

The Relevance of Islamic Religious Education for Indonesia's Generation Z: The Role of Digital Religious Literacy and Meaningful Engagement

Emeraldo Wahyu Nugroho^{1✉}, Harimas Ramadhan²

1) Institut Agama Islam Negeri Curup, Curup, Indonesia
 E-mail: emeraldo@iaincurup.ac.id

2) Institut Agama Islam Negeri Curup, Curup, Indonesia
 E-mail: harimas@iaincurup.ac.id

✉ Correspondence Author:
 emeraldo@iaincurup.ac.id

Article Information:

Received 04 25, 2026

Revised 05 01, 2026

Accepted 07 16, 2026

Keywords: Islamic Religious Education; Indonesia's Generation Z; digital religious literacy; dialogical pedagogy; autonomy support; meaningful learning engagement; mixed methods

© **Copyright:** 2026. Authors retain copyright and grant the ISNUJOU - Journal of Education right of first publication with the work simultaneously licensed under a Creative Commons Attribution License

Abstract

Digital connectivity, changes in knowledge authority, and increasingly personalized learning needs demanded Islamic Religious Education (PAI) to be designed as an academic experience that intersects directly with the ecology of Indonesia's Generation Z experience. This study examined the relationship among PAI's digital-contextual design, pedagogical autonomy support, dialogical-moderate climate, digital religious literacy, and meaningful learning engagement, while exploring how students interpreted PAI learning that they considered relevant. The research design used an explanatory sequential mixed-method design with a survey of 428 high school students and qualitative elaboration through semi-structured interviews, focus group discussions (FGDs), and classroom observations. Quantitative data were analyzed using Partial Least Squares Structural Equation Modeling (PLS-SEM), while qualitative data were analyzed through reflexive thematic coding. Quantitative findings showed that digital religious literacy was the strongest predictor of meaningful learning engagement ($\beta = 0.41$; $t = 8.23$; $p < 0.001$). The model explained 56% of the variance of digital religious literacy and 64% of the variance of meaningful learning engagement, with a Standardized Root Mean Square Residual (SRMR) value of 0.061. Qualitative findings showed that students rated PAI as relevant when religious material was associated with digital content dilemmas, safe spaces for questioning, teacher curation of resources, and daily ethical practices. This article presents a PAI renewal model that combines religious pedagogy, digital design, and student voices as the basis for strengthening digital religious literacy in Indonesian schools.

How to cite: Nugroho, E. W. (2026). The relevance of Islamic religious education for Indonesia's generation z: The role of digital religious literacy and meaningful engagement. *ISNUJOU - Journal of Education*, 1(2), 34-60.

INTRODUCTION

Generation Z grew up in a digital ecology that makes knowledge, identity, social relations, and religious practices move simultaneously among classrooms, families, communities, and digital

platforms (Tsaliki, 2022). In such a situation, Islamic Religious Education (PAI) is no longer sufficient when positioned as a subject that conveys religious propositions, laws, and moral advice in one direction (Suhayib & Ansyari, 2023; Chanifah et al., 2021). When religious learning fails to enter students' digital spaces for questioning, religion is at risk of appearing as a normative discourse that is respected but not always used to assess information, manage emotions, or make ethical decisions. Evolvi (2022) showed that digital religious practice is not merely a move from physical space to online space, but rather a change in the way authority, materiality, and religious experience are negotiated. An important interpretation for the Indonesian context is that PAI classes need to help students reason through religious teachings in the rapid flow of information, not just repeat the truth they have heard. Marcus (2021) emphasized that religious literacy in social media requires context-aware amplification strategies, so that religious information can move responsibly. If this need is ignored, students can have broad access to religious content but remain weak in distinguishing authoritative knowledge, popular opinion, and potentially divisive rhetoric. Therefore, the urgency of this research lies in the need to design PAI that can bridge faith, reason, digital experience, and meaningful learning engagement without losing academic discipline and Islamic roots.

The digital transformation of education shows that technological support is only meaningful when it strengthens the psychological needs, pedagogical relationships, and learning experiences that students can understand (Chiu, 2021). Theoretically, PAI is often placed as a vehicle for the formation of religious knowledge, attitudes, and practices (Suhayib & Ansyari, 2023; Chanifah et al., 2021), but the relationship among digital design, autonomy support, digital religious literacy, and meaningful engagement has not always been explained in a measured way. Contextually, Indonesian students face a diverse stream of religious content, ranging from brief religious lessons, da'wah videos, religious memes, lecture excerpts, to identity debates that are often detached from pedagogical guidance (Ikhrom et al., 2023; Marcus, 2021; Pearce & Denton, 2022). Pearce and Denton (2022) showed that screen time and social media can intersect with adolescents' religious commitment, so the issue of religious education cannot be separated from media habits. In this framework, the problem of PAI is not just students' low interest, but the misalignment between the way religion is taught and the way students build meaning in digital spaces. Ryan and Deci (2020) explained that persistent motivation is born when the needs for autonomy, competence, and connectedness are adequately supported. The explanation directs attention to the question of whether PAI that provides space for choice, dialogue, and digital reasoning will result in stronger digital religious literacy and engagement. Thus, theoretical and contextual issues come together in the need to assess learning models that are not only normatively correct, but also perceived as relevant by students living in a digital culture.

Recent studies on PAI show a strong focus on curriculum design, spirituality, text intolerance, and online learning, but most have not examined the interdependencies in an integrated manner in

the experiences of Indonesia's Generation Z (Suhayib & Ansyari, 2023). Chanifah et al. (2021) developed a spirituality-based Islamic education framework for the younger generation and showed the importance of learning that touches the inner dimension. The findings are important because they reject the reduction of PAI to mere material mastery, but the study has not placed digital religious literacy as a mechanism that explains the relevance of learning for students. Ikhrom et al. (2023) reviewed intolerance in PAI textbooks and encouraged a more peaceful teaching model. The research is valuable in analyzing content, but it has not yet linked the quality of the classroom dialogical climate to student engagement in interpreting digital religious content. Musthofa (2023) examined online learning in Islamic teacher professional education and displayed the importance of professionalism, but the focus is on prospective teachers, not Generation Z students in secondary school. Aditia (2023) showed that digital literacy and learning satisfaction are related to academic performance in online learning in Indonesia. The direction of the research opens up opportunities to test whether digital religious literacy acts as a bridge between PAI learning design and meaningful student engagement.

The digital education literature also shows that student engagement is not only determined by the media, but by the way teachers design support, structure, and relationships that allow students to feel capable, understood, and responsible (Zeinstra et al., 2023). Chiu (2021) found that autonomy support in online learning can strengthen cognitive engagement, but the study did not focus on religious learning that has normative, affective, and identity dimensions. Nasri et al. (2021) emphasized the importance of culturally responsive online pedagogy in Southeast Asia, so digital design needs to depart from students' social experiences. However, the study has not specifically examined PAI as a subject dealing with text authority, teacher authority, and algorithmic authority in a single learning-experience space. Soules and Jafralie (2021) emphasized the importance of religious literacy in teacher education, but students' need to assess digital religious sources has not yet become central to quantitative analysis. MisirHiralall (2021) placed religious literacy as civic education for the common good, and this idea is highly relevant for Indonesia's pluralistic society. However, this direction needs to be translated into PAI learning indicators that can be measured and explored through students' voices. These limitations prompted this study to combine testing relationships among variables with an exploration of students, teachers, and classroom dynamics.

This research proposes that PAI that is relevant to Indonesia's Generation Z is formed through the interaction among digital-contextual design, autonomy support, dialogical-moderate climate, digital religious literacy, and meaningful learning engagement. The quantitative question of this study is: How do PAI's digital-contextual design, pedagogical autonomy support, and dialogical-moderate climate influence digital religious literacy and meaningful learning engagement among Indonesian Generation Z students? The qualitative question of this study is: How do students and teachers interpret the PAI experience that is considered relevant, meaningful, and ethical in the digital lives of Indonesia's Generation Z students? These two questions are formulated so that the

analysis does not stop at numerical relationships among variables, but also reaches a description of how relevance is experienced in the classroom. The theoretical contribution of this research is to develop a model that brings together motivational theory, religious literacy, digital pedagogy, and Islamic education in the Indonesian context. Its methodological contribution lies in the use of a mixed-method design that links the results of Partial Least Squares Structural Equation Modeling (PLS-SEM) with thematic evidence from interviews, FGDs, and classroom observations. Its practical contribution is to provide indicators and instrument designs that PAI teachers can use to assess whether their learning has reached the experiential world of Generation Z.

