JIPSI: Jurnal Ilmu Pendidikan dan Sains Islam Interdisipiner
Vol. 5 No. 1 Februari 2026, pp. 1005-1015
http://journal.amorfati.id/index.php/jipsi || ISSN 2962-9187

Interdisciplinary Scope of Science and Education, Islamic Education and Science, Integration of Science and Islam, Islamic Thought and Philosophy, Integration of Social Sciences, Humanities, and Islamic Studies, Islamic Economics and Business Studies, and Islamic Ethics in Science and Technology

Development Of Ict-Based Islamic Religious Education Media In Addressing The Relevance Crisis Of Learning In The Digital Era

Nailul Izzata Gufron [a,1,*], Hunafa Ulfitriyah [b,2], Muhammad Nur Alam Syah [c,3], Erba Rozalina Yulianti [d,4]

[*a] Universitas Islam Negeri Syarif Hidayatullah, Jakarta;
[b] Universitas Bina Sarana Informatika, Jakarta;
[c] Universitas Islam Negeri Alauddin, Makassar;
[d] Universitas Islam Negeri Syarif Hidayatullah, Jakarta.
[1]nailulgufron40@gmail.com; [2]hunafa.hfh.@bsi.ac.id; [3]Asyah158@gmail.com;
[4]Erba.rozalina@uinjkt.ac.id
*Correspondent Author; nailulgufron40@gmail.com

ARTICLE INFO

Article history
Received : 27-12-2025
Revised : 19-01-2026
Accepted : 21-02-2026

Keywords: ***ICT-based learning media, Islamic Education, relevance crisis, digital pedagogy.***

ABSTRACT

This study examines the development of ICT-based Islamic Religious Education (PAI) media to address the relevance crisis in learning during the digital era. The research employs a qualitative literature review method, analyzing theoretical frameworks, empirical studies, and policy documents related to ICT integration in Islamic education. The findings reveal three main factors causing the suboptimal utilization of ICT in PAI learning: (a) relevance crisis, where PAI fails to present itself in the visual language and digital platforms inhabited by students; (b) cognitive stagnation due to the absence of facilitated cognitive conflict; and (c) the gap in teachers' digital pedagogical competence. Furthermore, the study identifies four interrelated dimensions of challenges in developing ICT-based PAI media: digital-pedagogical challenges, sociocultural challenges, infrastructural-economic challenges, and ethical-theological challenges. Based on the characteristics of digital-era learners including preference for bite-sized and visual content, need for interactivity and active participation, orientation toward speed and instant gratification, need for authenticity and personal relevance, and high tendency for multitasking this study formulates three forms of ICT-based PAI media design: (1) Islamic value-based digital educational games with adaptive difficulty adjustment; (2) cognitive load-based instructional videos (60-180 seconds duration); and (3) interactive visual media in the form of short animations, interactive infographics, and visual simulations. This study contributes to the development of pedagogical frameworks for transformative Islamic education in the digital era.

Introduction

Islamic Religious Education (PAI) in Indonesia stands at a critical crossroads between the demands of developing a moderate national character and the reality of learning that remains trapped in conventional approaches. In the digital era, students are no longer tabula rasa who passively receive knowledge from teachers, but rather active agents who spend their days in front of gadget screens. There are 185.3 million internet users in Indonesia as of January 2024 (Kemp, 2024). Ironically, PAI learning has not been able to transform itself into digital media that are familiar to students' daily lives.

Data from the Indonesian Internet Service Providers Association (APJII) for 2024 shows that national internet penetration has reached 79.5%, with the age group of 12-27 years being predominantly Generation Z (Kristianti, 2024). Analyzed critically, this figure is not merely statistics but a portrait of the existential change in how the younger generation learns. They learn from YouTube, discuss on Discord, seek answers to existential religious questions through TikTok searches, and form opinions about other religions through Instagram comments. Where is the position of PAI? Most schools still rely on lecture methods, printed textbooks, and occasional screenings of religious lecture videos that are not pedagogically designed. This gap is not just a methodological issue but a crisis of relevance: students begin to view PAI as an outdated subject because it fails to appear in the digital spaces they inhabit (Surachman & Nazib, 2024).

