

Islamic Religious Education in the Digital Ecosystem: Strategies for Madrasas and Islamic Boarding Schools to Shape the Religious Character of Generation Z

Erni Ardiyanti

Universitas Islam An Nur Lampung, Indonesia

Correspondence email: erniardianti006@gmail.com

Article history

Submitted: 2026/04/16; Revised: 2026/05/07; Accepted: 2026/06/30

Abstract

The development of the digital ecosystem has changed the way Generation Z acquires knowledge, communicates, builds identity, and understands religious values. This study aims to analyze the strategy of Islamic Religious Education (PAI) in the digital ecosystem and formulate a conceptual framework that integrates the roles of madrasahs, Islamic boarding schools, teachers, families, and digital spaces in the formation of the religious character of Generation Z. The study used a qualitative approach with library research methods through literature synthesis of relevant scientific articles, books, and academic documents. Data were analyzed using content analysis and thematic synthesis to identify patterns, themes, gaps, and relationships between research findings. The results of the study indicate that the formation of the religious character of Generation Z requires the integration of religious values and culture, the role model of teachers/kyai, habituation, interactive and contextual PAI learning, digital-religious literacy, religious digital citizenship, and the involvement of families and digital communities. Madrasahs and Islamic boarding schools serve as the foundation for internalizing values, while technology becomes a supporting space and actualization of character. The study resulted in a PAI-Madrasah-Pesantren-Digital framework that places Islamic values as the foundation, teachers/kyai as role models and mentors, PAI as a space for internalization, and digital literacy as an instrument for strengthening character. Conclusion: Religious character education for Generation Z cannot be achieved solely through Islamic Religious Education (PAI) learning in the classroom, but requires an integrated educational ecosystem between madrasahs, Islamic boarding schools, families, and digital spaces so that Islamic values can be applied critically, ethically, adaptively, and sustainably.

Keywords

Digital Ecosystem; Generation Z; Religious Character.



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INTRODUCTION

The development of the digital ecosystem has changed the way Generation Z acquires knowledge, communicates, builds identity, and understands religious values. Generation Z no longer acquires religious knowledge solely through classrooms, teachers, madrasahs, or

Islamic boarding schools, but also through social media, short videos, learning platforms, digital communities, and various online religious resources. This situation provides a significant opportunity for Islamic Religious Education (PAI) to expand the learning space, but also presents new problems such as an information flood, difficulties verifying religious authority, religious hoaxes, instant culture, cyberbullying, and the potential weakening of the internalization of values and manners. Recent studies even show that digital disruption can give rise to problems such as the spread of religious hoaxes, the weakening of the culture of *tabayyun*, and the threat of digital radicalism in Generation Z. Therefore, PAI cannot be understood simply as a subject that conveys religious knowledge conventionally, but needs to be developed as an educational ecosystem capable of connecting formal learning, madrasah and Islamic boarding school culture, family, social environment, and digital space as part of the process of religious character formation.

The Urgency of Islamic Religious Education in the Digital Ecosystem. Generation Z's religious character is not formed solely through mastery of Islamic faith, jurisprudence, the Quran, hadith, or the history of Islamic culture, but through a continuous process of internalizing values across various life environments. In this context, madrasas and Islamic boarding schools (*pesantren*) hold a strategic position because both have educational structures that enable character formation through learning, habituation, role models, institutional culture, and social interaction. Research (Hasyati et al., 2025) Research on the characteristics of Generation Z shows that their character as digital natives has direct implications for character education strategies, including the need for an educational environment that is able to respond to changes in technology and the interaction patterns of this generation. On the other hand, research (Lailatul, 2026) Research on Islamic education for Generation Z demonstrates that Islamic Religious Education (PAI) needs to shift from an approach solely focused on knowledge transfer to contextual, interactive learning that builds students' abilities to connect Islamic values with the realities of digital life. Therefore, the primary challenge for Islamic Religious Education (PAI) is not simply how to use technology in learning, but how to build a digital ecosystem that remains focused on fostering morality, spirituality, responsibility, tolerance, integrity, and the ability to filter religious information.