LITERATURE REVIEW

1. The Relevance of Islamic Religious Education in the Digital Ecology of Generation Z

The study of PAI has shifted from the paradigm of material transmission to the paradigm of learning experiences that connect students' texts, contexts, authorities, and digital practices (Suhayib & Ansyari, 2023). Chanifah et al. (2021) interpreted Islamic education for the younger generation as a process that links understanding, spirituality, and life practices, so relevance cannot be measured only by the amount of material presented. In this study, the relevance of PAI is defined as the alignment among religious goals, students' digital experiences, motivational needs, and the ability to use Islamic values to assess real situations (Suhayib & Ansyari, 2023; Nasri et al., 2021; Chanifah et al., 2021). The definition means that PAI is considered relevant when students can see the relationship among Islamic teachings, social dilemmas, media culture, and personal responsibility. PAI relevance indicators include contextuality (Nasri et al., 2021), experiential connectivity (Chanifah et al., 2021), clarity of curriculum objectives (Suhayib & Ansyari, 2023), cultural sensitivity (Nasri et al., 2021; Viano & Darling-Aduana, 2026), and orientation toward ethical practice (MisirHiralall, 2021). These indicators require teachers to shift from material presenters to designers of learning experiences that maintain accuracy, depth, and meaning. Ikhrom et al. (2023) warned that religious material that is not critically curated can give rise to narrow and exclusive understandings. Therefore, the relevance of PAI needs to be reviewed as a pedagogical capacity to lead students into religious knowledge accurately, reflectively, and responsibly.

The updated developmental ecological framework in contemporary education studies places learners as subjects shaped by layered interactions among home, school, peers, digital culture, and educational policy (Pothong & Livingstone, 2022). This idea frames the research because PAI does not take place in an isolated social space, but competes and dialogues with algorithms, digital figures, family traditions, and adolescent experiences. Tsaliki (2022) showed that young identities in digital media ecologies are built through fluid and continuously negotiated cultural practices. This means that Generation Z students not only receive values from teachers, but also test those values through comments, content, and digital communities. Evolvi (2022) showed that digital space changes the relationship between religious practice and materiality, so religious learning needs to provide interpretive skills. In this position, relevant PAI must create a bridge between the

authority of religious knowledge and often fast-paced digital reality. Döring (2022) reminded that education that deals with young people's digital lives needs to avoid moral panic and replace it with argumentative pedagogy. Thus, the study of PAI relevance needs to assess whether the learning design equips students with the conceptual tools to understand, assess, and practice Islamic values in the digital-social environment they face every day.

2. Digital-Contextual Design and Digital Religious Literacy

The study of educational technology has shifted from instrumental optimism toward devices to more substantive questions about how digital design shapes the quality of student engagement and literacy (Chiu, 2021). The digital-contextual design of PAI is defined as organizing the objectives, materials, media, activities, assessments, and reflections of PAI by selectively utilizing technology and associating it with students' religious, social, and digital experiences (Chiu, 2021; Molenaar, 2022; Suhayib & Ansyari, 2023). This definition rejects the understanding of digitalization as simply the use of videos, platforms, or online quizzes without a change in pedagogical thinking. Digital-contextual design indicators include the integration of authentic media (Ilmi et al., 2023), digital problem-based tasks (Chiu, 2021), verification of religious sources (Marcus, 2021), engagement-based reflective assessment (Chiu, 2021; Kim et al., 2022), and adaptive feedback (Wang et al., 2023). Each of these indicators points to the quality of the design, not the quantity of digital devices used. Crompton and Burke (2023) showed that smart technology in education has value when it supports learning rather than replacing human judgment. In PAI, this principle means that teachers need to ensure that digital media become a space for responsible religious verification, dialogue, and reflection. With such a position, digital-contextual design is predicted to strengthen digital religious literacy and meaningful learning engagement.

The Technological Pedagogical Content Knowledge (TPACK) framework that is extended with contextual knowledge places technology, pedagogy, content, and learning situations as configurations that must be considered together (Mishra, 2019). This idea frames the digital-contextual design variable because it is not enough for PAI teachers to choose appealing media; they must assess the suitability of media for Islamic goals, student readiness, and social context. Molenaar (2022) showed that good learning technology works as a hybrid system that reinforces human pedagogical decisions. In PAI, the explanation leads to the use of technology as support for guidance, not as a substitute for academic authority and teachers' ethical responsibility. Kasneci et al. (2023) emphasized that large language models open up learning opportunities but also carry risks of accuracy and responsibility. Akgun and Greenhow (2022) added that the ethics of educational technology need to be considered from the learning-design stage, especially for school-age students. Conceptually, this relationship becomes stronger because contextual digital design provides students with practice in verifying sources, comparing explanations, and weighing ethical consequences. Therefore, digital-contextual design is positioned as an important predictor of digital religious literacy and meaningful learning engagement.

Digital-contextual design brings together authentic media with students' religious questions so that students are more likely to search, verify, and reflect on sources (Marcus, 2021). Designs that combine digital support and psychological needs have been shown to strengthen engagement in blended learning (Chiu, 2021). The Southeast Asian cultural context confirms that digital pedagogy that is responsive to local experiences makes learning more meaningful and easier to internalize (Nasri et al., 2021). With this footing, H1 was formulated to assess whether PAI's digital-contextual design strengthens students' digital religious literacy.

H1: The digital-contextual design of PAI has a positive effect on the digital religious literacy of Indonesian Generation Z students.

Digital design that aligns with goals, activities, and assessments provides students with a more targeted learning experience than the use of technology as decoration (Suhayib & Ansyari, 2023). The use of digital stories and reflective practices helps students connect the material with everyday experiences (Ilmi et al., 2023). Evidence on blended learning suggests that engagement increases when digital activities provide space for interaction, choice, and meaningful feedback (de Bruijn-Smolters et al., 2024). From this conceptual relationship, H2 was proposed to test the contribution of PAI's digital-contextual design to meaningful learning engagement.

H2: The digital-contextual design of PAI has a positive effect on the meaningful learning engagement of Indonesian Generation Z students.

Autonomy support strengthens internal motivation because students are given reasons, choices, and recognition of their personal voices in learning (Ryan & Deci, 2020). Teacher-student interactions that support psychological needs have been shown to be associated with increased engagement over time (Zeinstra et al., 2023). Studies on autonomy support have also shown that students are better prepared to express self-determination when teachers provide a safe space for participation (Parker et al., 2021). On the basis of this motivational relationship, H3 was directed to test the influence of pedagogical autonomy support on digital religious literacy.

H3: Pedagogical autonomy support has a positive effect on the digital religious literacy of Indonesian Generation Z students.

Classes that openly provide religious reasons make it easier for students to associate religious concepts with personal experiences and ethical choices (Reeve et al., 2021). Online learning that supports autonomy can strengthen cognitive engagement when students feel they have the space to manage their learning process (Chiu, 2021). Psychological-need support prevents religious learning

from turning into passive obedience that weakens value transfer to digital life (Salmela-Aro et al., 2021). With this flow, H4 was formulated to assess whether pedagogical autonomy support strengthens meaningful learning engagement.

H4: Pedagogical autonomy support has a positive effect on the meaningful learning engagement of Indonesian Generation Z students.

The dialogical-moderate climate provides space for students to ask questions, compare explanations, and discuss differences without losing academic manners (MisirHiralall, 2021). An analysis of PAI textbooks shows the importance of a teaching model that reduces exclusive understanding and strengthens a peaceful orientation (Ikhrom et al., 2023). Religious literacy in teacher education also requires the ability to recognize the context, experience, and social complexity of religious practices (Soules & Jafralie, 2021). Departing from this relationship, H5 was proposed to test the influence of a dialogical-moderate climate on students' digital religious literacy.

H5: The dialogical-moderate climate has a positive effect on the digital religious literacy of Indonesian Generation Z students.

Culturally responsive pedagogy emphasizes that students learn more strongly when their social identities, experiences, and language are not excluded from the classroom (Viano & Darling-Aduana, 2026; Nasri et al., 2021). Studies of cultural pedagogy show that recognition of students' values and experiences can strengthen learning achievement and sense of ownership (Walker, 2021). A pedagogical perspective that sustains culture emphasizes the importance of caring for identity while opening space for responsible social criticism (McCarty & Lee, 2021). Through this basis, H6 was formulated to assess the contribution of the dialogical-moderate climate to meaningful learning engagement.

H6: The dialogical-moderate climate has a positive effect on the meaningful learning engagement of Indonesian Generation Z students.

Digital religious literacy allows students not only to access religious content, but also to evaluate sources, understand context, and weigh the social consequences of the messages they receive (Evolvi, 2022; Marcus, 2021; MisirHiralall, 2021). The ability to judge religious information on social media is necessary so that students are not caught up in the popularity of content that is not necessarily valid or proportionate (Marcus, 2021). Religious literacy as a civic competence connects religious understanding with the ability to live together in a pluralistic society

(MisirHiralall, 2021). With this framework, H7 was proposed to test whether digital religious literacy is a direct reinforcer of meaningful learning engagement.

H7: Digital religious literacy has a positive effect on the meaningful learning engagement of Indonesian Generation Z students.