Research by Siregar et al. (2025), involving 11,372 PAI teachers throughout Indonesia, demonstrates that technology integration in Islamic education is no longer optional but an urgent pedagogical necessity. However, the survey also revealed that only 52.6% of PAI educators consistently utilize ICT-based media in teaching and learning activities. Most teachers still use ICT only as PowerPoint presentations or YouTube videos without modification, interactivity, or student involvement in content production processes (Rosfiani et al., 2025).

Various studies have empirically proven the effectiveness of ICT media in PAI learning. A meta-analysis by Yahya et al. (2024) of 7 studies found an average effect size of 0.959, categorized as very high/strong, meaning that the use of ICT media is significantly more effective in improving PAI learning outcomes compared to conventional methods. Quantitative research by Sholehah et al. (2025) also showed that the use of digital learning media has a significant positive effect on students' learning interest ($p = 0.003$), with a contribution of 66% to the variation in learning interest when combined with a supportive school environment.

From the perspective of Jean Piaget's constructivist learning theory, students construct knowledge through active interaction with the environment and direct experience (Piaget, 1950). Piaget emphasizes that the process of assimilation and accommodation of cognitive schemata occurs when individuals face new situations that challenge their intellectual equilibrium. When translated into the context of ICT-based PAI media, the media must not merely serve as a one-way information transfer tool but must be designed as a space for exploration, where students can experience moral dilemmas, engage in dialogue with different perspectives, and reflect on their own beliefs. In other words, ICT media in PAI must create a healthy cognitive conflict, not to shake faith but to strengthen internal argumentation within students (Piaget, 1950).

Furthermore, the connectivism theory proposed by George Siemens provides an epistemological foundation relevant to the digital era. Siemens argues that in the digital age, knowledge is no longer stored entirely within a person's head but is distributed across the digital networks we access. The ability to learn is no longer about memorizing but about knowing where to find and how to evaluate information (Siemens, 2005). This theory has profound implications: the teacher is no longer the sole authority of knowledge, and ICT

media must be designed not only as a source of information but as a curatorial tool that guides students in filtering, verifying, and contextualizing the religious knowledge they encounter.

However, ICT media alone is insufficient without the transformation of the teacher's role. Albert Bandura, in his social learning theory, explains that individuals learn through observation and imitation of models they consider authoritative (Bandura, 1977). In the digital era, this principle gives rise to the concept of a digital role model: teachers must be present and demonstrate reflective, critical, and open attitudes through the digital media they use.

Research by Rosfiani et al. (2025) shows that one of the biggest challenges for PAI teachers in the digital era is the low level of digital pedagogical competence—the ability to design, use, and evaluate ICT media for character education purposes. Many teachers remain trapped in using ICT solely for PowerPoint or YouTube videos without modification, interactivity, or student involvement in content production. This is fundamentally different from the concept of digital learning ecology, where students are not only consumers of content but also producers of content—for example, by creating vlogs about interfaith tolerance or producing digital posters about moderation values. Thus, ICT media in PAI must shift from substitution (replacing paper with screens) toward redefinition (creating learning experiences that were previously impossible) (Zamri & Mohamad, 2025).

From the above exposition, it can be concluded that the development of ICT-based Islamic Religious Education media is not a supplementary choice (nice to have) but a systemic necessity (must have). The absence of such media causes three simultaneous losses: (1) students lose guidance in navigating digital religious information, (2) PAI learning loses relevance in the eyes of the younger generation, and (3) teachers lose their role as religious authorities in the digital era. This study aims to examine the development of ICT-based PAI media by identifying the factors causing suboptimal utilization, analyzing the challenges in its development, and formulating appropriate media designs that align with the characteristics and learning needs of students in the digital era.

