

Chromebook-Based Islamic Digital Learning Ecosystem: A Model for Strengthening Students' Religious Character and Digital Ethics

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ARTICLE INFO	ABSTRACT
Keywords: chromebook; Islamic digital learning; religious character; Islamic digital ethica; digital literacy	Digital transformation has driven the widespread use of Chromebooks in learning. However, the intense use of digital technology also poses challenges in the form of digital distractions, misuse of technology, and the weakening of students' religious character and digital ethics. This study aims to analyze and construct a Chromebook-Based Islamic Digital Learning Ecosystem model as a strategy for strengthening students' religious character and digital ethics. The study used a qualitative approach with a case study design at an educational institution that implemented Chromebooks in the learning process. Data were collected through learning observations, in-depth interviews with Islamic Religious Education teachers, students, and curriculum elements, as well as documentation of digital learning devices. Data analysis was carried out through data condensation, data presentation, and drawing conclusions, with validation through triangulation of sources and methods. The results show that strengthening religious character and digital ethics is achieved through four main components: the role of teachers as digital role models, familiarizing religious activities in digital learning, integrating Islamic values into Chromebook-based content and assignments, and continuous monitoring of students' digital ethics. In addition, innovative practices were found in the form of digital spiritual reflection, Islamic digital literacy, Islamic value-based assignments, and a character appreciation system that support the formation of religious and responsible behavior in the digital space. Based on these findings, this study produces a Chromebook-Based Islamic Digital Learning Ecosystem model that integrates digital literacy, religious character, and Islamic digital ethics within a holistic learning framework. The novelty of this research lies in the development of an Islamic digital learning ecosystem that positions Chromebooks not only as learning tools but also as a medium for internalizing Islamic values and character building for students in the era of digital transformation. This research contributes to the development of an Islamic education paradigm that adapts to digital transformation without neglecting students' spiritual and moral dimensions.
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INTRODUCTION

The development of digital transformation in education has changed the way educational institutions manage the learning process in the contemporary era. Technology integration is no longer positioned as a complement to teaching and learning activities, but has become a crucial part of building an education system that is adaptive to changing times. One form of implementation of this transformation is seen in the increasing use of Chromebook devices in various educational institutions as a digital-based learning tool. With the support of the cloud computing ecosystem through services like Google Workspace for Education, Chromebooks make it easier for teachers and students to access learning materials, collaborate online, and manage academic activities more flexibly and efficiently. These changes demonstrate that digitalization has become a new foundation in modern educational practices in the 21st century.¹

However, the development of digital technology is not always accompanied by the development of students' character and ethical awareness. Various studies show that intensive use of digital devices without proper supervision and guidance can give rise to a number of problems, such as decreased learning focus, increased digital distraction, social media addiction, academic plagiarism, irresponsible dissemination of information, and digital behavior that is inconsistent with moral and social norms.² This condition shows that the development of educational technology cannot only be oriented towards learning effectiveness, but must also be balanced with strengthening the character and ethical dimensions of students.

From the perspective of Islamic education, this issue becomes increasingly important because the goal of Islamic education is not only oriented towards mastering knowledge (transfer of knowledge), but also the formation of noble morals (transfer of values) and the development of personality based on Islamic values. Islamic education places religious character development as the primary goal of the educational process, where students are expected to internalize Islamic values in all dimensions of life, including when interacting with developments in digital technology.³ However, the current reality reveals a new contradiction: students are increasingly connected to digital devices, yet in many situations they experience a decreased sensitivity to religious values, a diminished habit of spiritual reflection, and a weakened ethical awareness in their use of technology. This phenomenon demands an Islamic educational model that can utilize digital technology not only as a learning tool but also as a space for the ongoing internalization of religious values.⁴

Several previous studies have discussed the relationship between the digitalization of education and changes in student learning behavior. Neil Selwyn explains that developments

¹ Stephen Carney, "Reimagining Our Futures Together: A New Social Contract for Education: By UNESCO, Paris, UNESCO, 2021, 186 Pages, ISBN 978-92-3-100478-0," *Comparative Education* 58, no. 4 (2022): 568–69, <https://doi.org/10.1080/03050068.2022.2102326>.

² Brian Keeley, *The State of the World's Children 2021: On My Mind—Promoting, Protecting and Caring for Children's Mental Health*. (ERIC, 2021), <https://eric.ed.gov/?id=ED615261>.

³ Prof DR H. Abuddin Nata MA, *Ilmu Pendidikan Islam* (Prenada Media, 2016).

⁴ Fauzan Azim dkk., "Modernisasi pendidikan Islam perspektif Azyumardi Azra dalam buku pendidikan Islam tradisi dan modernisasi di tengah tantangan milenium III," *Jurnal Ilmiah Pendidikan Dan Keislaman* 3, no. 2 (2023): 255–60.

in educational technology have a significant impact on student interaction patterns, learning culture, and social behavior. However, in practice, technology implementation is often more focused on academic efficiency than on strengthening the moral dimension of technology users.⁵ The study developed by Mike Ribble also emphasized that the development of digital education must be accompanied by the formation of digital citizenship, namely the ability of students to use technology safely, responsibly and ethically in digital life.⁶ In the study of Islamic education, Syed Muhammad Naquib al-Attas places the concept of adab as the core of education, where educational success is not only measured through mastery of knowledge, but also through the formation of good moral behavior in all human activities.⁷

At the implementation level, several practices of Chromebook utilization in school environments demonstrate that digital devices can be used for more than just academic aids. The implementation of Chromebook-based learning at SMP Negeri 3 Madiun demonstrated how the use of Google Slides, Google Classroom, Google Forms, and cloud-based documents increased student participation in religious learning. These learning practices also demonstrated that students began to become accustomed to keeping digital reflection journals, accessing online religious learning resources, developing responsibility in submitting digital assignments, and utilizing the school internet for more focused learning activities. Furthermore, other practices demonstrated that Chromebooks were also used for digital spiritual reflection activities, accessing prayer texts, learning based on religious values, and monitoring healthy internet usage, thus enabling technology to be directed toward strengthening students' religious habits in the digital space.