3. Autonomy Support, Dialogical Climate, and Meaningful Engagement

Religious learning engagement is no longer sufficient if it is limited to physical presence and obedience to instructions, but should be understood as cognitive, emotional, social, and reflective participation that makes students relate material to life decisions (Kim et al., 2022). Meaningful learning engagement is defined as a state in which students show attention, effort, belonging, moral reflection, and willingness to consciously practice Islamic values in digital and offline life (Chiu, 2021; Kim et al., 2022; Zeinstra et al., 2023). This definition emphasizes that PAI engagement is not only liking teachers, but also the quality of students' encounters with religious knowledge. Indicators of meaningful engagement include cognitive attention (Chiu, 2021), learning persistence (Kim et al., 2022), emotional attachment (Parker et al., 2021), dialogical participation (Zeinstra et al., 2023), and ethical practice intentions (MisirHiralall, 2021). These indicators allow PAI to be assessed from the depth of students' relationships with the material, not just the completion of assignments. Ryan and Deci (2020) provided the basis that engagement is more stable when students experience autonomy, competence, and connectedness. In this study, autonomy support and a dialogical climate are seen as two pedagogical conditions that make PAI engagement more reflective, not just formal.

The updated theory of human agency places students as actors who are able to interpret situations, choose actions, and assess the moral consequences of their actions (Bandura, 2018). This idea frames PAI engagement because Generation Z students need to be positioned as ethical subjects who learn to make decisions, not as recipients of instruction without room for consideration. Ryan and Deci (2020) added that a sense of autonomy does not mean directionless freedom, but the experience that a person understands the reason for and participates in shaping their learning actions. In the PAI classroom, such autonomy can emerge when the teacher explains the meaning of rules, gives space for questions, and connects doctrinal principles with real dilemmas. Zeinstra et al. (2023) showed that supportive interaction and engagement shape each other over time. This means that the quality of the teacher-student relationship is not an accessory, but a pedagogical infrastructure for religious learning engagement. Salmela-Aro et al. (2021) noted that classroom disruption can weaken the positive effects of supportive teaching, so a dialogical climate still needs to be accompanied by structure. Thus, autonomy support and a dialogical-moderate climate are positioned as pathways that strengthen meaningful engagement.

4. Islamic Religious Education, AI, and Ethical Significance

Recent changes in digital education expand the PAI discussion from media literacy to artificial intelligence (AI) literacy that demands accuracy, responsibility, and epistemic prudence (Crompton & Burke, 2023). AI in education is defined as a computational system that supports search, personalization, feedback, or the generation of learning content through data processing and language patterns (Crompton & Burke, 2023; Molenaar, 2022; Kasneci et al., 2023). In the context of PAI, that definition should be limited by the principles of scholarly authority, source verification, and moral responsibility so that students do not treat machine output as a fatwa or final religious knowledge. Ethical readiness indicators in the face of AI include output verification (Kasneci et al., 2023), bias awareness (Kizilcec et al., 2023), privacy protection (Akgun & Greenhow, 2022), human-AI collaboration (Molenaar, 2022), academic responsibility (Bearman et al., 2023), and responsibility for sharing religious content (Marcus, 2021). These indicators are important because students can use AI to ask questions about verses, hadiths, fiqh, morals, and personal problems without always knowing the quality of the sources of the answers. Chan and Hu (2023) showed that students see the benefits and challenges of generative AI in education, so school responses cannot consist solely of prohibitions. Moorhouse et al. (2023) emphasized the need for an AI policy framework that brings together the needs of teachers, students, and academic governance. Therefore, relevant PAI needs to teach the skills of asking questions, verifying, and weighing digital answers in a civil manner.

The human-AI hybrid learning framework asserts that technology should reinforce human judgment, not take over the ethical responsibilities of educators and learners (Molenaar, 2022). This idea frames the discussion of PAI and AI because religious knowledge always demands context, scholarly chains of transmission, and moral considerations that cannot be completely left to predictive systems. Gašević et al. (2023) emphasized that students need to be empowered to live in the era of AI with reflective capacity. Wang et al. (2023) demonstrated the importance of human-oriented intelligent education architectures, not just technical efficiency. Holmes et al. (2023) reviewed the opportunities and challenges of AI in education, and a critical review of the findings shows that innovation needs to be accompanied by ethics and rigor. Lee et al. (2025) placed ChatGPT in an educational landscape that requires more careful boundaries, policies, and development directions. In PAI, this consideration means that AI can be the subject of discussion about the manners of seeking knowledge, not a shortcut to replace the thinking process. Therefore, ethical significance becomes the main evaluative direction for the relevance of PAI for Generation Z.

Additional literature on digital learning suggests that relevance is born not only from the medium, but from the quality of the task, the context, and the accompanying learning experience (Buchanan et al., 2021). Taryana et al. (2023) showed that field-inquiry-based blended learning can work when digital activities are linked to concrete experiences and local social values. In the context of PAI, the findings are more appropriately interpreted as an analogy of blended learning

that needs to be juxtaposed with goal design and religious context (Suhayib & Ansyari, 2023; Nasri et al., 2021). These findings are important for PAI because religious issues cannot always be understood through screens, but need to be brought together with social practices, living spaces, and student communities. Scholes et al. (2021) emphasized that young people's digital education needs to balance agency and risk, so teachers should neither simply prohibit nor fully deregulate media use. In the context of model analysis, Nguyen et al. (2022) suggested that PLS-SEM can be used to test complex educational relationships if variables, indicators, and model decisions are openly described. The implication for this study is that the PAI model for Generation Z needs to combine pedagogical qualities, digital experiences, and traceable analytical procedures. The literature also reinforces the decision to include digital-contextual design as a variable that includes media, tasks, verification, and reflective assessment. Thus, the position of the following conceptual model is not just a diagram of statistical relationships, but a synthesis of pedagogical, cultural, and methodological needs.

Figure 1 presents a conceptual model that links three pedagogical conditions, namely digital-contextual design, pedagogical autonomy support, and dialogical-moderate climate, with digital religious literacy and meaningful learning engagement.

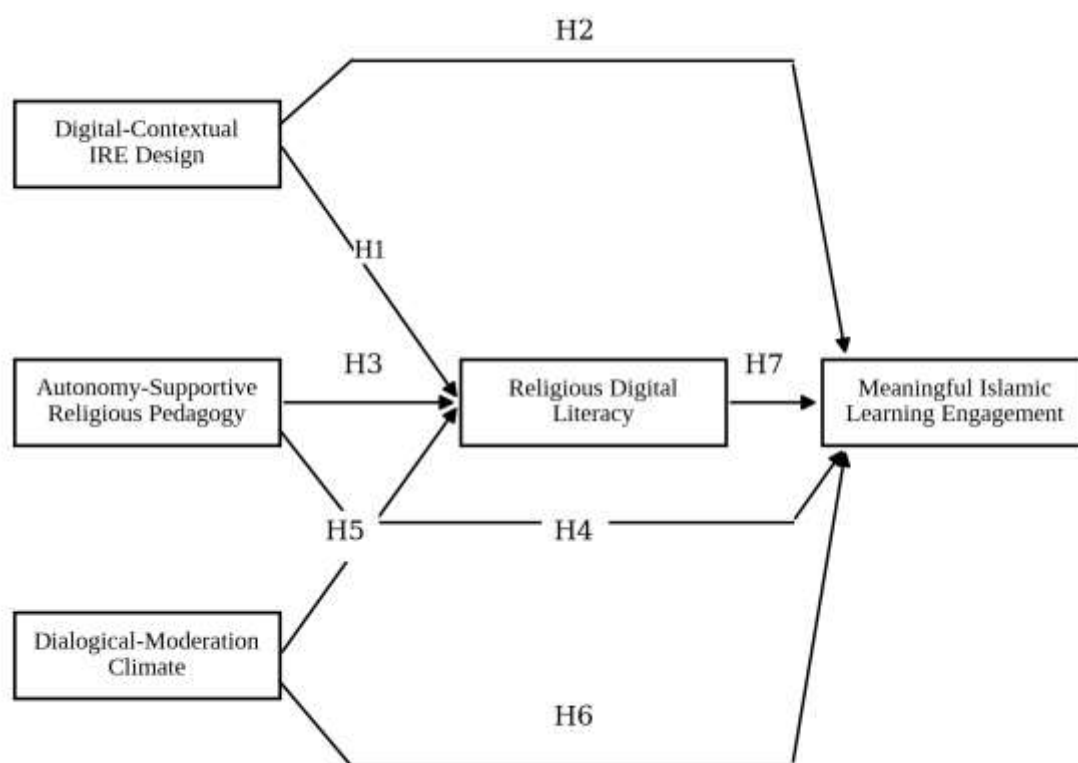


Fig 1. Conceptual Model of Research

The model in Figure 1 contains seven hypothetical paths that place digital religious literacy as the main link between pedagogical conditions and meaningful learning engagement. Pathways H1, H3, and H5 examine the contribution of digital-contextual design, autonomy support, and dialogical-moderate climate to students' ability to critically assess digital religious content. Path H7 assesses the role of digital religious literacy in strengthening meaningful learning engagement. Pathways H2, H4, and H6 test the direct influence of three pedagogical conditions on engagement. The left, center, and right arrangements of the model clarify the conceptual flow from learning design to literacy and engagement competencies. With such a structure, the model not only organizes statistical relationships, but also demonstrates the pedagogical logic that the relevance of PAI is built through design, relationships, dialogue, and literacy practices. The placement of the digital religious literacy variable in the middle confirms its position as an explanatory node, not just an additional variable. This model becomes a bridge among theoretical arguments, quantitative measurements, and qualitative exploration.