Method

This study employs a qualitative research approach with a literature review method (library research). The type of research is conceptual and theoretical, aiming to develop a comprehensive framework for ICT-based Islamic Religious Education media development. The data sources consist of secondary data in the form of: (a) theoretical literature on learning theories, instructional media, and digital pedagogy; (b) empirical research findings related to ICT integration in Islamic education; (c) policy documents and official reports concerning technology in Indonesian education; and (d) relevant international studies on technology-enhanced learning. Data collection techniques include systematic literature searching through academic databases (Google Scholar, Scopus, DOAJ) using keywords such as "ICT-based learning media," "Islamic Education," "digital pedagogy," "relevance crisis," and "teacher digital competence." Data analysis employs content analysis techniques with an interactive model: data reduction, data display, and conclusion drawing/verification. The analysis was conducted through three stages: (1) descriptive analysis to identify concepts and findings from the literature; (2) comparative analysis to find relationships and patterns among various theories and findings; and (3) interpretive analysis to formulate conclusions and recommendations according to the research objectives. Conclusions are drawn using an inductive approach, building a comprehensive framework from the synthesized concepts and findings. This literature review method is considered appropriate because the research aims to construct a conceptual framework for

ICT-based PAI media development based on the synthesis of existing theories and research findings.

Results and Discussion

1. Factors Causing Suboptimal Utilization of ICT Media in PAI Learning

The suboptimal utilization of ICT-based media in Islamic Religious Education (PAI) learning is not merely an issue of equipment availability but rather a pedagogical and epistemological problem rooted in resistance to paradigm change. Analysis of this problem can be examined through three dimensions:

First, the Relevance Crisis and Digital Meaning Construction. Digital-era students live in a digital ecosystem where the boundaries between reality and virtuality are blurred. They construct their religious identity not only through interactions in mosques or classrooms but massively through social media algorithms (Widayat et al., 2025). They are accustomed to content that is bite-sized (short duration), visual, and interactive. The main problem is that the PAI curriculum and delivery in many institutions remain oriented toward vertical, linear, and dogmatic text transmission. When PAI fails to appear in the visual language and platforms used by students, religious education experiences a crisis of relevance perceived as an entity alienated from students' daily lives, causing their intrinsic motivation to study it to decline drastically (Mufida & Suharto, 2023).

Second, Cognitive Stagnation Due to the Absence of Cognitive Conflict. From Jean Piaget's constructivist perspective, meaningful knowledge is only formed when cognitive disequilibrium (cognitive conflict) occurs, forcing individuals to assimilate and accommodate schemata (Piaget, 1950). Research by Winarso et al. (2023) shows that the development of interactive multimedia based on cognitive conflict strategies is effective in improving students' conceptual understanding and reducing misconceptions in the learning process. The same principle can be adapted to PAI learning, where ICT media is designed to create productive cognitive disequilibrium through ethical dilemma simulations, interactive case studies, or virtual debate spaces. ICT media in PAI should not only function as an information transfer tool but as an exploration medium that triggers students to question, reflect, and ultimately strengthen their internal arguments regarding Islamic teachings (Winarso et al., 2023).

Field realities show that most ICT media used by PAI teachers remains one-way informative rather than exploratory-dialectical. The absence of facilitated cognitive conflict results in students' religious knowledge being fragile and easily eroded when confronted with counter-narratives from unfiltered social media.

Third, the Gap in Teachers' Digital Pedagogical Competence. The most urgent challenge in optimizing ICT media utilization lies in the teacher's digital pedagogical competence. Although teachers have used various digital devices such as projectors, laptops, PowerPoint, Islamic videos, and interactive applications like Kahoot, Quizizz, and Word Wall, their utilization has not been fully maximized according to the demands of ideal pedagogical competence in the digital era. The success of ICT utilization in PAI learning is largely determined by the mastery of pedagogical and professional competence, yet field realities still indicate the need for continuous training and more systematic technology integration into the PAI curriculum.

Furthermore, the challenge of PAI teachers' digital competence enters a new phase with the emergence of the Artificial Intelligence (AI) era. Although AI tools have significant potential to improve four aspects of PAI teachers' digital competence digital literacy, learning content development, digital classroom management, and technology-based learning evaluation their implementation still faces three main obstacles: the digital divide,

resistance to paradigm shifts in learning, and ethical considerations in the context of Islamic education. PAI teachers are not sufficiently competent merely to operate ICT media technically; they must also have curatorial competence to filter, verify, and contextualize the abundant and unfiltered digital religious information (Muhtaram et al., 2025).