Theoretical Review. Theoretically, the formation of religious character can be understood through the processes of moral knowing, moral feeling, and moral action, so that character does not stop at the ability to recognize good values, but develops into awareness, attitudes, habits, and concrete actions. From an Islamic educational perspective, character formation is also related to the concepts of *ta'dib*, *tarbiyah*, and *ta'lim*, which position education as a process of forming knowledgeable and civilized human beings. In the context of Generation Z, this theory needs to be expanded with the perspective of digital citizenship and digital religious literacy, because students' religious behavior is now also manifested in the digital space. Honesty, for example, is not only related to behavior in school, but also honesty in creating and disseminating content; tolerance occurs not only in face-to-face interactions, but also in social media comments and discussions; while *tabayyun* is not only a

principle in social life, but also the ability to verify religious information before accepting and disseminating it. Research on the integration of Living Values Education in Indonesian Islamic schools also demonstrates the importance of character education innovations that connect values with educational practices contextually. Thus, religious character in the digital era must be understood as religious character that possesses both moral and digital competencies.

Study (Generation & Era, 2026) shows that Islamic Religious Education (PAI) plays a strategic role in shaping the character of Generation Z through the internalization of honesty, responsibility, discipline, and tolerance, with attention to the influence of globalization and social media. This research still positions Islamic Religious Education primarily as an instrument for character formation and has not specifically constructed the relationship between madrasas, Islamic boarding schools, and digital spaces as a single educational ecosystem. Furthermore, this research (Sucianingtyas et al., 2025) the study on TikTok in Islamic Religious Education (PAI) shows that social media can be a means of disseminating religious messages and forming religious communities for a generation living in a digital environment. The study focused more on the opportunities and challenges of a single social media platform and therefore failed to explain how madrasas and Islamic boarding schools (pesantren) can manage the entire digital ecosystem for character development. Alfian Rizqi & Nanang Budianto, (2025) shows that values education can be an innovation in character formation in Islamic schools. The research has not specifically linked values education to the characteristics of Generation Z and the digital environment. These three studies demonstrate the close relationship between Islamic Religious Education (PAI), digital media, and values education, but there is still room for integration within a single madrasah-pesantren educational ecosystem.

Further research (Sam & Sulastri, 2024) Research on Islamic Religious Education (PAI) teacher professionalism shows that teachers face challenges in the form of a digital literacy gap, the need for experiential learning, and the need to contextualize religious material with the social and cultural realities of students. This research gap lies in its dominant focus on teacher competence and adaptation, while the institutional dimension of madrasahs and Islamic boarding schools as character-building ecosystems has not been a primary focus (Alfian Rizqi & Nanang Budianto, 2025). Regarding Islamic Religious Education teachers' efforts in building religious character, it also demonstrates the importance of teacher strategies in guiding students. However, the research was conducted in a single school using a case study approach. The gap is that the results are still contextual and have not yet produced a synthesis that can explain the relationship between the role of teachers, institutional culture, religious habits, families, and digital spaces. This research (Damayanti & Ridwan, 2024) also shows that Islamic Religious Education teachers use good examples, habits, advice, value integration, and digital media in shaping the noble character of Generation Z. However, the research still focuses on teacher strategies, so it has not explained how these strategies become part of an integrated educational ecosystem between madrasahs/Islamic boarding schools and the digital environment.

Research Novelty. Based on a comparison of previous studies, the novelty of this study lies in the formulation of a conceptual model of Islamic Religious Education (PAI) strategy in the digital ecosystem that integrates madrasas, Islamic boarding schools, teachers, religious culture, families, and digital spaces as a single unit for the formation of the religious character of Generation Z. In contrast to the research of Natsir et al., which emphasized the role of Islamic Religious Education (PAI) in the character of Generation Z, this study expands the unit of analysis from learning to the ecosystem; in contrast to the TikTok study that focused on one medium, this study views the digital space more broadly; in contrast to research on Islamic Religious Education (PAI) teachers, this study does not position teachers as the sole actors, but as part of the system; and in contrast to previous studies of Islamic boarding schools and SLR, this study specifically links religious digital literacy, digital citizenship, religious habits, role models, institutional culture, and the validation of religious information as components of character formation. Thus, the novelty of this research is formulated through the principle that "religious character is not only taught in the classroom, but is built through an ecosystem that integrates values, role models, institutional culture, digital literacy, and students' experiences in the digital space." This model is aimed at producing an Islamic Education (PAI) strategy that is not defensive against digitalization, but is capable of making the digital ecosystem a focused, ethical, critical educational space, and remains based on Islamic values.