METHODS

This study used an explanatory sequential mixed-method design because quantitative questions demanded testing relationships among variables, while qualitative questions required an explanation of the experiences of students and teachers behind statistical patterns (Coates, 2021). The first phase was carried out through a survey to test the conceptual model using Partial Least Squares Structural Equation Modeling (PLS-SEM). The second phase was conducted through interviews, FGDs, and class observations to deepen quantitative findings. This design was chosen because the relevance of PAI cannot be understood only through scores, but also through narratives, tensions, and examples of learning experiences. Alamer and Alrabai (2022) asserted that PLS-SEM is useful for testing complex relationships in educational research when the model has multiple latent constructs. Zhang (2026) showed that the use of PLS-SEM in educational research needs to be accompanied by careful evaluation of measurement models and structural models. Thus, the design of this study allows quantitative data to map relationships, while qualitative data provide depth of meaning. The integration of the two phases was carried out at the interpretation stage so that the numbers and narratives explain each other.

The quantitative participants consisted of 428 students in grades X and XI from high schools, aliyah madrasas, and vocational high schools in six Indonesian provinces. The age range of participants was 15 to 18 years old, so it was in accordance with the characteristics of Generation Z, which was the focus of the research. The sampling technique used was stratified cluster sampling by considering the type of school, region, and school status as part of the mixed-method integration logic (Coates, 2021). The qualitative participants consisted of 32 students, 12 PAI teachers, and 6 deputy principals in the curriculum field who were purposively selected based on variations in engagement scores and school context. The recruitment of qualitative participants was carried out

after the initial quantitative analysis was completed so that the interviews could be directed to patterns that required explanation. Quantitative data were collected using a five-point Likert questionnaire contextualized from the literature on digital education, motivation, religious literacy, and learning engagement and prepared for the evaluation of the PLS-SEM measurement model (Alamer & Alrabai, 2022; Zhang, 2026). Qualitative data were collected using semi-structured interviews, FGDs, and PAI class observations. Participation consent, school permission, data confidentiality, and anonymity of participant codes were maintained as part of research ethics.

Table 1 summarizes the research design, participant characteristics, data collection techniques, and analytical outputs used to answer quantitative and qualitative questions.

Table 1. Summary of research design and data sources

Components	Quantitative	Qualitative	Analytical outputs
Design	Cross-sectional survey	Sequential deepening	Integration of numbers and narratives
Participants	428 Generation Z students	32 students, 12 teachers, 6 curriculum leaders	Relationship models and experience themes
Sampling/recruitment	Stratified cluster sampling	Purposive maximum variation sampling	Variation in the school context
Instruments	Five-point Likert questionnaire	Interview guide, FGDs, observation	Construct and theme scores
Analysis	PLS-SEM, bootstrapping 5,000 subsamples	Reflective thematic coding	Unified interpretation

Table 1 confirms that the qualitative phase serves as a source of explanation for the relationship patterns found in 428 survey responses. The composition of the quantitative participants was adequate for the model with five latent constructs and twenty-three measurement indicators. The selection of 32 students in the qualitative phase helped capture the variety of experiences of students with high, medium, and low engagement. The involvement of 12 teachers provided perspective on pedagogical decisions that were not reflected in student scores. Six curriculum leaders provided information on school policies that affected PAI's innovation space. A combination of interviews, FGDs, and observations allowed for triangulation of techniques. Final integration was performed by comparing path coefficients, qualitative themes, and classroom evidence. Thus, Table 1 shows the flow of the method consistent with the explanatory sequential mixed-method design.

Table 2 presents a quantitative instrument blueprint that contains constructs, indicators, item numbers, and theoretical references to ensure each questionnaire item has a clear conceptual basis.

Table 2. Blueprint of Quantitative Instruments

Construct	Indicators and citations	Item	Example statement
Digital-contextual design of PAI	Authentic media integration (Ilmi et al., 2023); digital problem-based tasks (Chiu, 2021); verification of religious sources (Marcus, 2021); engagement-based reflective assessment (Chiu, 2021; Kim et al., 2022); adaptive feedback (Wang et al., 2023)	DCP1- DCP5	The teacher invited me to check religious sources on the internet before drawing conclusions.
Pedagogical autonomy support	Learning choices (Ryan & Deci, 2020); meaningful reasoning (Reeve et al., 2021); spaces for questioning (Parker et al., 2021); supportive structures (Zeinstra et al., 2023)	ASP1- ASP4	The teacher gives a reasonable reason when explaining religious values or rules.
Dialogical-moderate climate	Safe dialogue (MisirHiralall, 2021); appreciation of differences (Ikhrom et al., 2023); recognition of experiences (Soules & Jafralie, 2021); cultural awareness (Viano & Darling-Aduana, 2026)	DMC1- DMC4	PAI classes provide space to ask questions politely about differences in views.
Digital religious literacy	Resource evaluation (Marcus, 2021); digital context of religion (Evolvi, 2022); AI bias awareness (Akgun & Greenhow, 2022); AI output verification (Kasneci et al., 2023); responsibility for sharing religious content (Marcus, 2021); ethics of AI education (Kizilcec et al., 2023)	RDL1- RDL5	I check the clarity of sources before sharing religious content.
Meaningful learning engagement	Cognitive attention (Chiu, 2021); persistence (Kim et al., 2022); emotional attachment (Parker et al., 2021); dialogical participation (Zeinstra et al., 2023); intentional ethical practice (MisirHiralall, 2021)	MILE1- MILE5	The PAI material helped me make ethical decisions in digital life.

Table 2 shows that each construct is represented by several indicators linked by specific conceptual references. PAI's digital-contextual design has five items because it includes media, tasks, verification, assessment, and feedback. Autonomy support has four items that emphasize learning choices, meaningful reasoning, spaces for questioning, and supportive structures. The dialogical-moderate climate has four items to capture the security of dialogue, appreciation of differences, recognition of experiences, and cultural awareness. Digital religious literacy has five items because these capabilities include resource evaluation, digital context, bias, AI verification, and shared responsibility. Meaningful learning engagement has five items so that the cognitive, emotional, dialogical, and ethical practice dimensions can be identified. The scale used a range

from 1, meaning strongly disagree, to 5, meaning strongly agree. The structure of these items supports the PLS-SEM analysis because each construct has adequate reflective indicators.

Table 3 presents a blueprint of qualitative instruments that guided interviews, FGDs, and class observations on the main constructs of the research.

Table 3. Blueprint of Qualitative Instruments

Focus	Indicators	Technique	Sample questions/observations
Relevance of PAI	Digital context (Evolvi, 2022); personal experience (Tsaliki, 2022); ethical dilemmas (MisirHiralall, 2021)	Student interviews	When do PAI lessons feel close to your digital life?
Learning design	Authentic media (Ilmi et al., 2023); source verification (Marcus, 2021); reflective tasks (Chiu, 2021)	Classroom observation	Do teachers ask students to evaluate sources of digital religious content?
Autonomy support	Choice (Ryan & Deci, 2020); reason (Reeve et al., 2021); space for questioning (Parker et al., 2021)	Teacher interviews	How do teachers give space for choice without weakening the purpose of PAI?
Dialogical climate	Dialogue security (MisirHiralall, 2021); moderation (Ikhrom et al., 2023); ethics of difference (Soules & Jafralie, 2021)	Student FGDs	What religious topics most need to be discussed dialogically?
Meaningful engagement	Reflection (Kim et al., 2022); ethical action (MisirHiralall, 2021); practice intentions (Chiu, 2021)	Student interviews	What changes in attitudes appear after PAI learning?

Table 3 places qualitative instruments as tools for examining experience, not simply confirming scores. The focus of PAI relevance is directed to concrete examples of digital life so that students' answers do not stop at general assessments. The focus of learning design is observed through the actions of teachers in the classroom, especially the facilitation of source verification and reflection. The focus of autonomy support explores teachers' strategies in providing a space for choices that remain directed. The dialogical climate focus assesses whether differences of views are discussed in a safe and civil manner. The focus of engagement examines changes in students' reflection and actions after learning PAI. The participant code uses S for students, G for teachers,

and K for curriculum leaders. This approach keeps the qualitative themes connected to the quantitative constructs.