While various studies demonstrate the positive benefits of using Chromebooks in learning, most existing studies still focus on the technology's effectiveness in increasing student engagement, creativity, or efficiency in academic processes. These studies have not yet developed a conceptual approach that positions digital devices as part of an Islamic learning ecosystem systematically directed at shaping both religious character and students' digital ethics. On the other hand, research on religious character education in Islamic education generally emphasizes aspects of worship habits, school religious culture, teacher role models, and moral development through conventional classroom interactions. Meanwhile, studies on digital ethics have developed within the discipline of modern digital literacy, but are rarely directly linked to the internalization of Islamic values in everyday learning practices.⁸ In this research, morals are not understood only as mastery of religious knowledge or students' ability to quote verses from the Koran and hadith in the learning process. Morals are interpreted as a manifestation of Islamic values in daily behavior which is reflected through the attitudes, decisions and actions of students, both in social interactions

⁵ Neil Selwyn, *Education and Technology: Key Issues and Debates* (Bloomsbury Publishing, 2021).

⁶ Tutik Wijayanti dkk., "Implementasi Pendekatan Deep Learning Melalui Model Digital Citizenship Character Habituation," *Wahana Sekolah Dasar* 33, no. 2 (2025): 129–44, <https://doi.org/10.17977/wsd.v33i2.3350>.

⁷ Muhammad Atho'illah dan Sri Minarti, "Evaluasi Pendidikan Berbasis Nilai Islam: Kajian Konseptual Berdasarkan Pemikiran Syed Muhammad Naquib al-Attas," *Philosophiamundi* 3, no. 3 (2025), <https://philosophiamundi.id/index.php/philosophia/article/view/132>.

⁸ Henni Syafriana Nasution dkk., "Islamic Education Teachers Strategies for Character Building Through Digital Literacy Based Islamic Values in The Society 5.0 Era," *Fitrah: Journal of Islamic Education* 6, no. 1 (2025): 259–71, <https://doi.org/10.53802/fitrah.v6i1.1172>.

and when utilizing digital technology. Therefore, moral strengthening does not stop at the cognitive aspect, but is directed at the process of internalizing values so that students are able to demonstrate behavior that is responsible, honest, disciplined, polite, has self-control, and uses technology ethically in accordance with the principles of Islamic teachings. Based on this perspective, Chromebooks are positioned not just as a medium for delivering religious material, but as part of a learning ecosystem that supports the formation of moral behavior through habituation, example and learning experiences based on Islamic values.

This situation indicates a research gap that has not been widely addressed in previous research: the lack of a learning model capable of integrating Chromebook use with the strengthening of religious character and the formation of Islamic digital ethics within a single, cohesive learning framework. Based on this gap, this study developed the concept of a Chromebook-Based Islamic Digital Learning Ecosystem, a learning model that positions digital technology as an educational environment that supports the holistic development of student character. This model is built through four main components: teachers as digital role models, the habituation of religious activities in digital learning, the integration of Islamic values into Chromebook-based content and assignments, and continuous monitoring of students' digital behavior throughout the learning process. This model also involves innovative practices in the form of digital spiritual reflection, Islamic value-based assignments, and a system for developing discipline and character appreciation that encourages students to develop religious behavior when interacting with technology.

The novelty of this research lies in the development of a Chromebook-Based Islamic Digital Learning Ecosystem model that views Chromebooks not only as digital learning support devices, but as part of an educational ecosystem that facilitates the internalization of Islamic values in students' learning lives. This novelty lies not only in the insertion of Quranic verses or religious materials in digital learning, but also in the integration of teacher role models, religious habits, strengthening digital ethics, and value-based learning activities that continuously shape students' moral behavior. Thus, morality in this research is understood as behavior that reflects responsibility, honesty, discipline, politeness, and the ability to control oneself in utilizing technology in accordance with Islamic values.

Based on the description, this study aims to analyze how the Chromebook-Based Islamic Digital Learning Ecosystem model can be used as a strategy to strengthen religious character and form students' digital ethics in an educational environment. Academically, this study is expected to broaden the study of contemporary Islamic education in facing digital transformation. Practically, this study is expected to be an implementable model for educational institutions in utilizing digital technology productively without neglecting the moral, spiritual, and ethical dimensions of students. In line with these objectives, this study is formulated in the following research questions: How is the implementation of the use of Chromebooks in building an Islamic digital learning ecosystem in the school environment?; How can the process of strengthening students' religious character be formed through Chromebook-based learning activities?; How are Islamic digital ethical values internalized through the use of Chromebooks in learning activities?; and How can the Chromebook-Based Islamic Digital Learning Ecosystem model be constructed as an Islamic education paradigm that is adaptive to digital transformation?

RESEARCH METHOD

This research uses a qualitative approach with a case study design to deeply understand the implementation of a Chromebook-based Islamic digital learning ecosystem in strengthening students' religious character and digital ethics. In this study, religious morality is understood as student behavior that reflects the appreciation and application of Islamic values in daily life, both during the learning process and when interacting in digital spaces. Religious morality is identified through several indicators, namely responsibility in carrying out learning tasks, honesty in academic activities, discipline in using Chromebooks according to school regulations, politeness in communicating and interacting in digital environments, the ability to control oneself in using technology, and consistency in carrying out religious habits, such as praying before learning, utilizing Islamic learning resources, and reflecting on moral values acquired during the learning process. These indicators are used as a reference in the observation process, interviews, and documentation to analyze how Chromebook use contributes to strengthening students' religious morality. The qualitative approach was chosen because this research focuses on understanding social phenomena and learning practices that occur naturally in the school environment, particularly regarding the use of digital technology as a medium for internalizing Islamic values. Meanwhile, the case study design was used because the research focuses on a specific context, namely educational institutions that have integrated Chromebooks into their daily learning processes.⁹ The research subjects included Islamic Religious Education teachers, students, and digital learning activities taking place at the school. Informants were selected using purposive sampling, based on their direct involvement in the implementation of Chromebook-based learning.