Research Objectives. Based on the background, theoretical review, and research gap, this study aims to (1) analyze and synthesize literature on Islamic Religious Education strategies in the digital ecosystem, particularly regarding the role of madrasas, Islamic boarding schools, teachers, religious culture, digital literacy, and the social environment in shaping the religious character of Generation Z; and (2) formulate a conceptual framework for a strategy for shaping the religious character of Generation Z that integrates Islamic Religious Education (PAI) education, madrasah and Islamic boarding school culture, role models and habits, religious digital literacy, digital citizenship, and adaptive and sustainable family and digital community involvement. Through qualitative literature study, this study is expected to not only provide a mapping of previous research results, but also produce a conceptual synthesis that can be the basis for developing Islamic Religious Education strategies in madrasas and Islamic boarding schools in facing the changing characteristics of Generation Z and the complexity of the digital ecosystem.

METHODS

This study uses a qualitative approach with a library research method based on the Systematic Literature Review (SLR) to analyze and synthesize research on Islamic Religious Education in the digital ecosystem and the strategies of madrasas and Islamic boarding schools in shaping the religious character of Generation Z. Data sources include national and international journal articles, academic books, proceedings, relevant scientific documents, and fundamental theoretical sources as conceptual reinforcement. Literature selection is carried out systematically through the stages of identification, screening, eligibility checks, and

determining articles that meet the inclusion criteria. Literature is included if it is relevant to the research focus, comes from verifiable academic sources, is available in full text, and contains findings or concepts related to Islamic Religious Education, educational digitalization, Generation Z, madrasas/Islamic boarding schools, or religious character; while duplicate articles, opinions, news, and irrelevant sources are excluded. This systematic procedure is in line with the use of PRISMA in educational literature studies to increase the transparency of the source identification and selection process.

Data from the selected literature was then analyzed using qualitative content analysis and thematic synthesis. Each article was extracted into a matrix containing the author, year of publication, research objectives, educational context, methods, study focus, main findings, limitations, and relevance to the formation of Generation Z's religious character. The analysis was conducted through the stages of reading and understanding the data, coding, grouping categories, identifying themes, comparing findings, interpreting, and drawing a conceptual synthesis. The themes analyzed included Islamic Religious Education (PAI) strategies, the religious culture of madrasas and Islamic boarding schools, role models and habits, the role of teachers, digital-religious literacy, digital citizenship, social media use, family involvement, and mechanisms for strengthening religious character. Thematic synthesis was used because it allows findings from various studies to be integrated into new themes and concepts that go beyond simply summarizing previous research. Next, the synthesis results were compared to identify patterns, similarities, differences, limitations, and research gaps, then used to formulate a conceptual framework for Islamic Religious Education (PAI) strategies in a digital ecosystem that integrates madrasas, Islamic boarding schools, teachers, families, religious culture, and digital spaces as environments for the formation of Generation Z's religious character.

RESULTS AND DISCUSSION

Results

Islamic Religious Education Strategies in the Digital Ecosystem to Shape the Religious Character of Generation Z

The results of the literature synthesis indicate that Islamic Religious Education (PAI) in the digital ecosystem needs to shift from a learning pattern centered on knowledge transfer to one that integrates knowledge, experience, habituation, role models, and digital literacy. Generation Z obtains religious information not only from teachers and books, but also from YouTube, TikTok, Instagram, online communities, and various digital platforms that shape their understanding of religion. This condition makes the digital space an integral part of the educational environment that cannot be separated from the process of character formation. Recent studies show that digital platforms have become an important epistemic space for Generation Z, but also present issues of misinformation, unverified religious authority, and algorithmic bias. Therefore, PAI strategies need to be directed at students' abilities not only to access religious information, but also to examine sources, understand context, compare

opinions, conduct tabayyun (religious inquiry), and use the information ethically. Thus, digital-religious literacy becomes an integral part of the religious character of Generation Z.