The content validity of the instrument was assessed by five experts in Islamic education, educational technology, psychometrics, and mixed-methods methodology. Aiken's V score for the 23 questionnaire items was in the range of 0.82 to 0.96, so all items were maintained with minor revisions to digital diction and religious context. The trial was conducted on 72 students outside the main sample to check readability, response variation, and initial reliability. The test results showed Cronbach's alpha in the range of 0.80 to 0.89 and composite reliability in the range of 0.86 to 0.92. Convergent validity analysis on the main sample used outer loading, Average Variance Extracted (AVE), Cronbach's alpha, and composite reliability. Discriminant validity was analyzed using the Heterotrait-Monotrait Ratio (HTMT) with a conservative interpretation threshold below 0.85 (Alamer & Alrabai, 2022; Zhang, 2026). The structural model was tested through path coefficients, t-statistics, p-values, R^2 , f^2 , Q^2 , and Standardized Root Mean Square Residual (SRMR) according to PLS-SEM reporting practices in educational research (Alamer & Alrabai, 2022; Zhang, 2026). The credibility of qualitative data was maintained through methodological triangulation, limited member checking, audit trails, inter-researcher discussions, and storage of analytical memos.

RESULTS

1. Measurement Model and Structural Model

The evaluation of the proposed model was conducted in two main stages using Partial Least Squares Structural Equation Modeling (PLS-SEM). The initial stage focuses on assessing the measurement (outer) model to verify the psychometric properties of the research instruments. This crucial step ensures that all items reliably and validly measure their respective latent constructs before structural relationships can be meaningfully interpreted. Table 4 presents a summary of the reliability, convergent validity, and discriminant validity of the five research constructs after the evaluation of the measurement model.

Table 4. Reliability and validity of constructs

Construct	Number of items	Loading range	Cronbach's alpha	Composite reliability	AVE	Highest HTMT
Digital-contextual design of PAI	5	0.76-0.84	0.86	0.90	0.65	0.71
Pedagogical autonomy support	4	0.75-0.83	0.82	0.88	0.64	0.68
Dialogical-moderate climate	4	0.77-0.86	0.84	0.89	0.67	0.73
Digital religious	5	0.76-0.85	0.87	0.91	0.66	0.76

literacy						
Meaningful	5	0.78-0.87	0.88	0.92	0.69	0.78
learning						
engagement						

Table 4 shows that all constructs have an outer loading range of 0.75 to 0.87, so each indicator is above the practical limit used in the evaluation of the measurement model. Cronbach's alpha values range from 0.82 to 0.88, while composite reliability ranges from 0.88 to 0.92; these two results show strong internal consistency. The Average Variance Extracted (AVE) value is in the range of 0.64 to 0.69, so convergent validity is considered adequate. The highest Heterotrait-Monotrait Ratio (HTMT) is 0.78, which means that the constructs are still conceptually and empirically distinguishable. Meaningful learning engagement has the highest AVE of 0.69, so the variation of its indicators is most strongly explained by the latent construct. PAI's digital-contextual design has a composite reliability of 0.90, which indicates that its five indicators worked coherently. The interpretation of outer loading, composite reliability, AVE, HTMT, and measurement feasibility followed the PLS-SEM reporting guidelines for educational research (Alamer & Alrabai, 2022; Zhang, 2026). Based on this pattern, the measurement model is feasible to proceed to structural testing. Table 5 presents the results of hypothesis testing using bootstrapping of 5,000 subsamples to assess the direction, strength, and significance of the structural pathways.

Table 5. Results of testing the structural model hypothesis

Hypothesis	Pathway	β	t	p	f ²	Verdict
H1	DCP -> RDL	0.34	6.89	<0.001	0.16	Supported
H2	DCP -> MILE	0.19	3.47	0.001	0.07	Supported
H3	ASP -> RDL	0.27	5.16	<0.001	0.10	Supported
H4	ASP -> MILE	0.15	2.53	0.012	0.04	Supported
H5	DMC -> RDL	0.29	5.84	<0.001	0.12	Supported
H6	DMC -> MILE	0.22	4.26	<0.001	0.08	Supported
H7	RDL -> MILE	0.41	8.23	<0.001	0.23	Supported

Note. DCP = digital-contextual design of PAI; ASP = pedagogical autonomy support; DMC = dialogical-moderate climate; RDL = digital religious literacy; MILE = meaningful learning engagement.

Table 5 shows that all hypotheses were supported by the data. The strongest influence was the digital religious literacy pathway on meaningful learning engagement with a coefficient of $\beta = 0.41$ and $t = 8.23$. PAI's digital-contextual design pathway toward digital religious literacy was also strong with $\beta = 0.34$ and $t = 6.89$. The dialogical-moderate climate had an effect on digital religious literacy with $\beta = 0.29$, while pedagogical autonomy support had an effect with $\beta = 0.27$. The direct influence of digital-contextual design on meaningful engagement was at $\beta = 0.19$. The effect of

autonomy support on meaningful engagement was the lowest but still significant pathway with $\beta = 0.15$ and $p = 0.012$. The model explains 56% of the variance of digital religious literacy and 64% of the variance of meaningful learning engagement. A Standardized Root Mean Square Residual (SRMR) value of 0.061 indicates acceptable model fit for socio-educational research (Alamer & Alrabai, 2022; Zhang, 2026).

Figure 2 presents an outer loading model and path coefficients from the PLS-SEM test with a visual pattern that is aligned with the conceptual model in Figure 1.

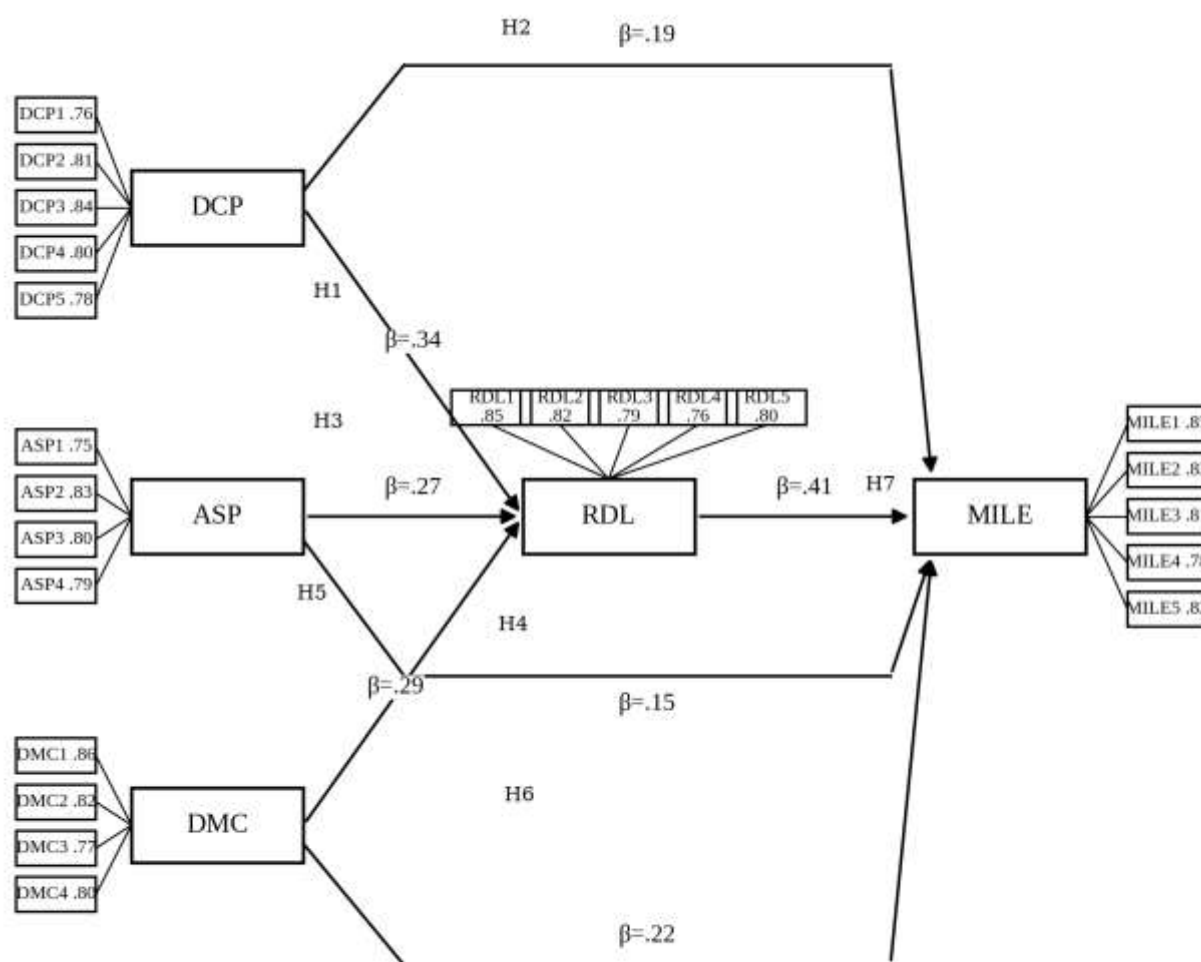


Fig 2. Outer loading model and path coefficients

The visual results in Figure 2 show that each construct has measurement indicators with outer loadings of 0.75 to 0.87. PAI's digital-contextual design has five indicators, with the highest loading

on DCP3 of 0.84. Pedagogical autonomy support has four indicators, with the highest loading on ASP2 of 0.83. The dialogical-moderate climate has four indicators, with the highest loading on DMC1 of 0.86. Digital religious literacy has five indicators, with the highest loading on RDL1 of 0.85. Meaningful learning engagement has five indicators, with the highest loading on MILE1 of 0.87. The largest structural path is RDL $\rightarrow$ MILE with $\beta = 0.41$, while the smallest direct path is ASP $\rightarrow$ MILE with $\beta = 0.15$. Because the visual pattern is the same as the conceptual model, readers can compare the hypothesis design and the computational results more easily.