This study focused on observing the use of digital platforms such as Google Classroom and Google Slides, digital-based assignments, religious practices, and student interactions using technology during learning activities.¹⁰ Research data was collected through observation, in-depth interviews, and documentation. Observations were conducted to directly observe the use of Chromebooks in learning activities, interviews were used to explore teachers' and students' experiences regarding the digital learning process, and documentation was used to collect various supporting data such as learning devices, student assignments, digital reflection results, and archives of Chromebook-based learning activities.¹¹

Data were analyzed using an interactive analysis model developed by Matthew B. Miles and A. Michael Huberman, which includes three stages: data condensation, data display, and conclusion drawing. In the initial stage, data were selected and grouped according to the research focus. Next, the data were presented systematically to identify patterns in the research findings. Conclusions were then drawn to construct a Chromebook-Based Islamic Digital Learning Ecosystem model as the final research result.¹² To maintain data validity,

⁹ John W. Creswell dan J. David Creswell, *Research Design: Qualitative, Quantitative, and Mixed Methods Approaches* (SAGE Publications, 2017).

¹⁰ Robert K. Yin, *Case Study Research and Applications: Design and Methods* (SAGE Publications, 2017).

¹¹ Robert Bogdan dan Sari Knopp Biklen, *Qualitative research for education*, vol. 368 (Allyn & Bacon Boston, MA, 1997), http://math.buffalostate.edu/dwilson/med595/qualitative_intro.pdf.

¹² Matthew B. Miles dkk., *Qualitative Data Analysis: A Methods Sourcebook*, 3/E. (SAGE Publications,

this study employed source and method triangulation techniques by comparing data from observations, interviews, and documentation. Based on this framework, this study analyzes the implementation of Chromebook-based learning not only from the perspective of technology utilization but also from its contribution to strengthening students' religious morals. The analysis focuses on behaviors reflecting the internalization of Islamic values, including responsibility, honesty, discipline, politeness in the use of digital technology, self-control, and the habituation of religious behavior during the learning process. All of these indicators serve as the basis for analyzing data obtained through observation, in-depth interviews, and documentation.¹³

RESULT AND DISCUSSION

Teachers as Role Models in Using Islamic Digital Technology

The research results show that the successful implementation of a Chromebook-based Islamic digital learning ecosystem at SMP Negeri 3 Madiun is heavily influenced by the role of teachers as key actors in building a culture of healthy, responsible, and Islamic-value-oriented technology use. In learning practices, teachers not only function as transmitters of academic material but also act as role models who directly guide students in the ethical use of digital devices. These findings demonstrate that technology integration in schools is not solely about device mastery, but also about how teachers shape digital habits that align with students' character development.¹⁴

Based on observations during the learning process, each Chromebook use always begins with teacher guidance on how to use the device responsibly. Teachers provide clear boundaries regarding internet access, permitted platforms, and rules for using learning accounts during the activity. Chromebooks are not positioned as free-access devices, but rather as learning tools whose use must adhere to the academic and moral norms prevailing in the school environment. An integrated learning system through Google Classroom, Google Slides, and Google Workspace helps teachers monitor students' digital activities in a more structured manner.

In an interview with an Islamic Education teacher, it was explained that the use of Chromebooks in schools from the outset was aimed not only at digitizing learning but also as part of student character development. The teacher explained:

"We always remind students that when they use Chromebooks, they are both learning and practicing responsibility. We emphasize that technology is a trust. Therefore, they should not access anything outside of their learning environment, as that is part of student etiquette."

This statement demonstrates that teachers are consciously building students' awareness that technology use is part of their moral responsibility. Another teacher echoed this sentiment, explaining that student supervision focuses not only on completing academic assignments but also on the digital behaviors they exhibit during the learning process.

2019), <https://openlibrary.telkomuniversity.ac.id/home/catalog/id/149484/slug/qualitative-data-analysis-a-methods-sourcebook-3-e-.html>.

¹³ Norman K. Denzin dan Michael D. Giardina, *Qualitative Inquiry in Transition—Pasts, Presents, & Futures: A Critical Reader* (Taylor & Francis, 2024).

¹⁴ John W. Creswell, *Educational research: Planning, conducting, and evaluating quantitative*, 2002, <https://www.academia.edu/download/31111669/MCTE690-syllabus-summer2003.pdf>.

"Sometimes students think Chromebooks are just another gadget. This is where teachers need to lead by example. We strive to show them how to use the internet for the right purposes, how to find good information, and how to maintain ethical behavior online."

Research findings also show that teacher role models are not only evident through verbal instructions but also through hands-on practice during learning. During observations, teachers were seen using digital devices in a disciplined manner, only accessing relevant learning resources, modeling how to find valid academic references, and avoiding the use of digital media for anything unrelated to learning. These patterns indirectly shape students' habits, leading them to emulate the digital behaviors exemplified by their teachers.

One of the class VIII students in an interview explained that teachers often give reminders about digital ethics before learning begins. According to the student:

"Before class starts, the teacher usually reminds us to focus on the assignment in Google Classroom. If anyone opens another tab, they're usually immediately reprimanded. So, we've become more cautious when using Chromebooks."

Another student shared a similar experience, saying that teachers often instilled in them the understanding that internet use is also related to religious values.

"The teacher once said that seeking knowledge online is also an act of worship, so it should be used wisely. That's why we were asked not to open anything unimportant during class."

These field findings demonstrate that the formation of religious character through digital technology is highly dependent on teachers' consistency in providing digital role models in the classroom. Teachers not only transfer learning materials but also serve as figures who teach how technology is used within ethical and morally responsible boundaries. From an Islamic educational perspective, this aligns with the thinking of Syed Muhammad Naquib al-Attas, who places the concept of *adab* (adab) at the core of education. According to Al-Attas, education truly aims to shape individuals who are able to apply knowledge correctly and responsibly in all aspects of life.¹⁵ In the context of digital learning, these manners can be translated as students' ability to use technology with moral and spiritual awareness.

In addition, the results of this study also strengthen Neil Selwyn's view, which explains that educational technology is never neutral because it always influences social interaction patterns and student learning behavior.¹⁶ Thus, the success of technology integration in schools is greatly influenced by how teachers guide students in understanding the ethical dimensions of technology use. If technology is viewed solely as an academic tool, the digitalization process has the potential to lose its character education dimension. Conversely, when teachers act as digital role models, technology can become an effective medium for building students' religious character.