The research also found that teacher role models, religious habits, and personal interactions remain key strategies even though learning takes place in a digital ecosystem. Technology cannot completely replace the teacher's role as a moral guide and role model. Research on Islamic Religious Education (PAI) teachers' efforts to build the religious character of Generation Z demonstrates the importance of teachers' role in providing guidance and directing students in navigating the digital environment. This suggests that religious character is not formed solely through PAI materials or engaging digital content, but through a repeated and consistent process of internalization. Habitual practices of congregational prayer, Quran reading, prayer, social activities, discipline, responsibility, respect for teachers, and the habit of tabayyun (reflection on digital information) need to be integrated. In this context, madrasas and Islamic boarding schools (pesantren) have an advantage because they can create a religious culture that lasts throughout the day, while technology can be used to strengthen, document, and expand these learning experiences.

The following findings indicate that digital-religious literacy is a new strategy that is increasingly important in shaping religious character. This literacy is not only related to the ability to use technological devices, but also includes the ability to understand the credibility of religious sources, recognize false information, avoid hate speech, respect differences, maintain privacy, and be accountable for the content produced and disseminated. Research on digital space as a medium for religious learning shows that social media provides fast, easily accessible, and interactive religious materials, but also presents the risk of misinformation, the emergence of unverified religious authorities, and the polarization of religious identities. Therefore, the religious character of Generation Z in this study is formulated not only as ritual piety, but also as digital piety, namely the ability to apply the values of honesty, responsibility, tolerance, politeness, tabayyun, and moderation when interacting in digital spaces. These findings broaden the understanding of religious character by including the dimension of digital behavior as part of the actualization of Islamic values.

The synthesis also shows that Islamic Religious Education (PAI) learning strategies appropriate to the characteristics of Generation Z need to be interactive, contextual, reflective, collaborative, and multimodal. Project-based learning, discussions, case studies, educational videos, interactive quizzes, digital storytelling, and Islamic content production can be used to connect Islamic Religious Education (PAI) material to students' real lives. Recent studies on Islamic Religious Education (PAI) learning for Generation Z show that contextual and project-based digital learning can increase student engagement, motivation, and understanding, especially when supported by teachers' pedagogical competence and digital literacy. Moreover, research in Islamic boarding schools (pesantren) shows that student-led video production can simultaneously develop character and digital literacy. These findings suggest that students should not only be consumers of religious content but also be directed to become producers of content that is educational, polite, responsible, and in accordance with Islamic

values. Thus, digital activities can be transformed from potential threats into tools for character education.

Furthermore, research findings indicate that the use of technology in Islamic Religious Education (PAI) must remain guided by ethical principles, Islamic values, and the teacher's pedagogical authority. The development of artificial intelligence (AI), for example, offers the opportunity to provide adaptive and interactive learning materials and enhance students' digital literacy. However, it also has the potential to reduce the emotional closeness between teachers and students and weaken aspects of etiquette if used without guidance. Recent research on the integration of AI in Islamic Religious Education (PAI) learning in madrasas found benefits for digital literacy and learning motivation, but also indicated risks to teacher-student closeness, etiquette, and spiritual awareness. Therefore, Islamic Religious Education (PAI) strategies within the digital ecosystem must utilize the principles of human-centered digital education, where technology supports the educational process but does not replace human relationships, role models, spiritual guidance, and teacher authority. Technology is used to enrich the learning experience, while internalizing values still requires interaction, habituation, reflection, and real-life role models.