2. The Meaning of PAI Relevance for Generation Z

Table 6 presents thematic coding results from interviews, FGDs, and classroom observations to explain empirical support for quantitative pathways in the model.

Table 6. Qualitative data codification

Main themes	Subtheme	Core code	Data source
PAI is close to digital life	Dilemma of religious content	Verification, comments, lecture excerpts	Student interviews; FGDs
PAI as a safe space for questioning	Dialogue without fear of blame	Sensitive questions, manners, reasons	Student interviews; Observation
Teachers as curators of meaning	Source selection and examples	authoritative sources, context, comparison	Teacher interviews; Observation
Meaningful engagement	Reflection and ethical action	Withhold comments, choose content, share wisely	Student interviews; FGDs

Table 6 summarizes four main themes that collectively explain the quantitative results. The first theme shows that students felt PAI was relevant when the lesson touched on the dilemma of religious content on social media. The second theme shows the importance of a safe space for questioning because many students had religious questions but were worried that they would be perceived as oppositional. The third theme places the teacher as a curator of meaning who helps students assess the source, context, and boundaries of digital authority. The fourth theme shows that meaningful engagement is seen in small actions, such as holding back comments, checking sources, or choosing more responsible content. These four themes explain why digital religious literacy is the strongest pathway to meaningful engagement. Qualitative data also show that relevance does not always arise from sophisticated media, but from the way teachers connect the material to students' life situations. Thus, Table 6 gives interpretive depth to the statistical patterns shown in Table 5.

a. The Dilemma of Digital Religious Content

This theme emphasizes that students consider PAI relevant when learning helps them carefully examine religious content circulating on social media. Interview data showed that students often found provocative lecture excerpts, brief advice with unclear sources, or religious comments that burdened peer identity relationships. In such situations, learning that only repeats the book material is not always enough to help students take a stand. Teachers who invited students to compare sources and examine the context made students feel that religious lessons touched on the problems they faced. Classroom observations also showed that discussions based on digital content examples made students more active in asking questions. This subtheme reinforces the quantitative results that digital-contextual design has an effect on digital religious literacy. The relationship appeared because students needed real practice to sort religious information. The following two excerpts show how students and teachers interpreted the dilemma.

Based on student interviews, one of the participants described an experience when the teacher asked the class to compare a short lecture piece with an explanation from a more complete source.

"I just realized that short videos about certain laws often cut out the context. When the teacher asked us to find a more complete source, I didn't immediately share religious videos just because many people liked them." (S-07)

The excerpt shows that the relevance of PAI arises when students acquire a thinking procedure, not just a single answer.

Based on class observations, teachers were seen displaying two examples of digital religious content and asking students to assess the clarity of the speakers, the context of the questions, and the impact if the content was shared.

"Students work in pairs, marking parts of content that are not clear from the source, and then writing clarification questions before drawing conclusions. The discussion is active, especially when students compare the title of the video with the content of the explanation." (O-03)

The observation excerpt shows that verification activities can be a concrete learning experience and do not reduce religious substance.

b. Safe and Moderate Spaces for Questioning

This theme emphasizes that students need PAI classes as a space that allows difficult questions to be discussed academically and in a civil manner. Students' questions are not always born from a rejection of religion, but from encounters with digital issues, differences in practices, and complex social experiences. When teachers responded to questions with calm explanations, students felt more courageous in clarifying their understanding. When teachers responded with reproach, students tended to look for answers in digital spaces without guidance. This subtheme explains why the dialogical-moderate climate has a positive effect on digital religious literacy and meaningful engagement. Safe dialogue strengthens students' ability to ask questions responsibly.

Moderation does not mean weakening religious principles, but managing differences with arguments and manners. The following two excerpts clarify the meaning of spaces for questioning.

Based on an FGD, one student explained that classes became more meaningful when teachers did not immediately judge questions about social media issues.

"Sometimes we ask not to refute, but because on TikTok there are many different opinions. If the teacher explains the reason and does not get angry, we are more confident to ask again." (FGD-S-12)

The excerpt shows that the safety of dialogue increases students' confidence in the PAI learning process.

Based on the teacher interview, one teacher explained that he deliberately distinguished between questions that reflected misunderstanding and impolite attitudes.

"I tried to open the space for questions, but still emphasized manners. Children need to know that differences of opinion can be discussed with knowledge, not by mocking each other or removing context." (G-04)

This snippet shows that moderate dialogue requires a clear value structure so that freedom of inquiry does not shift into relativism without a foothold.

DISCUSSION

This study aimed to examine the influence of PAI's digital-contextual design, pedagogical autonomy support, and dialogical-moderate climate on digital religious literacy and meaningful learning engagement, and then explain the experiences of students and teachers behind these patterns. The first finding showed that PAI's digital-contextual design is the strongest predictor of digital religious literacy among the three pedagogical variables. This result is in line with Chiu (2021), who placed digital support as a driver of engagement when technology meets learning needs. This result is also supported by Nasri et al. (2021), who emphasized the importance of cultural context in online pedagogy. Ilmi et al. (2023) showed that digital stories can transform teachers' reflective practices into learning experiences that are closer to students. Marcus (2021) emphasized that religious literacy on social media requires a strategy that is aware of the mechanism of information dissemination. Wang et al. (2023) supported these findings through the idea of human-oriented intelligent education. However, these results differ from studies that emphasize digital infrastructure as a key issue, such as Aditia (2023), Musthofa (2023), Crompton and Burke (2023), and Hwang et al. (2023). This difference can be explained because this study assesses the quality of the design and context of PAI, not just access to or intensity of technology use. Thus, PAI digitization appears to be more effective when technology is used for source verification, reflection, and dialogue, rather than as merely visual packaging.

The second finding showed that pedagogical autonomy support has a positive effect on digital religious literacy and meaningful learning engagement. This result strengthens Ryan and Deci

(2020), who explained that autonomy, competence, and connectedness are the basis for sustainable motivation. Reeve et al. (2021) supported this pattern through the relationship between supportive teaching practices and student need satisfaction. Zeinstra et al. (2023) showed that supportive teacher-student interaction and engagement develop gradually and reciprocally throughout the school year. Parker et al. (2021) showed that autonomy support and self-determination skills are predictive of student engagement. Chiu (2021) also found that autonomy support in online learning can strengthen cognitive engagement. However, the direct effect of autonomy support on engagement in this study was smaller than the influence of digital religious literacy, and this differs from the strong emphasis on motivation in Salmela-Aro et al. (2021), Kim et al. (2022), Lei et al. (2021), and de Bruijn-Smolters et al. (2024). This difference can be explained because PAI has a normative and authoritative dimension that makes autonomy need to be translated through literacy and manners, not completely individual freedom of learning. In other words, autonomy in PAI works most productively when students are given reasons, guided choices, and ways to verify religious knowledge.

The third finding showed that a dialogical-moderate climate has a positive effect on digital religious literacy and meaningful learning engagement. This finding is supported by MisirHiralall (2021), who placed religious literacy as civic education for the common good. Soules and Jafralie (2021) emphasized that religious literacy in teacher education must recognize context and experience. Ikhrom et al. (2023) showed the need for an Islamic teaching model that avoids intolerant narratives. Viano and Darling-Aduana (2026) showed that culturally relevant pedagogy can strengthen the quality of online learning. Walker (2021) showed that acknowledgment of student culture can increase a sense of ownership in learning. These results differ from studies that place digital religion primarily as a media and identity phenomenon, such as Evolvi (2022), Tsaliki (2022), Pearce and Denton (2022), and Döring (2022). The difference occurs because this study includes the classroom climate as a pedagogical space that can direct digital experiences toward more reflective conversations. Thus, moderation in PAI does not only function as value content, but as a dialogue condition that enables students to talk about differences with knowledge and responsibility.