2. Challenges in Developing ICT-Based PAI Media

The development of ICT-based Islamic Religious Education media is a multidimensional endeavor that does not solely depend on the availability of technological infrastructure but also on the readiness of the pedagogical system, the transformation of scientific paradigms, sociocultural dynamics, resource availability, and complex ethical-theological considerations. These four dimensions of challenges are systemically interrelated; the weakness of one dimension will impact the entire ecosystem of ICT-based PAI media development.

a. Digital Pedagogical Challenges

The most urgent fundamental challenge in developing ICT-based PAI media lies in teachers' digital pedagogical competence the professional ability of educators to meaningfully integrate technology into the learning process, which includes the skills to design, implement, and evaluate ICT media for character education purposes.

When analyzed using the SAMR Model framework (Substitution, Augmentation, Modification, Redefinition) proposed by Puentedura (2006), the findings indicate that PAI teachers remain predominantly trapped at the two lowest levels. Most teachers have not yet reached the Modification level where technology enables substantial redesign of learning tasks let alone Redefinition, where technology creates fundamentally new learning experiences that were previously impossible to achieve through conventional methods (Zamri & Mohamad, 2025). Furthermore, this digital-pedagogical challenge can be elaborated into four interrelated sub-dimensions:

First, Weak Digital Curatorial Competence. Amidst the phenomenon of information overload flooding the digital space, PAI teachers are required not only to act as content deliverers but also as curators capable of filtering, verifying sources, contextualizing information, and guiding students in navigating the increasingly complex landscape of religious information (Hobbs, 2010). Unfortunately, most teachers lack this curatorial competence. Consequently, students with direct internet access are often exposed to unverified religious content, including radical narratives, without critical guidance from educators. This phenomenon creates an epistemic crisis in PAI learning: the teacher's scientific authority is eroded by digital content that is more attractively packaged but substantively inaccurate and unverified (Mufida & Suharto, 2023).

Second, Limited Capacity to Design Cognitive Conflict-Based Learning. As elaborated previously, pedagogically meaningful PAI learning requires space for students to experience cognitive conflict—intellectual disequilibrium that drives the process of assimilation and accommodation of cognitive schemata (Piaget, 1950). However, field realities show that most PAI teachers are not professionally trained to design learning experiences that productively trigger cognitive conflict through ICT media. The dominant tendency is to maintain a one-way knowledge transmission model considered "safe" theologically, even though such an approach results in fragile knowledge easily eroded when students face alternative narratives on unfiltered social media (Winarso et al., 2023).

Third, Limited Ability in Digital Data-Based Learning Evaluation. ICT media, theoretically, offers advantages in tracking student learning data in real-time and comprehensively: time spent on each topic, quiz completion levels, recurring error patterns, and participation levels in discussion forums. However, PAI teachers generally have not utilized learning analytics to conduct accurate learning diagnosis and provide targeted

pedagogical interventions (Siemens & Long, 2011). PAI learning evaluation remains dominated by conventional written test instruments that have limited capacity to measure affective and psychomotor aspects adequately even though both domains are the essence of religious education.

Fourth, Limitations in Developing Contextual Multimodal Content. Pedagogically effective ICT-based PAI content should be multimodal integrating text, images, audio, video, animation, and interactive elements and contextual to students' lives and digital world. However, developing such multimodal content requires technical skills beyond the basic competence of PAI teachers, such as graphic design, video production, and basic programming. Most PAI teachers have a religious education background, not educational technology, making this skill gap a significant structural obstacle (Mishra & Koehler, 2006). Consequently, the resulting media is technically "ICT-based" but pedagogically remains conventional and non-interactive.

b. Sociocultural Challenges

This challenge originates from the sociological fact that teachers and students come from fundamentally different generations in terms of experience, literacy, and orientation toward digital technology. Most current PAI teachers come from Generation X or early Millennials, while their students are Generation Z (born 1997-2012) or even Generation Alpha (born 2013 and above). These two groups show significant differences in information consumption patterns, expectations of interaction, and digital literacy (Prensky, 2001).