Based on the overall synthesis, the results of the first study formulated that the Islamic Religious Education (PAI) strategy in the digital ecosystem can be built through five main components: exemplary religious behavior and habituation, contextual and interactive Islamic Religious Education (PAI) learning, digital-religious literacy, ethical use of technology, and collaboration between madrasahs/Islamic boarding schools (*pesantren*) with families and the digital environment. These five components form an interconnected process: Islamic values serve as the foundation, teachers serve as guides and role models, learning becomes a space for internalization, technology becomes an instrument, and the family and digital environment become spaces for character actualization. This finding is in line with a recent study that concluded that the formation of the religious character of Generation Z requires the integration of Islamic values with technology, exemplary educators, religious habituation, and collaboration between schools, families, and the digital environment. Thus, the Islamic Religious Education (PAI) strategy is not enough to simply "use technology," but must transform the digital ecosystem into a space for the formation of religious character that is directed, critical, ethical, and sustainable.

The Madrasah and Islamic Boarding School Ecosystem Model in the Formation of Religious Character of Generation Z

The second synthesis of results shows that the formation of Generation Z's religious character requires an integrated educational ecosystem, not just classroom learning interventions. Madrasahs and Islamic boarding schools (*pesantren*) have strengths in institutional culture, the role models of teachers and religious leaders (*kyai*), religious habits, social interactions, and student supervision and mentoring. Meanwhile, the digital space has become a new environment where students obtain information, build relationships, express their identities, and interact with various religious views. Research on the integration of the

Islamic boarding school and Islamic Religious Education ecosystems shows that the formation of Generation Z's religious character requires a holistic and adaptive approach. Therefore, this study places madrasahs, Islamic boarding schools, families, teachers/kyai, peers, and the digital space as components of an ecosystem that influence each other. Religious character will be stronger when the messages students receive in the classroom, the Islamic boarding school environment, family, and digital media have a continuity of values.

Within this ecosystem, madrasahs serve as centers for the development of knowledge and competence, while Islamic boarding schools (pesantren) are powerful in the intensive formation of culture, etiquette, discipline, and religious experience. Integrating the two can produce an educational model that combines the strengths of the formal curriculum with the experience of religious life. Research on the transformation of Islamic boarding schools in the digital era shows that they are able to adapt through digital halaqah (Islamic religious gatherings), online mentoring, and other forms of digital pedagogy without abandoning their traditional foundations. In fact, this process can produce a hybrid form of religiosity among Generation Z that combines traditional Islamic values with the ability to adapt to the digital space. These findings strengthen the argument that digitalization does not have to lead to secularization or the loss of Islamic boarding school identity. Instead, when managed appropriately, technology can be a means to expand the reach of education and strengthen students' religious identities.

Further research indicates that an institution's religious culture is a crucial mechanism for transforming values into habits. Religious character is not simply shaped by teaching about honesty, discipline, tolerance, responsibility, and morals; it must be embodied in the culture of daily life. Islamic boarding schools (pesantren) have a strong tradition of fostering these habits through congregational prayer, religious study, religious activities, discipline, respect for teachers, and communal living. Recent research findings on character education in Islamic boarding schools indicate that daily habits, the role models of kiai/ustaz (Islamic teachers), communal supervision, and digital ethical literacy can be used simultaneously to address the impact of digital culture on students' learning patterns and moral references. Based on these findings, this study views religious culture as a "moral infrastructure" that enables Islamic Religious Education values to become concrete behaviors. Technology is then positioned as a supporting environment that must be controlled by this culture, not the other way around.

At the student level, the synthesis results demonstrate the need to develop religious digital citizenship, namely the ability of Generation Z to incorporate religious values into digital behavior. This concept encompasses the ability to use media responsibly, respect differences, avoid the spread of hoaxes, maintain ethical communication, verify information, and produce useful content. With this concept, indicators of religious character extend beyond worship and moral behavior in the physical environment to encompass students' behavior when using social media and technology. Studies on digital spaces as a medium for religious learning indicate that social media can strengthen religious literacy but require pedagogical support due to the risks of unverified information and identity polarization. This suggests that

madrasas and Islamic boarding schools (pesantren) need to develop an explicit digital-religious literacy curriculum, rather than simply prohibiting social media use. Students need to be equipped with the skills to understand how algorithms work, how to evaluate religious sources, how to distinguish opinion from fact, and how to apply Islamic principles in digital communication.

