online quizzes shows the cultivation of these competences

The integration of digital media by teachers at SMA Muhammadiyah Bogor does not merely replace traditional tools but it transforms leaning behavior. The empirical evidence suggests: First of all, students are more disciplined due to transparent digital monitoring. Second, teachers intentionally design tasks that require responsibility, time management, and ethical use of digital tools. Latest, digital literacy and discipline develop simultaneously because the teachers guide student on proper technology use (including basic AI literacy). Thus, the role of teachers is not limited to technological adaption, they serve as cultural agents shaping disciplined digital learning behavior consistent with the demands of 21st century education.

Implementation of digitalization of learning media

The implementation of digitalization of learning media at SMA Muhammadiyah Bogor Demonstrates systemic integration of technology across learning processes. Based on the findings of the research, schools have implemented various forms of digital innovation that touch almost all aspects of learning, ranging from the development of teaching materials, evaluation systems, to guidance and counseling services. A teacher of Al-Islam & Kemuhammadiyah stated, *"Hypercontent yang digunakan dalam mata pelajaran al-Islam dan Kemuhammadiyah sangat membantu karena siswa bisa belajar secara mandiri baik di kelas maupun di rumah. Para siswa bisa membuka referensi, video, dalil dan penjelasan para Ulama dalam satu paket media pembelajaran"*. This implementation shows that digitalization is not only interpreted as the use of technological devices, but also as an effort to transform pedagogic towards learning that is more interactive, collaborative, and relevant to the needs of 21st century students.

The first implementation can be seen from the use of hypercontent-based digital teaching materials in Al-Islam and Kemuhammadiyah subjects. Hypercontent-based teaching materials integrate text, images, videos, and interactive links in a single learning material. This model provides a richer and more immersive learning experience as it allows learners to explore a variety of learning resources independently. In his research, Al Fadillah & Akbar (2024) it was stated that hypercontent learning materials are able to increase motivation and learning effectiveness because they present content that is adaptive to students learning styles. In the context of SMA Muhammadiyah Bogor, this approach helps instill Islamic and Muhammadiyah values in a more contextual and attractive way for the younger generation who are always closely associated with digitalization.

The second implementation is the optimization of YouTube streaming media as a means of assignment in Islamic Religious Education subjects. Teachers give assignments in the form of making or analyzing religious videos uploaded on the YouTube platform. This strategy not only increases

students' creativity, but also fosters discipline in managing time, producing content, and understanding ethics in the world of digital media. According to Khairunnisa & Abidin (2025), the use of social media such as YouTube in PAI learning has the potential to increase Islamic literacy as well as hone students' digital literacy. Thus, this medium serves as a bridge between religious values and digital age skills.

The third implementation is the use of online quizzes as a form of ice breaking in the classroom. In classroom sessions, teachers frequently used online quizzes such as Quizizz before starting lessons as ice-breaking activities. Teachers take advantage of various applications such as Kahoot, Quizizz, or Google Forms to create a learning atmosphere that is both fun and competitive. This strategy helps keep students focused in the midst of digital learning which tends to make it saturated (ice breaking). The use of online quizzes not only serves as a formative evaluation tool, but also as an interactive medium that stimulates the spirit of learning and increases material retention. This is reinforced by research by Purba et al., (2024), that gamification in digital learning is able to increase students' active participation and strengthen their intrinsic motivation for learning discipline.

Furthermore, the implementation of digitalization can also be seen in the optimization of counseling guidance services through the WhatsApp application. BK (Counseling Guidance) teachers use this media to establish faster, personal, and flexible communication with students. Through text messages or online calls, teachers can provide academic and non-academic counseling effectively without being limited by time and space. According to Rimayati (2023), this practice is called Cyber Counseling, which is the use of instant messaging applications such as WhatsApp in educational counseling services that can increase the affordability and speed of response to student problems. This practice also helps maintain learning discipline and emotional well-being of students, especially in the digital era which is full of psychological and social challenges.

So, based on overall implementation, the integration of Hypercontent, video-based assignment, gamified quizzes, and cyber counseling collectively reflects and advanced digitalization system. Empirical evidence suggest that: a) Digital tools enhance engagement and motivation, confirming theories of constructivism and connectivism. b) Structured platforms reinforce learning discipline by creating clear routines and expectation. c) Digital counseling contributes to emotional regulation, which indirectly supports academic discipline. Thus, the implementation at SMA Muhammadiyah Bogor represent a holistic approach where technology strengthens both cognitive and non-cognitive aspects of learning discipline.

Aspects of Student Learning Discipline

Learning discipline is one of the important indicators of the success of the educational process, especially in the midst of digital transformation that demands greater independence and responsibility from students (Sobri, 2020). Based on the findings of research at SMA Muhammadiyah Bogor, the Digitalization of learning media has been proven to play a positive role in the formation of aspects of learning discipline. A student stated, *"kalau tugasnya di classroom, saya jadi lebih ingat sih selain ada notifikasi dari guru mapel. ada juga notifikasi deadline otomatis yang muncul di HP jadi mau tidak mau harus tepat waktu"*. Another student shared, *"selain belajar by Youtube atau classroom, kami juga diajari cara menggunakan AI sebagai bantuan untuk mengakses informasi lebih. tapi tetap guru tidak membolehkan serta merta kita copy paste apalagi mata pelajaran agama"*. Students showed improvements in punctuality, responsibility for assignments, study time management, and ethics in the use of digital media for academic activities. The first aspect is punctuality in participating in learning activities and collecting assignments. Through digital learning systems such as the Learning Management System (LMS), Google Classroom, or the YouTube platform, students are familiar with schedules and deadlines that have been set systematically. The obligation to upload assignments and take online exams fosters awareness of the importance of time management. According to Sobri (2020), time discipline is a reflection of high academic responsibility, and technology-based learning can strengthen students' self-control in meeting learning targets on time.