This disparity creates a generation gap that impacts learning expectations. Observed phenomena show that PAI teachers often express complaints about students being "unfocused," "disrespectful," or "gadget-addicted." On the other hand, students perceive PAI learning as "boring," "outdated," or "irrelevant" to their daily lives (Twenge, 2017). This phenomenon is not merely an intergenerational communication issue but reflects a fundamental misalignment in perspectives on how the learning process should occur in the digital era.

If not managed wisely and strategically, this generational gap has the potential to deepen the crisis of relevance previously identified. Teachers who continuously complain about students without adjusting their teaching methods will increasingly lose authority and relevance in students' eyes. Conversely, teachers willing to learn from students about the digital world and collaboratively explore how Islamic teachings can authentically appear in digital spaces will build more productive, mutually respectful, and transformative pedagogical relationships.

c. Infrastructural and Economic Challenges

This challenge relates to the availability of hardware, network connectivity, and other supporting resources that are prerequisites for ICT media implementation in learning. Although APJII (2024) data shows that national internet penetration has reached 79.5%, this aggregate figure obscures significant geographical disparities. In urban areas, internet access is relatively stable and widespread, while in 3T regions (frontier, outermost, disadvantaged), many educational units lack adequate internet network access, and even continuous electricity to operate digital devices.

Even if schools provide computer laboratories, the device-to-student ratio is often far from ideal. Slow or intermittent internet connections cause ICT media requiring online connectivity to be inaccessible optimally, thus reducing the effectiveness of the designed learning (UNESCO, 2023).

The cost of developing and maintaining high-quality ICT media such as digital educational games, animated instructional videos, or interactive simulations requires substantial financial investment. Cost components include software licenses, content production costs (design, animation, voiceovers, editing), and periodic maintenance and

update costs. Educational units with limited budgets will face significant difficulties in developing such media independently (UNESCO, 2023).

d. Ethical Theological Challenges

The most recent and most complex challenge has emerged with the exponential development of Artificial Intelligence (AI) in education. The presence of generative AI such as ChatGPT, Gemini, Claude, and similar platforms presents both opportunities and paradigmatic challenges for ICT-based PAI media development that are unprecedented.

AI's capacity to generate religious content including answering theological questions, interpreting Qur'anic verses, elaborating fiqh arguments, and even composing sermon scripts raises fundamental questions about the role and authority of PAI teachers in the digital era. If students can access "instant answers" from AI presented in fluent language supported by seemingly authoritative references, the foundation of teachers' scientific authority in Islamic education faces an existential challenge (Selwyn, 2022).

This challenge requires PAI teachers to transform from source of knowledge to curator of meaning. In the AI era, teachers are no longer competing with artificial intelligence in terms of information speed and breadth but rather utilizing AI as a tool to train students in developing higher-order thinking skills: verifying AI-generated answers by referring to authoritative sources, comparing various perspectives, and contextualizing information with inclusive, moderate, and contextual Islamic values (Muhtaram et al., 2025).

Ethical problems in AI use in Islamic education include: (a) content accuracy and bias generative AI is trained on internet data that is not always accurate and often contains biases, requiring teachers and media developers to ensure AI-generated content has been rigorously verified and aligns with moderate Islamic teachings; (b) data privacy and protection many AI platforms extensively collect user data, potentially violating student privacy, especially minors whose personal data must be strictly protected; and (c) risk of over-reliance if students and even teachers become too dependent on AI for answering religious questions, there is a risk of de-skilling the loss of critical, analytical, and reflective thinking skills that are the essence of humanistic and transformative Islamic education (Carr, 2010).