Research findings at SMP Negeri 3 Madiun indicate that teachers as digital role models are the main foundation in building a Chromebook-Based Islamic Digital Learning Ecosystem. The existence of digital technology does not automatically shape positive student

¹⁵ Moh Hamzah, "Legasi Pemikiran Syed Muhammad Naquib Al-Attas Dan Relevansinya Terhadap Pendidikan Islam Kontemporer," *Edupreneur: Jurnal Pendidikan Dan Ekonomi* 2, no. 2 (2024), <https://doi.org/10.28944/edupreneur.v2i2.2541>.

¹⁶ Neil Selwyn, *Education and Technology: Key Issues and Debates* (Bloomsbury Publishing, 2021).

behavior, but requires educators who are able to demonstrate ethical, disciplined, and Islamic-compliant technology use practices. From these results, it can be understood that digital transformation in Islamic education is not enough to simply provide technological devices, but must be built through the example of teachers as the main agents of forming an Islamic digital culture in the school environment. Thus, teachers as digital role models are the main foundation in the development of a Chromebook-Based Islamic Digital Learning Ecosystem.

Cultivating Religious Character through Digital Learning Activities

Research findings indicate that the use of Chromebooks at SMP Negeri 3 Madiun is not only aimed at supporting the effectiveness of the learning process, but is also utilized as a means of building students' religious habits in their daily learning activities. The school has developed a learning model that positions digital technology not merely as an academic tool, but as a medium that helps students stay connected to spiritual values throughout the learning process. This situation demonstrates that the digitalization of education does not necessarily imply a decline in students' religious dimensions, but can instead provide a new space to instill religious habits that are more adaptive to current developments.¹⁷

Based on observations, each Chromebook-based learning activity begins with a religious routine that has become part of the school culture. Before accessing the devices, students first pray together, then the teacher directs them to access digital materials prepared through the school's learning platform. In several Islamic Religious Education learning sessions, students are also directed to access digital copies of the Quran, online interpretation materials, and various religious learning resources relevant to the topic. The use of digital devices in this context does not replace religious activities, but rather serves as a new means to support students' religious practices within the school environment.

An Islamic Education teacher explained that the school consciously strives to strike a balance between technological development and the spiritual development of students. In an interview, he said:

"We don't want students to become preoccupied with digital devices and lose sight of their religious values. Therefore, we begin every Chromebook-based lesson with prayer, and for certain topics, we direct students to access digital Islamic resources so they understand that technology can also be used to deepen their understanding of religious values."

In addition to these habits, research also found that digital spiritual reflection practices are a learning innovation in schools. After completing the learning process, students are asked to write a reflection in Google Classroom about the understanding they gained and the values they can apply to their daily lives. This activity is designed to encourage students to not only focus on cognitive understanding but also engage in personal reflection on the moral messages of the material they have learned.

An eighth-grade student described the experience as follows:

"After class, we're sometimes asked to write about what we learned from the day's material. Usually, it's not just the content, but also how the religious lessons can be applied to everyday life. This way, we learn

¹⁷ Loso Judijanto dkk., *Transformasi Pendidikan: Menghadapi Era Digital di Ruang Belajar* (PT. Sonpedia Publishing Indonesia, 2025).

to think more deeply."

Similar sentiments were expressed by other students who felt that using Chromebooks made religious learning activities more engaging without eliminating the spiritual values usually built in conventional classes.

"When we study using Chromebooks, we can immediately read additional materials, look up Quranic verses, or consult other explanations. But the teacher always reminds us that studying religion isn't just an assignment; it must also be understood and put into practice."

Regarding school policy, the Vice Principal for Curriculum explained that the use of technology in the school was designed from the outset to not separate students from the religious character that has long been the school's identity. In an interview, he said:

"Digitizing schools is certainly important, but we agree that technology should not eliminate long-established religious culture. Therefore, Chromebook-based learning must continue to go hand in hand with character building and instilling religious habits in students."

These findings suggest that developing religious character in the digital age requires an approach that does not separate technology from spiritual values. From an Islamic educational perspective, habituation is a crucial part of the character education process because repeated behaviors will form a more permanent moral awareness. Abuddin Nata explained that Islamic education emphasizes not only the transfer of knowledge but also the process of habit formation that gradually develops the character and morals of students.¹⁸ In the context of this research, religious habituation is no longer only carried out through conventional practices, but has begun to develop into the digital space through Chromebook-based learning activities.

One innovation discovered is the practice of digital spiritual reflection, a Google Classroom-based reflection activity that encourages students to connect learning materials with spiritual experiences and everyday life. This practice demonstrates that technology can be used not only to improve cognitive achievement but also to strengthen students' reflective and spiritual awareness. From an Islamic education perspective, this finding confirms habituation theory, which explains that character is formed through consistent and repeated activities. Religious habits integrated into digital activities demonstrate that virtual spaces can function as an arena for character formation just as physical school spaces do.¹⁹

The results of this study also show consistency with the views of Azyumardi Azra, who emphasized that modern Islamic education needs to be able to adapt to social change without losing its main orientation in forming the morals and spirituality of the younger generation.²⁰ The use of Chromebooks at SMP Negeri 3 Madiun shows that digital technology does not have to be positioned as a threat to character education, but can be integrated as an instrument to strengthen students' religious practices in a way that is more relevant to the reality of contemporary education.

More broadly, these findings provide a new understanding that digital transformation

¹⁸ Prof DR H. Abuddin Nata MA, *Ilmu Pendidikan Islam* (Prenada Media, 2016).

¹⁹ Rodolfo Maggio, *An analysis of Pierre Bourdieu's outline of a theory of practice* (Macat Library, 2018), <https://api.taylorfrancis.com/content/books/mono/download?identifierName=doi&identifierValue=10.4324/9781912284764&type=googlepdf>.

²⁰ Prof Azyumardi Azra CBE Ph D. , M. Phil. , M. A., *Surau: Pendidikan Islam Tradisi dalam Transisi dan Modernisasi* (Kencana, 2017).

in Islamic education needs to be directed not only at improving academic quality, but also at creating learning spaces that maintain students' connection with spiritual values. Religious habits carried out consistently through digital activities prove that technology can function as a medium for strengthening religious character if designed within an appropriate educational framework. Thus, the use of Chromebooks in schools does not just produce digitally literate students, but also helps form a generation that remains religiously aware in the face of modern technological developments.