The research also shows that collaboration between stakeholders is a crucial element in the success of a character education ecosystem. Islamic Religious Education (PAI) teachers cannot work alone because most of students' digital experiences occur outside of school. Families play a role in controlling and supporting technology use, while Islamic boarding schools (pesantren) can provide reinforcement through familiarization and religious communities. Teachers and religious leaders (kyai) serve as guides, role models, and curators of religious knowledge; madrasas provide learning systems and policies; families provide continuity of development; and the digital environment becomes a space for character actualization. The findings of a recent literature review on Islamic education and Generation Z also emphasize the importance of collaboration between schools, families, and the digital environment in shaping religious character. Thus, the success of Islamic Religious Education (PAI) in the digital ecosystem is determined not only by the quality of learning but also by the consistency of educational messages across environments. When madrasas teach digital ethics but families and the social environment do not provide reinforcement, the internalization process is suboptimal.

Based on all these findings, this study produces a PAI-Madrasah-Pesantren-Digital Ecosystem Model consisting of five interacting elements, namely (1) religious values and culture as a foundation, (2) teachers/kyai as role models and mentors, (3) PAI learning as a space for internalizing knowledge and values, (4) digital-religious literacy as a mechanism for filtering and actualizing values in the digital space, and (5) family and community as strengthening character sustainability. This model expands previous research that generally focuses on teachers, digital media, PAI learning, or the pesantren ecosystem separately. The latest SLR study on the integration of Islamic boarding school and Islamic Religious Education ecosystems has indeed emphasized the importance of a holistic approach, but the results of this study provide more specific emphasis on the relationship between institutional ecosystems and digital ecosystems in shaping the religious character of Generation Z. Thus, the main results of this study emphasize that the religious character of Generation Z is not enough to be formed by teaching religion in the classroom, but must be built through an ecosystem that combines values, role models, habits, madrasah/pesantren culture, digital-religious literacy, family, and students' experiences in the digital space.

Discussion

Islamic Religious Education (PAI) in the digital ecosystem is no longer simply positioned as a process of transferring religious knowledge, but must evolve into a process of character formation that takes place across spaces, namely the classroom, madrasah (Islamic school), Islamic boarding school (Islamic boarding school), family, and digital spaces. This

finding aligns with character education theory, which emphasizes that character is formed through the integration of moral knowing, moral feeling, and moral action. From an Islamic education perspective, this process also aligns with the concepts of ta'lim (Islamic study), tarbiyah (Islamic education), and ta'dib (Islamic guidance), which integrate knowledge, guidance, and the formation of adab (ethics). However, the religious character of Generation Z is more complex because most interactions, information seeking, and identity formation occur through digital technology. Research findings (Munawir et al., 2024) shows that Islamic Religious Education plays a crucial role in fostering honesty, responsibility, discipline, and tolerance in Generation Z, while research on social media in religious education indicates that digital spaces have become a source of religious understanding for students. Therefore, this research expands on previous studies by positioning digital spaces not merely as a learning medium but as an educational environment that contributes to the formation of religious character. Consequently, Islamic Religious Education must be able to connect the values taught in madrasas and Islamic boarding schools with students' behavior when consuming, producing, and disseminating religious information in digital spaces.