3. ICT-Based PAI Media Design in the Digital Era

a. Characteristics of Learners

Research by Widayat et al. (2025) identifies that Indonesian Muslim students construct their religious identity not only through mosque or classroom interactions but massively through social media algorithms. This characteristic gives rise to five main relevant features:

First, preference for bite-sized and visual content. Students are accustomed to consuming information in short durations, between 15 seconds to 3 minutes, as commonly found on platforms like TikTok, Instagram Reels, or YouTube Shorts. They show a decline in endurance for long, linear, and textual monologue content.

Second, need for interactivity and active participation. Students are not satisfied being passive consumers of content; they want to interact, respond, comment, and even produce their own content. This characteristic aligns with Piaget's constructivist principle of learning as an active process of meaning-making (Piaget, 1950).

Third, orientation toward speed and instant results. Students are accustomed to getting answers to their questions within seconds through search engines or digital assistants. They have low tolerance for unnecessary technical complexity. The implication for PAI media design is that the user interface must be intuitive, navigation simple, and loading time minimal.

Fourth, need for authenticity and personal relevance. Research by Mufida & Suharto

(2023) refers to this phenomenon as the crisis of relevance, where students begin to view PAI as an outdated subject because it fails to appear in the digital spaces they inhabit. Students are not interested in learning that feels abstract, dogmatic, and disconnected from their daily lives. The implication is that PAI media must connect Islamic teachings with real situations faced by students: moral dilemmas on social media, digital bullying, challenges of religious identity in plural environments, and contemporary issues such as mental health, environmental sustainability, and social justice.

Fifth, high tendency for multitasking and digital distraction. Students are accustomed to opening multiple platforms simultaneously and switching between applications with high frequency. Although this ability can be seen as a weakness (short attention span), it can also be viewed as an opportunity to design media that utilize the principles of chunking and modality variation. Good PAI media must be able to capture and maintain students' attention amidst the sea of digital distractions, for example, by presenting information in a strong narrative format, using gamification elements, and inserting attention hooks at the beginning of each segment.

These five characteristics cannot be ignored in the media design process. Ignoring them means repeating the same mistake: producing PAI media that is technically "ICT-based" but pedagogically still trapped in conventional paradigms, thus failing to reach students.

b. Specifications of ICT-Based PAI Media

Based on the analysis of challenges and learner characteristics, this study formulates three forms of ICT-based PAI media design that align with the characteristics and learning needs of students in the digital era:

First, Islamic Value-Based Digital Educational Games. This media form directly responds to students' need for interactivity and gamification. These games apply adaptive difficulty adjustment using the Multi-Objective Optimization on the Basis of Ratio Analysis (MOORA) method based on player performance. Testing on 20 students aged 18-21 years using the System Usability Scale (SUS) produced an average score of 84 (indicating high usability), while the Igroup Presence Questionnaire (IPQ) produced a score of 4.64 (indicating strong player immersion). These findings indicate that the General Presence and Involvement dimensions had the highest average scores, indicating that players felt emotionally engaged and present in the virtual learning world (Nugroho et al., 2025).

In the PAI context, digital educational games can be designed with the following characteristics: (a) presenting Islamic content (such as aqidah, akhlak, fiqh, or sirah) in challenge or mission format to be completed; (b) using point systems, levels, and badges to maintain motivation; (c) providing instant formative feedback, not merely correct-incorrect indicators; (d) integrating narrative elements (storytelling) to create emotional engagement.

Second, Cognitive Load-Based Instructional Videos. The characteristics of effective instructional videos for digital-era students include: (a) segment duration between 60 to 180 seconds; (b) presentation in narrative or case study format, not monologue lectures; (c) attention to signaling principles (highlighting important information), segmenting (breaking material into small segments), and weeding (eliminating non-essential content); (d) insertion of pause points where students are asked to respond to questions or make decisions in a moral dilemma; (e) at the end of each segment, there is a link to the next segment or to a discussion forum.

Third, Interactive Visual Media for PAI. This can be realized in the form of: (a) short animations illustrating abstract concepts through visual metaphors; (b) interactive infographics allowing students to explore relationships between concepts; (c) visual

simulations where students can see the consequences of a moral value in a life scenario. By reducing extrinsic cognitive load caused by abstract material presentation, students can allocate more cognitive resources to process meaning and internalize values.