Integration of Islamic Values in Chromebook-Based Content and Assignments

The research findings show that the use of Chromebooks at SMP Negeri 3 Madiun is not limited to the digitalization of the learning process alone, but has evolved into a medium for directly integrating Islamic values into learning materials and student assignment systems. In practice, teachers are not only utilizing Chromebooks to deliver material digitally, but are also consciously designing learning activities that enable students to connect the use of technology with an understanding of religious values. This pattern indicates that digital devices are beginning to be positioned as a means of internalizing values, rather than merely a technical academic tool.²¹

Based on observations of Islamic Religious Education learning, teachers utilize various platforms such as Google Classroom, Google Slides, Google Docs, and Google Forms to manage student materials and assignments. Interestingly, however, the assignments given are not merely academic in nature. In several learning activities, students are directed to seek Quranic verses related to the learning theme, identify hadiths relevant to morals, and then connect this material to the daily life issues they face as a digital generation. In this way, the learning process not only emphasizes understanding the material but also encourages students to internalize Islamic values through their digital activities.

One Islamic Education teacher explained that the learning design was intentionally designed so that students would not view Chromebooks merely as a tool for completing assignments, but also as a means of understanding the moral messages contained in religious material. In an interview, he said:

"When giving assignments through Google Classroom, we try to get students to go beyond answering simple questions. For example, when we're discussing honesty, we ask them to find verses from the Quran that discuss the importance of honesty and then explain how that value applies to everyday life, including when using the internet."

Another teacher added that digital learning actually provides students with greater access to Islamic resources that were previously unavailable in conventional classrooms. He said :

"With Chromebooks, students can more easily find additional resources. We often ask them to open digital commentaries, read Islamic articles, or look for case studies related to religious topics. So they learn about technology while also connecting science with religious values."

From the students' perspective, research findings indicate that this assignment model

²¹ Peter J. Wells, *UNESCO World Conference on Higher Education 2022: Data and Knowledge Production*, t.t., diakses 23 Juni 2026, https://www.academia.edu/download/88584273/WHEC_2022_Data_and_Knowledge_Production.pdf.

makes religious learning feel more relevant to their lives. One student explained that Chromebook-based assignments often encourage more critical thinking than traditional learning.

"When we study like this, we don't just read books. Sometimes the teacher asks us to look up verses or hadiths ourselves and then explain their meaning. So we have to understand, not just memorize the material."

Similar experiences were shared by other students who felt that using Chromebooks helped them see that technology could actually be used for religiously beneficial purposes.

"I used to think the internet was just for general information or entertainment. But since I've been doing my religious assignments on my Chromebook, I've gotten into the habit of searching for Islamic articles, reading digital Qurans, and seeking religious explanations online."

In addition to teachers and students, the Vice Principal for Curriculum also explained that the school institutionally encourages all teachers to ensure that digital learning maintains a character education orientation. In an interview, he explained:

"We encourage teachers to use Chromebooks to focus on more than just completing digital assignments. Character building must be incorporated into the curriculum. For religious studies, we certainly hope that Islamic values are truly present in every digital learning activity for students."

These findings indicate that technology can function as an instrument of value-based learning, meaning that the integration of technology with Islamic education requires a learning design that is deliberately built to connect academic aspects with value formation. From an Islamic educational perspective, the learning process is not simply the transfer of knowledge, but rather a process of ta'dib (religious practice), namely the formation of moral awareness through the knowledge learned. Syed Muhammad Naquib al-Attas emphasized that education must shape individuals who are able to understand the relationship between knowledge and moral responsibility in life.²² In the context of this research, this concept is evident when students not only use technology to complete assignments but also learn to understand how religious values are present in their digital activities. Therefore, integrating Islamic values into digital assignments is a concrete implementation of the ta'dib concept in a digital learning environment.

The results of this study also strengthen Neil Selwyn's view that educational technology should not only be seen as a tool for learning efficiency, but also as a social space that can influence students' thinking patterns and behavior.²³ When teachers are able to consciously design digital learning that integrates Islamic values, technology will function as a medium for character education that is more contextual to the lives of today's digital generation.

More broadly, research at SMP Negeri 3 Madiun shows that the use of Chromebooks opens new opportunities for Islamic education to deliver learning that is more relevant to technological developments without losing its primary focus on shaping students' character.

²² Muhammad Ardiansyah dkk., "The Concept of Adâb by Syed Muhammad Naquib Al-Attas and Its Relevance to Education in Indonesia," *Ibn Khaldun Journal of Social Science* 1, no. 1 (2019): 52–63, <https://doi.org/10.32832/ikjss.v1i1.2385>.

²³ Muhammad Ardiansyah dkk., "The Concept of Adâb by Syed Muhammad Naquib Al-Attas and Its Relevance to Education in Indonesia," *Ibn Khaldun Journal of Social Science* 1, no. 1 (2019): 52–63, <https://doi.org/10.32832/ikjss.v1i1.2385>.

The integration of Islamic values into digital content and assignments demonstrates that digital transformation does not have to distance students from moral education, but can instead become a new medium for instilling religious values more closely aligned with the learning experiences of the modern generation. Thus, the results of this study enrich the discourse on the integration of technology and Islamic education by demonstrating that the process of internalizing values can occur through planned digital activities.

Monitoring Digital Ethics and Strengthening Student Discipline in Digital Learning Environments

The results of the study indicate that the successful implementation of Chromebook-based learning at SMP Negeri 3 Madiun is not only determined by the availability of digital devices and good learning design, but is also greatly influenced by the monitoring system implemented by the school in controlling students' digital behavior. In practice, the school places monitoring of digital ethics as an important part of the character education process, with the aim of ensuring that the use of technology does not develop into activities that actually distance students from the values of responsibility, discipline, and morality that are the orientation of education.²⁴

Based on field observations, Chromebook use during learning activities is not done freely without control, but rather under the direct supervision of teachers throughout the learning process. Teachers actively monitor student internet access, ensuring that devices are only used to access school-designated learning platforms, such as Google Classroom, Google Slides, Google Forms, and various learning resources relevant to the material. When students are found accessing pages outside of academic needs, teachers immediately provide reprimands and direct students to return to using devices appropriate to learning objectives. This monitoring system is part of the digital discipline habit that is continuously built into daily learning activities.