The fourth finding showed that digital religious literacy is the strongest predictor of meaningful learning engagement. This result is in line with Marcus (2021), who emphasized the need for strategic amplification of religious literacy on social media. Evolvi (2022) supported this result because the practice of digital religion demands an understanding of hybrid spaces and new materialities. MisirHiralall (2021) strengthened the social meaning of religious literacy as the ability to live together in difference. Soules and Jafralie (2021) showed the importance of religious literacy in teacher preparation, and its implications can be extended to student learning. Kizilcec et al. (2023) added that the ethics of technology in education demand clear principles when students are dealing with digital systems. These results are different from educational AI studies that emphasize

personalization and efficiency, such as Molenaar (2022), Chan and Hu (2023), Moorhouse et al. (2023), and Kasneci et al. (2023). The difference arises because religious learning requires not only personalization, but also source validation, epistemic discipline, and moral responsibility. Therefore, digital religious literacy is the axis of PAI relevance because it transforms digital access into the ability to understand and act ethically.

The novelty of this research lies in the development of a mixed model that places digital religious literacy as a connecting node among digital-contextual design, autonomy support, dialogical-moderate climate, and meaningful learning engagement in PAI for Indonesia's Generation Z. This novelty is different from PAI studies that focus on curriculum design, spirituality, or textbook analysis because this research combines pedagogical, motivational, digital, and religious constructs in one empirical model. The second novelty lies in the way the research combines PLS-SEM with qualitative evidence so that the relationship can be explained through student experience and teacher practice. The third novelty lies in the digital religious literacy indicator, which includes source verification, bias awareness, sharing responsibility, and understanding of the digital context of religion. The fourth novelty is the placement of the dialogical-moderate climate as a pedagogical condition, not just as a normative value. The theoretical implication of this research is the expansion of PAI studies toward the integration of motivational theory, religious literacy, cultural pedagogy, and digital education. The practical implication is that teachers need to design PAI learning that assigns content-verification tasks, provides safe dialogue spaces, and promotes reflection on ethical actions. The policy implication is that PAI teacher training should not only emphasize the use of platforms, but also resource curation, AI ethics, and learning design that is responsive to students' digital experiences.

The limitations of this research need to be interpreted proportionately so that the model offered is not understood as a single formula for the entire context of PAI in Indonesia. First, quantitative data used a cross-sectional design, so the relationships among variables should not be interpreted as longitudinal causality. Second, the sample covered six provinces and does not represent the entire diversity of Islamic boarding schools, rural schools, urban schools, and religious minority communities more broadly. Third, the qualitative data focused on the PAI classroom experience and did not trace students' interactions with families, digital da'wah communities, or platform algorithms ethnographically. Fourth, digital religious literacy instruments still need to be retested in different age groups and education levels. Fifth, the rapid development of generative AI can change the shape of literacy challenges in a short period of time (Kasneci et al., 2023; Chan & Hu, 2023; Moorhouse et al., 2023). These limitations do not weaken the research contribution, but point to a more precise development agenda. Subsequent research can use longitudinal designs, pedagogical experiments, digital log analysis, and cross-contextual observation to reinforce this model.

CONCLUSION

This study concludes that PAI that is relevant to Indonesia's Generation Z needs to be designed as a learning experience that connects religious knowledge, digital literacy, motivational support, and moderate dialogue. Quantitative questions were answered through the findings that PAI's digital-contextual design, pedagogical autonomy support, and dialogical-moderate climate had a positive effect on digital religious literacy and meaningful learning engagement. Quantitatively, the digital religious literacy pathway to meaningful engagement was the strongest relationship ($\beta = 0.41$; $t = 8.23$), while the model explained 56% of digital religious literacy variance and 64% of meaningful engagement variance. Digital religious literacy was the most powerful pathway to meaningful engagement with $\beta = 0.41$, $t = 8.23$, and $p < 0.001$. The model explained 56% of the variance of digital religious literacy and 64% of the variance of meaningful learning engagement, so the relationships among variables had sufficient clarity. Qualitative questions were answered through the theme that students considered PAI relevant when the lesson touched on the dilemma of digital religious content, provided a safe space for questioning, presented the teacher as a curator of meaning, and encouraged daily ethical actions. These findings show that the relevance of PAI is not synonymous with digital entertainment, but rather with the depth of the relationship between religious material and students' real problems. PAI teachers need to maintain the accuracy of religious knowledge while opening a dialogue space that makes students unafraid to ask questions. Schools need to place the digitization of PAI as a literacy agenda, not just a device agenda. Thus, PAI reform for Generation Z needs to run through design, relationships, literacy, and ethics at the same time.

Subsequent research is suggested using longitudinal designs to assess whether digital religious literacy actually improves students' engagement and ethical practices in the long run. Experimental studies are also needed to compare the effectiveness of digital-contextual PAI models with conventional learning models. Future researchers can expand the sample to pesantren, rural schools, urban schools, and schools with different socio-religious characteristics. Instrument development should include new indicators on artificial intelligence, digital authority, and the ethics of sharing religious content. Digital ethnographic studies can be conducted to trace how students move among PAI classes, social media, families, and online da'wah communities. Policy research is also important to examine curriculum readiness, teacher training, and school governance in the face of AI and digital religious content. Teachers can use the blueprints in this article as a basis for initial reflection, but they still need to adapt them to students' conditions and school policies. With this advanced agenda, PAI can develop into a deep-rooted, dialogical, and relevant religious education for the generation living amid digital currents.

REFERENCES

- Aditia, R. (2023). Key factors to foster academic performance in online learning environment: Evidence from Indonesia during COVID-19 pandemic. *Cogent Education*, 10(1), 2174726. <https://doi.org/10.1080/2331186X.2023.2174726>
- Akgun, S., & Greenhow, C. (2022). Artificial intelligence in education: Addressing ethical challenges in K-12 settings. *AI and Ethics*, 2, 431-440. <https://doi.org/10.1007/s43681-021-00096-7>
- Alamer, A., & Alrabai, F. (2022). Partial Least Squares Structural Equation Modeling (PLS-SEM) in second language and education research: Guidelines using an applied example. *Research Methods in Applied Linguistics*, 1(3), 100027. <https://doi.org/10.1016/j.rmal.2022.100027>
- Bandura, A. (2018). Toward a psychology of human agency: Pathways and reflections. *Perspectives on Psychological Science*, 13(2), 130-136. <https://doi.org/10.1177/1745691617699280>
- Bearman, M., Ryan, J., & Ajjawi, R. (2023). Learning to work with the black box: Pedagogy for a world with artificial intelligence. *British Journal of Educational Technology*, 54(5), 1160-1173. <https://doi.org/10.1111/bjet.13337>
- Buchanan, R., Southgate, E., Smith, S. P., Murray, T., & Noble, B. (2021). Postdigital learning for a changing higher education. *British Journal of Educational Technology*, 52(6), 2164-2177. <https://doi.org/10.1111/bjet.13166>
- Chan, C. K. Y., & Hu, W. (2023). Students' voices on generative AI: Perceptions, benefits, and challenges in higher education. *International Journal of Educational Technology in Higher Education*, 20, 43. <https://doi.org/10.1186/s41239-023-00411-8>
- Chanifah, N., Hanafi, Y., Mahfud, C., & Samsudin, A. (2021). Designing a spirituality-based Islamic education framework for young Muslim generations: A case study from two Indonesian universities. *Higher Education Pedagogies*, 6(1), 195-211. <https://doi.org/10.1080/23752696.2021.1960879>
- Chiu, T. K. F. (2021). Digital support for student engagement in blended learning based on self-determination theory. *Computers in Human Behavior*, 124, 106909. <https://doi.org/10.1016/j.chb.2021.106909>
- Chiu, T. K. F. (2021). Student engagement in K-12 online learning amid COVID-19: A qualitative approach from a self-determination theory perspective. *Interactive Learning Environments*, 31(6), 3326-3339. <https://doi.org/10.1080/10494820.2021.1926289>
- Coates, A. (2021). The prevalence of philosophical assumptions described in mixed methods research in education. *Journal of Mixed Methods Research*, 15(2), 171-189. <https://doi.org/10.1177/1558689820958210>
- Crompton, H., & Burke, D. (2023). Artificial intelligence in higher education: The state of the field. *International Journal of Educational Technology in Higher Education*, 20, 22. <https://doi.org/10.1186/s41239-023-00392-8>
- de Bruijn-Smolters, M., & colleagues. (2024). Effective student engagement with blended learning: A systematic review. *Heliyon*, 10(23), e39439. <https://doi.org/10.1016/j.heliyon.2024.e39439>