The results of the second study indicate that role models, habits, and religious culture remain the main foundations for character formation, even though technology is increasingly dominant in the lives of Generation Z. This finding strengthens the social learning theory that places the process of observation and imitation of figures considered important as a mechanism for shaping behavior. In Islamic education, the position of teachers, kiai, ustaz, and the educational environment is even more strategic because role models (uswah hasanah) are an integral part of the educational process. Research by Gusli et al. shows the importance of the role of Islamic Religious Education teachers in guiding the religious character of Generation Z, while research (Lailiyatus Sa'adah & Zulfatul Mufidah, 2025) demonstrates the use of good examples, habituation, advice, and value integration as strategies for shaping Generation Z's morals. These results align with the findings of this study, but also demonstrate the limitations of previous research that tends to position teachers as the primary actors. This study expands on this by positioning teachers and kiai as part of a broader ecosystem, along with institutional culture, family, peers, and the digital environment. Therefore, the formation of religious character is not solely achieved through Islamic Religious Education programs or specific religious activities, but requires consistency between what is taught, what is exemplified, what is practiced, and what students experience in their digital lives. Madrasahs and Islamic boarding schools with a strong religious culture have an advantage because they are able to provide a relatively intensive habituation environment, while technology needs to be directed to strengthen this experience, not replace it.

In the digital-religious literacy dimension, the research findings indicate a need to expand the concept of religious character from conventional religious behavior to religious digital citizenship. This finding can be explained through digital literacy theory, which emphasizes not only the ability to access technology but also the ability to critically and ethically evaluate, understand, produce, and use information. In the context of Islamic

Religious Education (PAI), these competencies must be integrated with Islamic principles such as tabayyun (religious trust), amanah (trustworthiness), honesty, tolerance, ukhuwah (brotherhood), and responsibility (Andayani et al., 2025). A study on TikTok in Islamic Religious Education (PAI) shows that social media has the potential to disseminate religious messages and form learning communities, but the study focused on a single platform. Other research on digital space as a medium for religious learning also shows that social media provides broad access to religious knowledge, but carries the risk of misinformation, unverified religious authority, and polarization. The results of this study expand on these findings by emphasizing that the ability to verify religious information is part of religious character itself. Therefore, religious students in the digital era are not only diligent in worship but also able to maintain ethical communication, refrain from spreading unverified religious information, respect differences, avoid hate speech, and take responsibility for the content they produce. The concept of tabayyun can thus be reconstructed as one of the main principles of digital-religious literacy in Islamic Religious Education (PAI) learning.

From a pedagogical perspective, the research findings indicate that Islamic Religious Education (PAI) strategies appropriate to the characteristics of Generation Z need to be interactive, contextual, collaborative, reflective, and multimodal. These findings align with constructivism theory, which positions students as active subjects in constructing knowledge through experience, interaction, and reflection (Suryadi et al., 2022). Project-based learning, case studies, discussions, digital storytelling, religious content production, and video utilization can provide students with the opportunity to connect religious values to real-life issues they face. (Zahrah et al., 2025) shows that contextual digital learning can increase student engagement, while research (Muzakky et al., 2023). Research in Islamic boarding schools (pesantren) shows that student video content production can develop both digital literacy and character. These results differ from Islamic Religious Education (PAI) learning patterns that focus solely on memorization and material delivery. However, this research emphasizes that pedagogical innovation should not solely pursue technological appeal. Every innovation must maintain a clear goal of character development and Islamic values. For example, Islamic Religious Education (PAI) content creation projects should be assessed not only on visual creativity but also on the accuracy of religious sources, linguistic politeness, responsibility, tolerance, and social benefits. Thus, digital innovation can be an instrument for character learning, not simply technology-based learning.

The research also shows that madrasas and Islamic boarding schools need to build an educational ecosystem integrated with families and digital spaces. This finding aligns with the ecological perspective of education, which views student development as the result of interactions between various environments, not just the school institution (Safrudin et al., 2023). Madrasahs provide the curriculum structure and formal learning, Islamic boarding schools provide religious culture and intensive habituation, families reinforce values at home, while digital spaces become new environments where students actualize their identities and behaviors. Studies on the integration of the Islamic boarding school and Islamic Religious

Education ecosystems in character formation for Generation Z demonstrate the importance of a holistic and adaptive approach, while research on the transformation of Islamic boarding schools in the digital era shows that Islamic boarding schools can adopt various forms of digital pedagogy without losing their religious identity (Sholihah et al., 2025). The results of this study expand on this research by emphasizing that the digital ecosystem should be integrated with the institutional ecosystem, rather than viewed as two separate entities. Therefore, madrasas and Islamic boarding schools (pesantren) need to have digital-religious literacy policies, support social media use, strengthen communication with parents, and develop a digital culture consistent with Islamic values. Islamic Religious Education teachers and Islamic scholars (kiai) serve not only as transmitters of material but also as digital moral guides, helping students assess information, manage digital identities, and apply religious values in their online lives.