In an interview with an Islamic Education teacher, it was explained that digital monitoring in schools is not intended solely to restrict students, but rather to foster ethical awareness in the use of technology. The teacher explained:

"We understand that students are now deeply immersed in the digital world. Therefore, supervision doesn't mean prohibiting them from using technology, but rather guiding them to understand that when online, they must maintain responsibility and not use the internet recklessly."

This statement demonstrates that the school views digital monitoring as part of the educational process, not simply technical control over device use. Another teacher echoed this sentiment, explaining that the biggest challenge in technology-based learning lies in developing disciplined habits in students while in the digital space.

"Sometimes students treat Chromebooks like their personal devices at home. That's why we continually remind them that school devices are for learning. We want them to understand the line between learning needs and irrelevant digital activities."

In addition to teacher supervision in the classroom, research also found that schools are beginning to build a culture of digital responsibility through evaluations of student

²⁴ Manos Antoninis dkk., *Global Education Monitoring Report 2023: Technology in education: A tool on whose terms?*, 2023, <https://discovery.ucl.ac.uk/id/eprint/10195257/>.

behavior while using digital devices. This evaluation is evident in teachers' attention to student discipline in submitting digital assignments on time, the orderly use of learning accounts, and student compliance with school internet usage rules. In other words, student assessment is no longer solely based on academic performance, but also on their behavior when interacting with technology during the learning process.

One student explained that using a Chromebook made them feel more responsible because their digital activities could be directly monitored by teachers. In an interview, the student stated:

"We know that all our activities during class are visible to the teacher. So we usually focus more on our assignments because if we open something inappropriate, we'll be immediately reprimanded."

Another student also explained that digital learning indirectly taught them self-regulation when using the internet:

"Now we are used to using the internet for more useful things. Teachers often remind us that technology can help us learn, but if used incorrectly it can actually harm ourselves."

From a school policy perspective, the Vice Principal for Curriculum explained that strengthening digital ethics has become a key focus since the school began implementing a more widespread Chromebook-based learning system. In an interview, he said:

"We don't want school digitalization to simply produce students who are tech-savvy but lack moral responsibility. That's why we've made digital discipline part of our students' daily character development."

In addition to monitoring, the study also found a form of character appreciation system implemented informally by teachers during the learning process. Students who demonstrate high discipline, consistently submit assignments on time, use devices according to the rules, and demonstrate positive behavior during digital learning often receive special recognition from teachers. This appreciation is not always in the form of additional academic grades, but also verbal reinforcement and recognition of positive student behavior. This practice gradually builds students' motivation to maintain good digital behavior while using technology at school.

A teacher explained the practice in an interview as follows:

"We usually reward students who are disciplined and consistent during digital learning. This can sometimes be in the form of praise in class or positive notes on attitude assessments. The goal is to help them understand that good character is also important when using technology."

The findings of this study indicate that religious character formation in the digital era cannot be separated from efforts to develop sustainable digital ethics in students. From a digital citizenship perspective, Mike Ribble emphasizes that digital education should shape individuals who are able to use technology safely, ethically, responsibly, and are aware of the social impacts of their digital activities.²⁵ However, research at SMP Negeri 3 Madiun shows a broader perspective, namely that the concept of digital citizenship can be combined with Islamic education to form what can be called Islamic digital ethics, namely digital behavior

²⁵ Marsefio Sevyone Luhukay dkk., "DIGITAL CITIZENSHIP DAN OPTIMALISASI TEKNOLOGI DALAM PEMBELAJARAN UNTUK SISWA SMP DAN SMA DI SEKOLAH LENTERA HARAPAN (SLH) RANTEPAO - TORAJA," *Prosiding Konferensi Nasional Pengabdian Kepada Masyarakat Dan Corporate Social Responsibility (PKM-CSR)* 7 (Desember 2024), <https://doi.org/10.37695/pkmcscr.v7i0.2417>.

that is not only based on social rules, but also on moral awareness and religious values.

This finding is also in line with the thoughts of Thomas Lickona who explains that character education is not enough to be done through theoretical delivery of values, but must be built through behavioral habits, supervision, evaluation, and reinforcement that are carried out consistently in everyday life.²⁶ In the context of this research, the use of Chromebooks actually opens up new opportunities for schools to build student character through digital behavior management, a previously overlooked focus in conventional learning models. This can be seen in Table 3.1 below.

Tabel 1. Komponen Utama Chromebook-Based Islamic Digital Learning Ecosystem dalam Penguatan Karakter Religius dan Etika Digital Siswa

Tema	Bentuk Praktik	Nilai Islam yang Diinternalisasi	Dampak pada Siswa
Digital role model	Guru mencontohkan pencarian sumber valid, fokus pada LMS, dan etika penggunaan akun belajar.	Adab, amanah, tanggung jawab.	Siswa lebih disiplin dan memahami batas penggunaan teknologi.
Habitulasi religius	Doa sebelum pembelajaran, akses Al-Qur'an digital, refleksi spiritual melalui Google Classroom.	Dzikir, tafakur, kesadaran ibadah.	Siswa mengaitkan aktivitas digital dengan nilai spiritual.
Integrasi nilai Islam	Tugas mencari ayat/hadis, analisis kasus etika internet, proyek digital bernilai Islam.	Kejujuran, tabayyun, akhlak, moderasi.	Siswa tidak hanya menyelesaikan tugas, tetapi menafsirkan makna moral.
Monitoring etika digital	Pengawasan akses internet, teguran edukatif, apresiasi karakter digital.	Muraqabah, disiplin, kontrol diri.	Siswa belajar self-control dalam ruang digital.

More broadly, the results of this study demonstrate that digital transformation in Islamic education requires a monitoring system that not only maintains the effectiveness of

²⁶ Thomas Lickona, *Mendidik Untuk Membentuk Karakter* (Bumi Aksara, 2022).

learning but also ensures that technological developments go hand in hand with the development of students' moral character. The experience of SMP Negeri 3 Madiun proves that Chromebooks are not merely modern learning tools but can be developed as a character education medium that fosters responsibility, discipline, digital ethics, and religious awareness in students in a sustainable manner amidst the increasingly complex development of the digital world. Thus, the findings of this study demonstrate that Islamic digital ethics are formed through a combination of monitoring, habituation, evaluation, and continuous character strengthening.