- Döring, N. (2022). Digital media and relationships, sex, and health education in the classroom. *Pastoral Care in Education*, 40(3), 289-305. <https://doi.org/10.1080/02643944.2022.2095418>
- Evolvi, G. (2022). Religion and the internet: Digital religion, (hyper)mediated spaces, and materiality. *Zeitschrift für Religion, Gesellschaft und Politik*, 6, 9-25. <https://doi.org/10.1007/s41682-021-00087-9>
- Gašević, D., Siemens, G., & colleagues. (2023). Empowering learners for the age of artificial intelligence. *Computers and Education: Artificial Intelligence*, 4, 100130. <https://doi.org/10.1016/j.caeai.2023.100130>
- Holmes, W., Tuomi, I., & colleagues. (2023). Systematic literature review on opportunities, challenges, and future research recommendations of artificial intelligence in education. *Computers and Education: Artificial Intelligence*, 4, 100118. <https://doi.org/10.1016/j.caeai.2022.100118>
- Hwang, G. J., Xie, H., Wah, B. W., & Gašević, D. (2023). Leading digital transformation and eliminating barriers for teachers to incorporate artificial intelligence in basic education. *Computers and Education: Artificial Intelligence*, 5, 100171. <https://doi.org/10.1016/j.caeai.2023.100171>
- Ikhrom, I., Mubaraq, Z., & colleagues. (2023). Intolerance in Islamic textbooks: The quest for an Islamic teaching model for Indonesian schools. *Cogent Education*, 10(2), 2268454. <https://doi.org/10.1080/2331186X.2023.2268454>
- Ilmi, M., & colleagues. (2023). Adopting digital storytelling in English classrooms: Lessons learned from Indonesian EFL teachers' reflective practice. *Reflective Practice*, 24(4), 496-508. <https://doi.org/10.1080/14623943.2023.2210072>
- Kasneci, E., Sessler, K., Küchemann, S., Bannert, M., Dementieva, D., Fischer, F., ... Kasneci, G. (2023). ChatGPT for good? On opportunities and challenges of large language models for education. *Learning and Individual Differences*, 103, 102274. <https://doi.org/10.1016/j.lindif.2023.102274>
- Kim, S. Y., Westine, C., Wu, T., & Maher, D. (2022). Validation of the Higher Education Student Engagement Scale in use for program evaluation. *Journal of College Student Retention: Research, Theory & Practice*, advance online publication. <https://doi.org/10.1177/15210251221120908>
- Kizilcec, R. F., Reich, J., Yeomans, M., Dann, C., Brunskill, E., Lopez, G., Turkay, S., & Tingley, D. (2023). Ethical principles for artificial intelligence in K-12 education. *Computers and Education: Artificial Intelligence*, 4, 100131. <https://doi.org/10.1016/j.caeai.2023.100131>
- Lee, D., & colleagues. (2025). ChatGPT in education: A systematic review of current landscape, limitations and future directions through general system theory lens. *European Journal of Education*, 60(4), e70262. <https://doi.org/10.1111/ejed.70262>
- Lei, H., & colleagues. (2021). An integrated model for exploring college students' engagement and competence development in flipped learning using partial least squares path modeling. *Interactive Learning Environments*, 31(4), 2203-2218. <https://doi.org/10.1080/10494820.2021.1881799>

- Marcus, B. (2021). Religious literacy in social media: A need for strategic amplification. *Religion & Education*, 48(1), 89-101. <https://doi.org/10.1080/15507394.2021.1876507>
- McCarty, T. L., & Lee, T. S. (2021). Culturally responsive, sustaining, and revitalizing pedagogies: Perspectives from Native American education. *The Educational Forum*, 85(4), 429-443. <https://doi.org/10.1080/00131725.2021.1957642>
- Mishra, P. (2019). Considering contextual knowledge: The TPACK diagram gets an upgrade. *Journal of Digital Learning in Teacher Education*, 35(2), 76-78. <https://doi.org/10.1080/21532974.2019.1588611>
- MisirHiralall, S. (2021). Religious literacy: Civic education for a common good. *Religion & Education*, 48(1), 1-16. <https://doi.org/10.1080/15507394.2021.1876508>
- Molenaar, I. (2022). Towards hybrid human-AI learning technologies. *European Journal of Education*, 57(4), 632-645. <https://doi.org/10.1111/ejed.12527>
- Moorhouse, B. L., Yeo, M. A., & Wan, Y. (2023). A comprehensive AI policy education framework for university teaching and learning. *International Journal of Educational Technology in Higher Education*, 20, 38. <https://doi.org/10.1186/s41239-023-00408-3>
- Musthofa, M. (2023). The influence of online learning on student professionalism Teacher Professional Education Program: Studies in Islamic higher education in Indonesia. *Cogent Education*, 10(2), 2276025. <https://doi.org/10.1080/2331186X.2023.2276025>
- Nasri, N., Abd Talib, M. A., & colleagues. (2021). Regional contextualization of culturally responsive online distance pedagogy (CRODP) among Southeast Asia higher educators. *Interactive Learning Environments*, 31(7), 4599-4616. <https://doi.org/10.1080/10494820.2021.1967407>
- Nguyen, C. Q., Nguyen, A. M. T., & Le, L. B. (2022). Using partial least squares structural equation modeling (PLS-SEM) to assess the effects of entrepreneurial education on engineering students' entrepreneurial intention. *Cogent Education*, 9(1), 2122330. <https://doi.org/10.1080/2331186X.2022.2122330>
- Parker, J. S., Parris, L., Lau, M., Dobbins, A., Shatz, L., Porush, S., & Wilkins, B. (2021). Perceived teacher autonomy support and self-determination skill expression: Predictors of student engagement among African American high school students. *Journal of Black Psychology*, 47(7), 529-556. <https://doi.org/10.1177/00957984211009190>
- Pearce, L. D., & Denton, M. L. (2022). Screen time, social media, and religious commitment among adolescents. *The Sociological Quarterly*, 64(2), 250-273. <https://doi.org/10.1080/00380253.2022.2089270>
- Pothong, K., & Livingstone, S. (2022). Children and young people's rights in the digital environment. *Information, Communication & Society*, 25(4), 485-491. <https://doi.org/10.1080/1369118X.2022.2039748>
- Reeve, J., Cheon, S. H., & Jang, H. R. (2021). Connecting teacher and student motivation: Student-perceived teacher need-supportive practices and student need satisfaction. *Contemporary Educational Psychology*, 64, 101950. <https://doi.org/10.1016/j.cedpsych.2021.101950>

- Ryan, R. M., & Deci, E. L. (2020). Intrinsic and extrinsic motivation from a self-determination theory perspective: Definitions, theory, practices, and future directions. *Contemporary Educational Psychology*, 61, 101860. <https://doi.org/10.1016/j.cedpsych.2020.101860>
- Salmela-Aro, K., & colleagues. (2021). Perceived classroom disruption undermines the positive educational effects of perceived need-supportive teaching in science. *Learning and Instruction*, 75, 101498. <https://doi.org/10.1016/j.learninstruc.2021.101498>
- Scholes, L., & colleagues. (2021). Young people, digital media, and education: Negotiating agency and risk. *Journal of Education for Teaching*, 47(5), 681-694. <https://doi.org/10.1080/02607476.2021.1989986>
- Soules, K., & Jafralie, S. (2021). Religious literacy in teacher education. *Religion & Education*, 48(1), 37-56. <https://doi.org/10.1080/15507394.2021.1876497>
- Suhayib, & Ansyari, M. F. (2023). Design of Islamic Religious Education: Purposes, alignment of curriculum components and contexts. *British Journal of Religious Education*, 45(4), 382-393. <https://doi.org/10.1080/01416200.2023.2220940>
- Taryana, D., Sumarmi, S., Astina, I. K., & colleagues. (2023). Implementing fieldwork based on blended learning using geo-inquiry approach: Will it work during the COVID-19 pandemic? *International Research in Geographic and Environmental Education*, 33(2), 125-138. <https://doi.org/10.1080/10382046.2023.2214043>
- Tsaliki, L. (2022). Constructing young selves in a digital media ecology: Youth cultures, practices and identity. *Information, Communication & Society*, 25(4), 477-484. <https://doi.org/10.1080/1369118X.2022.2039747>
- Viano, S., & Darling-Aduana, J. (2026). Culturally relevant pedagogy in K-12 online learning: A systematic review. *Review of Educational Research*, advance online publication. <https://doi.org/10.3102/00346543251320355>
- Walker, B. J. (2021). Using culturally relevant pedagogy to influence literacy achievement for middle school Black male students. *Journal of Adolescent & Adult Literacy*, 64(4), 421-430. <https://doi.org/10.1002/jaal.1114>
- Wang, Y., Zheng, Q., Xu, X., Wang, Y., & Lu, H. (2023). Working toward advanced architectures for next-generation human-centric intelligent education. *Computers and Education: Artificial Intelligence*, 4, 100167. <https://doi.org/10.1016/j.caeai.2023.100167>
- Zeinstra, L., Kupers, E., Loopers, J., & de Boer, A. (2023). Real-time teacher-student interactions: The dynamic interplay between need supportive teaching and student engagement over the course of one school year. *Teaching and Teacher Education*, 121, 103906. <https://doi.org/10.1016/j.tate.2022.103906>
- Zhang, W. (2026). An assessment of the use of Partial Least Squares Structural Equation Modelling (PLS-SEM) in educational leadership and management research. *European Journal of Education*, 61(2), e70600. <https://doi.org/10.1111/ejed.70600>