Based on a comparison of previous theories and research, the main contribution of this study lies in the formulation of a model of the Islamic Religious Education (PAI)-madrasah-pesantren-digital ecosystem in the formation of the religious character of Generation Z. While previous studies have focused more on Islamic Religious Education and character, teacher strategies, social media use, digital literacy, or Islamic boarding school culture in part, this study synthesizes all these elements into a single framework consisting of religious values and culture, teacher/kiai role models, Islamic Religious Education learning, digital-religious literacy, religious digital citizenship, and family and digital community involvement. This model emphasizes that technology is not the goal of education, but rather an instrument that must be controlled by the values, etiquette, and goals of Islamic education. Thus, the formation of the religious character of Generation Z is not enough to be done by adding religious content in digital media, but requires a change in the ecosystem that makes every educational space a space for internalizing values. This finding results in the principle that "religious character is taught through Islamic Religious Education, exemplified by teachers and kiai, accustomed through the culture of madrasahs and Islamic boarding schools, strengthened by families, and actualized ethically through digital spaces." This principle also becomes a conceptual novelty of the research because it shifts the paradigm from "PAI uses technology" to "PAI builds a digital ecosystem with a religious character", so that Islamic education does not take a defensive stance against digital transformation, but is able to direct it into a space for learning, identity formation, and strengthening the character of Generation Z.

The novelty of this research lies in the formulation of the PAI-Madrasah-Pesantren-Digital conceptual model as a strategy for forming the religious character of Generation Z that integrates religious values and culture, the role model of teachers/kiai, habituation, PAI learning, digital-religious literacy, religious digital citizenship, and the involvement of families and digital communities in one educational ecosystem. In contrast to previous research that generally focuses partially on the role of teachers, the use of social media, digital learning, character education, or pesantren culture, this research views the digital space not merely as a learning medium, but as a new environment for the formation and actualization

of religious character. This conceptual novelty is formulated through the principle of “Islamic values as the foundation, madrasah and pesantren as internalization spaces, teachers/kiai as role models, technology as an instrument, and digital-religious literacy as a mechanism for character actualization,” so that PAI not only adapts to digitalization, but is able to direct the digital ecosystem into an educational space that is critical, ethical, religious, and responsive to the characteristics of Generation Z.

CONCLUSION

The research results show that Islamic Religious Education (PAI) in the digital ecosystem needs to be developed from merely knowledge transfer into a strategy for forming the religious character of Generation Z that integrates religious values and culture, teacher/kiai role models, habituation, interactive learning, digital-religious literacy, religious digital citizenship, and family and digital community involvement. Literature synthesis shows that madrasas and Islamic boarding schools have a strategic position as centers for internalizing values through learning, role models, habituation, and religious culture, while digital technology functions as a supporting space as well as a space for character actualization. In conclusion, the religious character of Generation Z is not sufficiently formed through PAI learning in the classroom, but must be built through an ecosystem that connects madrasas, Islamic boarding schools, families, teachers/kiai, and digital spaces in a sustainable manner; therefore, digital-religious literacy and tabayyun need to be part of the religious character so that students are able to filter information, maintain communication ethics, respect differences, and use technology responsibly. The recommendation is that madrasas and Islamic boarding schools need to develop Islamic Religious Education policies and programs based on a digital ecosystem, strengthen the digital-pedagogical competencies of teachers and Islamic scholars, integrate digital-religious literacy into the curriculum, develop project-based learning and positive content production, strengthen collaboration with families, and build mechanisms for mentoring and validating religious information; further research is recommended to empirically test the Islamic Religious Education–Madrasah–Islamic Boarding School–Digital model to determine its effectiveness in improving the religious character and digital citizenship of Generation Z.

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