A Chromebook-Based Islamic Digital Learning Ecosystem Model for Strengthening Students' Religious Character and Digital Ethics

Based on the overall research findings at SMP Negeri 3 Madiun, the use of Chromebooks demonstrates that digital technology not only functions as a learning support tool but can also form an educational ecosystem that integrates technological mastery, strengthening religious character, and developing students' digital ethics. The research results show that the implementation of Chromebooks in schools has developed into a learning system that not only emphasizes academic effectiveness but also focuses on the continuous development of students' morals.²⁷

Data analysis shows that the ecosystem model is built around four main components. First, teachers act as digital role models, setting an example for students in using technology responsibly and in accordance with Islamic values. Second, religious habits are maintained in digital learning through communal prayer, access to digital Islamic learning resources, and spiritual reflection after learning. Third, Islamic values are directly integrated into digital materials and assignments, so that students not only learn academically but also understand the moral dimensions of the material being studied. Fourth, schools conduct continuous monitoring of students' digital behavior through internet usage monitoring, digital discipline evaluations, and the promotion of ethical technology use.²⁸

In an interview, the Vice Principal for Curriculum explained that digitalization at the school has been aimed from the outset at establishing a balance between technological development and student character development. He stated:

"We want students to be able to keep up with technological developments while still developing strong character. Therefore, the use of Chromebooks in schools focuses not only on digital learning but also on how students learn to be responsible when using technology."

A similar sentiment was echoed by an Islamic Education teacher who emphasized that the success of Chromebook use is measured not only by students' ability to operate the devices, but also by the behavioral changes that emerge during the learning process. In an interview, he explained:

"The most important thing is not just that students can use Chromebooks, but how the technology helps them learn discipline, maintain ethics, and maintain religious values while in the digital space."

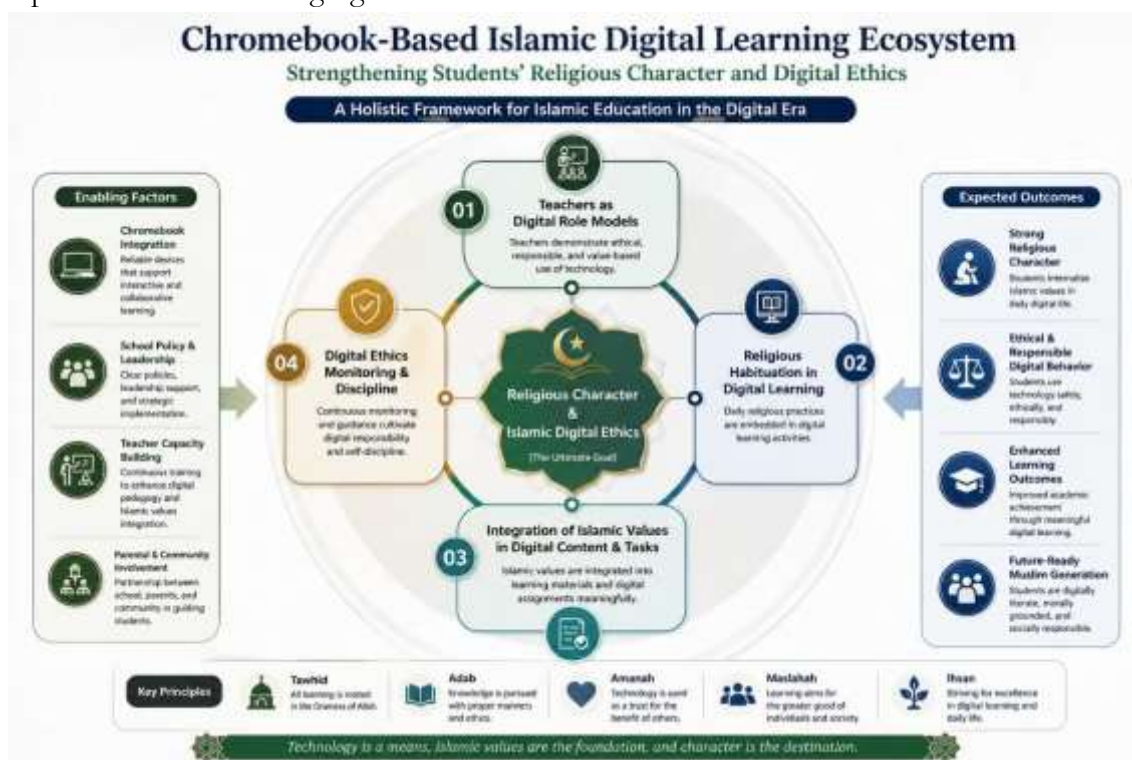
Theoretically, these findings demonstrate that digital literacy in Islamic education needs to be understood more broadly, not only as the ability to use technology but also as

²⁷ Dr Lina Herlina dkk., *STRATEGI PEMBELAJARAN DI ERA DIGITAL*, t.t.

²⁸ Prof DR H. Abuddin Nata MA, *Ilmu Pendidikan Islam* (Prenada Media, 2016).

the ability to develop moral responsibility when interacting in digital spaces. This view aligns with the concept of digital citizenship developed by Mike Ribble, but this research demonstrates that this concept can be enriched through the integration of Islamic values, thus forming a framework for Islamic digital ethics that is more contextualized within Islamic education.²⁹

Overall, this research produced a Chromebook-Based Islamic Digital Learning Ecosystem model, a digital learning system that combines teacher role models, religious habits, the integration of Islamic values into learning, and continuous monitoring of students' digital ethics. This model emphasizes that Chromebooks are not just educational technology devices, but also strategic tools for shaping a generation with digital literacy, religious character, and ethical awareness in facing the developments of the modern digital world.³⁰ This is explained in the following figure:



Gambar 1.1 Chromebook-Based Islamic Digital Learning Ecosystem Model's

Based on the overall findings, this study produces a Chromebook-Based Islamic Digital Learning Ecosystem model consisting of four main pillars: Digital Role Model (Teacher) → Religious Habituation → Islamic Value Integration → Islamic Digital Ethics Monitoring. These four components interact with each other in shaping students' religious character and digital ethics. Thus, this study offers a

²⁹ Mu'minatul Habibah dan Asyrofi Aziz, *Literasi digital spiritual: Peran strategis guru PAI dalam merawat nilai pendidikan Islam di dunia cyberbullying*, 2025, <https://journal.stainsy.ac.id/index.php/almanar/article/download/756-770/461>.