Conclusion

The suboptimality of PAI learning in utilizing ICT media in the digital era is caused by three main factors: (1) a relevance crisis, where PAI fails to appear in the visual language and digital platforms inhabited by students; (2) cognitive stagnation due to the absence of facilitated cognitive conflict, resulting in students' religious knowledge being fragile and easily eroded when confronted with counter-narratives from social media; and (3) the gap in teachers' digital pedagogical competence, evidenced by only 52.6% of PAI educators consistently utilizing ICT media and most remaining trapped in substitutive use without interactivity.

The challenges of ICT-based PAI media development encompass four interrelated dimensions: (1) digital-pedagogical challenges in the form of low teacher competence in designing, using, and evaluating ICT media for character education; (2) sociocultural challenges in the form of generational disparity between teachers and students in digital literacy and learning expectations; (3) infrastructural economic challenges including the digital divide and limited access to devices and internet networks; and (4) ethical theological challenges related to AI integration, data privacy, and the transformation of teacher authority in the digital era.

Based on the characteristics of digital era learners which include a preference for bite sized and visual content, a need for interactivity and active participation, an orientation toward speed and instant results, a need for authenticity and personal relevance, and a tendency for multitasking this study formulates three forms of ICT-based PAI media design that are appropriate. The first is Islamic value-based digital educational games with adaptive difficulty adjustment that integrate points, levels, badges, and narrative elements. The second is cognitive load-based instructional videos with a duration of 60-180 seconds in narrative or case study format, considering the principles of signaling, segmenting, and weeding. The third is interactive visual media that actualizes abstract Islamic concepts through short animations, interactive infographics, and visual simulations.

References

Azra, A. (2022). Islam dan Teknologi: Antara Adaptasi dan Resistensi. Jakarta: Prenada Media.

Bandura, A. (1977). Social Learning Theory. Englewood Cliffs: Prentice Hall.

Carr, N. (2010). The Shallows: What the Internet Is Doing to Our Brains. New York: W. W. Norton & Company.

Hobbs, R. (2010). Digital and Media Literacy: A Plan of Action. Washington, D.C.: The Aspen Institute.

Kemp, S. (2024). Digital 2024: Indonesia. Datareportal, January 21, 2024. https://datareportal.com/reports/digital-2024-indonesia

Khomaeny, E. F. F. (2020). Holistic Transcendent Parenting. Tasikmalaya: Edu Publisher.

Kristianti, L. (2024). APJII Sebut Penetrasi Internet Indonesia Naik Jadi 79,5 Persen. AntaraNTB, January 31, 2024. https://mataram.antaranews.com/berita/322713/apjii-sebut-penetrasi-internet-indonesia-naik-jadi-795-persen

Mishra, P., & Koehler, M. J. (2006). Technological Pedagogical Content Knowledge: A Framework for Teacher Knowledge. Teachers College Record, 108(6), 1017-1054. https://doi.org/10.1111/j.1467-9620.2006.00684.x

Mufida, N. A., & Suharto, T. (2023). Crisis of Relevance: Rethinking Islamic Religious Education in the Digital Era. Tadris: Jurnal Keguruan dan Ilmu Tarbiyah, 8(2), 245-258.

Muhtaram, M., Haslin, M. I. N., & Nur, M. (2025). Peningkatan Kompetensi Digital Guru PAI Melalui Pemanfaatan Tools Artificial Intelligence. Tomacca: Jurnal Pendidikan Islam, 2(1), 20-27.

Nugroho, F., Ridho, M., Melani, R. I., Pebrianti, D., Hammad, J. A., Lestari, T. M., Maharani, D., & Nurrahma, A. (2025). Implementation of MOORA for Determining Weather Conditions in Maze-Based Educational Games. Jurnal Nasional Pendidikan Teknik Informatika (JANAPATI), 14(2). https://doi.org/10.23887/janapati.v14i2.100064

Pemerintah Republik Indonesia. (2008). Undang-Undang Nomor 11 Tahun 2008 tentang Informasi dan Transaksi Elektronik. Lembaran Negara Republik Indonesia.