The second aspect is the responsibility of learning. In the context of digitalization, students at SMA Muhammadiyah Bogor have shown increased awareness of their active role as independent

learners. During digital PAI tasks, most students used their smartphones for academic platforms rather than non-academic. Through digital teaching materials and hypercontent-based assignments, students are encouraged to look for additional references, understand the material independently, and complete digital projects with their own creativity. This is in line with the opinion of Zimmerman & Schunk (2011), who explain that digital learning supports the formation of self-regulated learning, which is the ability of learners to regulate, control, and evaluate their learning process independently.

The third aspect concerns consistency and regularity of learning. Empirical findings from interviews and classroom observations indicate that students at SMA Muhammadiyah Bogor demonstrate increasingly regular learning behaviors, including consistent attendance in online classes, active participation in digital discussions, and sustained completion of digital-based assignments. Observational data show that students routinely access learning platforms to check schedules, monitor task progress, and engage in asynchronous discussions. This pattern support Zimmerman & Schunk (2011) theory of self-regulated learning, which emphasizes that structured digital environments encourage learners to plan, monitor, and evaluate their learning activities independently. The availability of learning management systems enables students to track their academic progress periodically, thereby reinforcing habitual learning routines and fostering long-term discipline. So, the digitalization of learning media functions not only as a technological tool but also as a mechanism for cultivating consistency and continuity in students learning practices.

The fourth aspect is ethics and responsibility in the use of digital media. In technology-based learning, students are not only required to master digital skills, but also maintain digital ethics. Based on the findings of the research, teachers at SMA Muhammadiyah Bogor city actively provide briefings related to the healthy and ethical use of technology, including how to use AI correctly. A teacher of AI-Islam & Kemuhammadiyah stated, *"tentunya, sebagai guru kita mengajarkan murid tentang etika digital untuk senantiasa bertabayyun atau re-check kembali atas apa-apa informasi yang didapatkan di internet maupun AI, jangan sampai termakan informasi yang keliru apalagi hoax"*. Students increasingly understand the limitations associated with technology use, such as avoiding digital hoaxes and using learning resources responsibly. This shows that learning discipline also includes moral and intellectual disciplines in the digital world.

The fifth aspect is motivation and perseverance in learning. The implementation of digital media such as learning videos, online quizzes, and YouTube-based projects increases students' interest in learning because the material is presented in a more interesting and varied way. However, success in this system remains dependent on the individual's discipline to complete tasks and continue to learn even without direct supervision. Of course, in this case, learning discipline is closely related to the strong intrinsic motivation in students to learn, connected to the stronger their commitment to discipline and responsibility in academic matters (Sobri, 2020).

The final aspect relates to time management and learning priorities in the digital age. Empirical evidence from interviews and direct observations indicates that students at SMA Muhammadiyah Bogor demonstrate an improved ability to manage their time by balancing online learning activities with non-academic routines. Observational findings show that students increasingly use smartphones and digital devices for productive academic purposes, such as accessing instructional videos, completing practice exercises, and reviewing learning materials through educational applications. This pattern of behavior also aligns with the ICTs for learning theory, which emphasizes that technology functions as a pedagogical tool to support effective learning when it is integrated into well-designed instructional practices (Yurtseven Avci et al., 2020). Through guided use and teacher supervision, digital tools help students organize their learning activities, set academic priorities, and manage their study time more effectively. Therefore, the findings suggest that digitalization, when supported by clear instructional design, strengthens students ability to regulate time, prioritize learning tasks, and maintain academic discipline in the digital era.

Overall, the findings indicate that the digitalization of learning media at SMA Muhammadiyah Bogor plays a significant role in strengthening students learning discipline in the digital era. Through the use of learning management systems, educational platforms, and guided digital tools, students demonstrate improvements in punctuality, responsibility, consistency, ethical

awareness, learning motivation, and time management. Digital learning environments encourage students to meet deadlines, take responsibility for their learning tasks, engage regular and sustained learning activities, and independent learning behaviors, where students are able to organize, monitor, and evaluate their own learning processes. Furthermore, when supported by clear instructional design and active teacher supervision, technology-enhanced learning not only increases students motivation and engagement but also helps them prioritize academic activities and manage their time effectively. Thus, digitalization functions not merely as a technological innovation, but as a pedagogical strategy that fosters academic discipline, responsibility, and sustained learning commitment among students in the context of contemporary education.

CONCLUSION

Based on the results of the research discussion, it can be concluded that the Digitalization of learning media at SMA Muhammadiyah Bogor plays a significant role in shaping the learning discipline of students through the synergy between school policies, the role of teachers, and the implementation of directed digital learning. School principals show a strong commitment to visionary policies through the provision of technological facilities, teacher training, and the implementation of digital learning standards. Teachers play an active role as facilitators who utilize e-learning, YouTube media, online assignments, and ethical education on the use of AI to foster students' independence and learning responsibility. The implementation of digitalization, which includes hyper-content teaching materials, online quizzes, and WhatsApp-based counseling services, is effective in increasing academic participation and discipline. The implication is that students show improvements in the aspects of punctuality, responsibility, learning order, and digital ethics, which as a whole reflects the success of digitalization in forming a disciplined and characterful learning culture in the SMA Muhammadiyah Bogor environment.

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