³⁰ Febriani Safitri dkk., *Literasi Digital dalam Dunia Pendidikan* (PT. Sonpedia Publishing Indonesia, 2025).

novelty in the form of a Chromebook-Based Islamic Digital Learning Ecosystem model, which expands the theory of digital citizenship by incorporating the spiritual and moral dimensions of Islam. This model shows that digital literacy in Islamic education includes not only the technical ability to use technology, but also the ability to internalize religious and ethical values in everyday digital activities. Thus, the resulting concept can be positioned as a new development towards an Islamic Digital Citizenship framework that is relevant to the needs of Islamic education in the era of Society 5.0.

CONCLUSION

This research confirms that digital transformation in Islamic education is not only related to the use of technology as a learning tool, but can also be developed into an educational ecosystem that supports the strengthening of religious character and the formation of students' digital ethics. The implementation of Chromebooks at SMP Negeri 3 Madiun demonstrates that the integration of technology, character education, and Islamic values can be balanced when schools are able to build a digital learning environment oriented towards students' moral responsibility, spirituality, and digital literacy. This research produces a Chromebook-Based Islamic Digital Learning Ecosystem model as a conceptual contribution that demonstrates that digital technology can be a strategic tool in shaping a generation that is both religious and adaptive to developments in the digital era.

However, this study is still limited to a single research location, so the findings cannot be broadly generalized to other educational institutions. Furthermore, this study did not quantitatively measure the model's effectiveness on long-term changes in student behavior. Therefore, future research needs to expand the study context to various educational institutions and develop a quantitative or mixed methods approach to test the effectiveness of the resulting model. Overall, this study suggests that the future of Islamic education in the digital era requires an approach that emphasizes not only technological innovation but also maintains a balance between digital development, character building, and students' moral values.

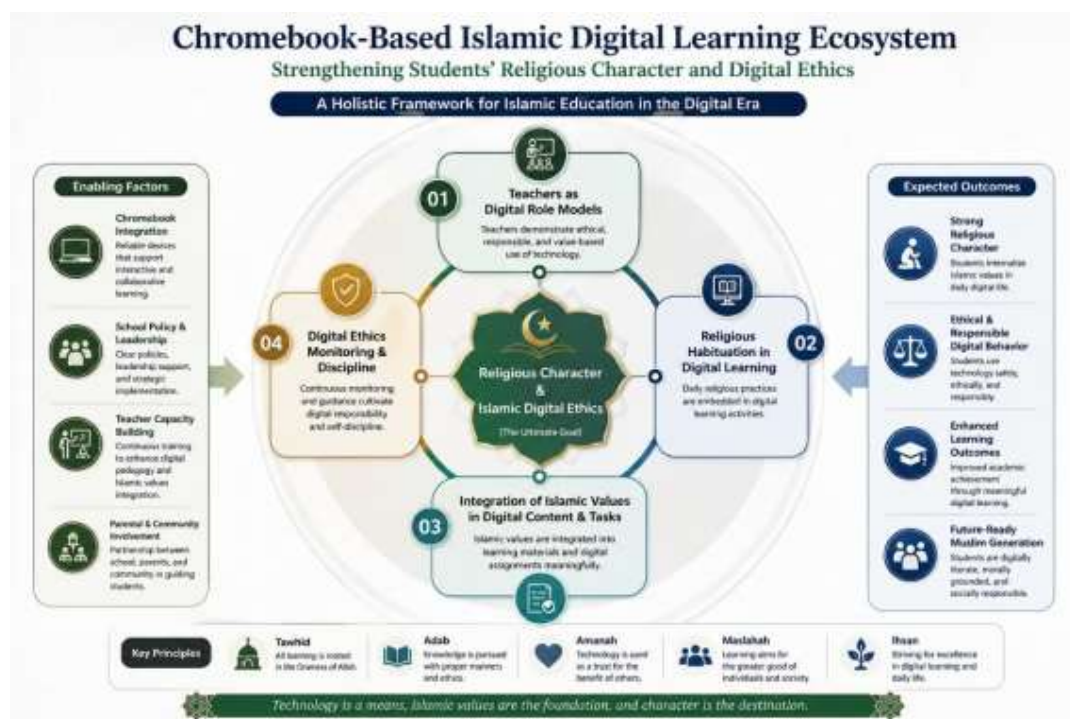
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Tables & Figure



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Integrasi nilai Islam	Tugas mencari ayat/hadis, analisis kasus etika internet, proyek digital bernilai Islam.	Kejujuran, tabayyun, akhlak, moderasi.	Siswa tidak hanya menyelesaikan tugas, tetapi menafsirkan makna moral.
Monitoring etika digital	Pengawasan akses internet, teguran edukatif, apresiasi karakter digital.	Muraqabah, disiplin, kontrol diri.	Siswa belajar self-control dalam ruang digital.

Table 2. Chromebook Utilization Model in Islamic Religious Education Learning

Learning Component	Chromebook Implementation	Expected Output
Planning	Preparation of digitally based lesson plans (RPP) and LMS integration	Structured digital lesson plans
Implementation	Use of Google Classroom, Google Docs, and learning videos	Interactive and collaborative learning
Evaluation	Online quizzes, digital project-based assignments	Technology-based authentic assessment
Value Reinforcement	Integration of religious moderation values into digital materials	Religious and moderate character

Table 3. Roles of Teachers and Students in Chromebook-Based Learning

Role	Teacher	Students
Facilitator	Provides digital learning materials and instructional guidance	Accesses and understands learning materials
Mentor	Directs discussions and value-based reflection	Actively participates in discussions
Evaluator	Assesses learning outcomes through digital-based assessment	Submits assignments and reflections
Innovator	Develops digital learning media	Uses technology creatively