Piaget, J. (1950). The Psychology of Intelligence. London: Routledge.

Prensky, M. (2001). Digital Natives, Digital Immigrants. On the Horizon, 9(5), 1-6. https://doi.org/10.1108/10748120110424816

Puentedura, R. R. (2006). Transformation, Technology, and Education. Presentation at the Maine DOE MLTI. http://hippasus.com/resources/tte/

Rosfiani, O., Sukmana, B., Andri, E., Sukma, D., & Saidah, M. (2025). Tantangan dan Solusi Guru PAI dalam Mengintegrasikan Nilai-Nilai Karakter dalam Pembelajaran di Era Digital. TEACHING: Jurnal Inovasi Keguruan dan Ilmu Pendidikan, 5(2), 320-328. https://doi.org/10.51878/teaching.v5i2.6464

Selwyn, N. (2022). Artificial Intelligence and Education: A Critical Overview. International Journal of Artificial Intelligence in Education, 32(1), 1-25. https://doi.org/10.1007/s40593-022-00297-z

Sholehah, A. A., Prasetiya, B., & Tewachew, A. (2025). Digital Media and School Environment as Predictors of Learning Interest in Islamic Education: Evidence from Indonesia's Integrated Islamic Schools. Journal of Islamic Education Research, 6(4), 459-478. https://doi.org/10.35719/jier.v6i4.530

Siemens, G. (2005). Connectivism: A Learning Theory for the Digital Age. International Journal of Instructional Technology and Distance Learning, 5(1), 1-9.

Siemens, G., & Long, P. (2011). Penetrating the Fog: Analytics in Learning and Education. Educause Review, 46(5), 30-32.

Siregar, H. S., Nurhamzah, N., Munir, M., & Fikri, M. (2025). Enhancing Islamic Education through Technology Integration: A Study of Teaching Practices in Indonesia. Jurnal Ilmiah Peuradeun, 13(2), 959-986. https://doi.org/10.26811/peuradeun.v13i2.1875

Surachman, Y. T. L., & Nazib, F. M. (2024). Implementasi Moderasi Beragama Pada Pembelajaran Pendidikan Agama Islam. Jurnal Pendidikan Agama Islam, 3(2), 245-251.

Twenge, J. M. (2017). iGen: Why Today's Super-Connected Kids Are Growing Up Less Rebellious, More Tolerant, Less Happy. New York: Atria Books.

UNESCO. (2023). Global Education Monitoring Report: Technology in Education. Paris: UNESCO Publishing.

Verbeek, P. P. (2011). Moralizing Technology: Understanding and Designing the Morality of Things. Chicago: University of Chicago Press.

Widayat, P. A., Khaeroni, C., & Kuliyatun, K. (2025). Religious Moderation Among Generation Z Indonesian Muslims: A Dialectical Analysis of Understanding and Practice. Fikri: Jurnal Kajian Agama, Sosial dan Budaya, 10(1), 264-285. https://doi.org/10.25217/jf.v10i1.5726

Winarso, W., Toheri, & Udin, T. (2023). Addressing the Challenge of Mathematical Misconceptions: Development of Interactive Multimedia Based on Cognitive Conflict Strategy. Journal of Education Technology, 7(3), 513-522. https://doi.org/10.23887/jet.v7i3.63037

Yahya, M. S., Fian, K., Afandi, R., & Masruri, M. (2024). The Effectiveness of IT-Based Audiovisual Media in Enhancing Islamic Religious Education Learning Outcomes: A Meta-Analysis.

Tadris: Jurnal Keguruan dan Ilmu Tarbiyah, 9(2), 499-514. https://doi.org/10.24042/tadris.v9i2.23624

Zamri, M. T., & Mohamad, S. N. A. (2025). Technology Integration in Education: A Review and Analysis of SAMR Model. International Journal of Research and Innovation in Social Science, VIII(IIIS), 6195-6200. https://doi.org/10.47772/IJRISS.2024.803463S