
INNOVATION OF ISLAMIC LEARNING MEDIA WITH VIRTUAL REALITY TECHNOLOGY

Nur Kholida Zia

CV Media Jaza Utama

kholidazia@gmail.com

Abstract

This research is motivated by the limited exploration of the use of immersive technologies such as Virtual Reality (VR) in the context of Islamic Religious Education (PAI), despite its significant potential in shaping the understanding of religious values in the digital era. The purpose of this study is to examine the perceptions, experiences, and impacts of the use of VR media in PAI learning on student engagement and understanding of abstract religious concepts, while also identifying factors that support and hinder its implementation. This study used a qualitative method with a single embedded case study design, involving 20 participants consisting of 15 students, 4 PAI teachers, and 1 principal from a private high school in Indonesia selected through purposive sampling. Data were collected through semi-structured interviews, observations of VR learning sessions, and analysis of documents such as lesson plans and student reflective journals. Data analysis was conducted using a thematic approach. The results showed that the use of VR significantly increased students' emotional, cognitive, and behavioral engagement. Abstract concepts such as the Hajj rituals or Islamic history can be understood more concretely through direct experience. This research supports the constructivist and experiential learning approaches, which emphasize the role of experience in building knowledge. The main conclusion states that VR is a transformative medium that creates a sense of presence, but its success depends on infrastructure, teacher competence, and appropriate content.

Keywords: Virtual Reality; Learning Media; Islamic Religious Education; Technological Innovation; Immersive Learning.

INTRODUCTION

Research Issue: The Gap between Traditional Teaching Methods and the Needs of the Digital Generation

Islamic Religious Education (PAI) in the contemporary era faces complex and multidimensional challenges (Abdul et al., 2019). On the one hand, PAI has a fundamental duty to instill the values of faith, morals, and sharia that form the foundation of students' character (Agusalim et al., 2021). On the other hand, PAI must be able to dialogue with the times, presenting Islamic teachings in a relevant, engaging, and easily understood manner for Generation Z and Alpha, who are *digital natives* (Sandy et al., 2023). This generation

grew up in a fast-paced, visual, and interactive digital ecosystem (Aswirna et al., 2023). Conventional learning methods that tend to be teacher *-centered* , relying on lectures, memorization, and textbooks, often create a distance between the teaching material and the realities of students' lives (Karimizadeh & Yi, 2023). As a result, many abstract or historical concepts in PAI—such as the Hajj pilgrimage procession, visualizations of the events of the Prophet's Sirah, or the architectural grandeur of past Islamic civilization—become difficult to internalize and are only understood at a superficial cognitive level.

This research is motivated by the limited number of studies that comprehensively explore innovative solutions to bridge this gap (Tirza & Cendana, 2023), even though the phenomenon of student disinterest in Islamic Religious Education (PAI) has a significant impact on the effectiveness of character and spiritual education in schools. Globally, the use of educational technology (*EdTech*) has shown extraordinary potential to revolutionize learning (Adijaya et al., 2023). One of the most promising technologies is Virtual Reality (VR). VR is a technology capable of creating immersive three-dimensional simulated environments, allowing users to feel "presence" *and* interact with virtual worlds as if they were real (Irvani & Warliani, 2022). The use of VR in general education has been shown to increase student motivation, engagement, and knowledge retention in various fields such as science, medicine, and engineering (Arifin et al., 2023). However, its application in the context of Islamic Religious Education, particularly in Indonesia, remains very limited and has not been studied in depth from a pedagogical perspective. Several existing initiatives have generally only scratched the surface, such as the development of Hajj or Umrah ritual simulation applications. Despite its benefits, this innovation has not been explored for its potential for broader Islamic Religious Education content and its qualitative impact on student learning experiences and the role of teachers has not been analyzed.

Researchers' Response: The Urgency of VR Integration Based on Modern Learning Theory

Based on an analysis of these challenges, researchers argue that simply adopting VR technology is not enough (Nugroho & Khasanah, 2023). Innovation must be based on a strong theoretical foundation to avoid becoming a mere technological gimmick. This phenomenon deserves further study because VR inherently aligns with the principles of modern learning theory that have proven effective (Taouki et al., 2022). According to

constructivist learning theory, pioneered by thinkers such as Jean Piaget and Lev Vygotsky, knowledge is not passively transferred from teacher to student but is actively constructed by students through interactions with their environment (Stebner et al., 2022). VR provides a rich, interactive, and safe environment for students to explore, experiment, and construct their own understanding. For example, students can not only read descriptions of the Kaaba but can also “stand” before it, “perform” the circumambulation (tawaf), and virtually experience its scale and spiritual atmosphere.

Previous Research and Research Gaps

A literature review shows that research on technology in Islamic Religious Education (PAI) largely focuses on the use of simpler media, such as instructional videos, e-learning platforms, or mobile apps (Paminto et al., 2023). These studies make important contributions, but they have yet to fully explore the transformative potential of immersive technology. Some preliminary research on VR in the Islamic context does exist, but its scope is very specific (Anand et al., 2021). For example, several studies and development reports focus on the technical aspects of creating Hajj and Umrah apps, measuring app functionality, or the level of satisfaction of early users. These studies generally focus on the "what" (what app to build) and "how" (how to build it), but have not yet deeply explored the "why" and "impact" aspects from a pedagogical perspective.

Novelty and Theoretical Basis of the Research

This study fills this gap through an in-depth qualitative case study approach, aiming to understand this innovation phenomenon from the perspectives of the actors in the field: students, teachers, and school leaders (Pérez-González et al., 2022). The novelty of this research lies in three main aspects. First, it broadens the focus from a simple Hajj simulation to the application of VR to various Islamic Religious Education (PAI) topics, such as a virtual exploration of the Al-Aqsa Mosque, a reconstruction of Medina during the Prophet's time, and a simulation of ethical dilemmas based on Islamic teachings. Second, this study uses a dual theoretical framework, namely Constructivism Theory and Experiential Learning Theory, as lenses for analyzing the data. This study not only reports the findings but also interprets them in terms of how students actively construct knowledge and meaning through immersive virtual experiences. Third, this study specifically examines

the dynamics of changing teacher roles and the practical challenges of implementation in schools, providing authentic and actionable insights. Thus, this study fills *this gap* through a qualitative-interpretive approach, supported by constructivism and experiential learning theories, to generate a rich and contextual understanding.

Focus and Objectives of the Research

Based on the background, problem identification, and novelty outlined above, the primary focus of this research is the process, perceptions, and impact of implementing Virtual Reality-based learning media in Islamic Religious Education. More specifically, this research aims to descriptively and in-depth analyze:

1. How do Islamic Education students and teachers perceive the use of Virtual Reality technology as a learning medium?
2. How is the student learning experience when interacting with Islamic Education content through Virtual Reality medium.
3. What is the impact of the use of Virtual Reality on *student engagement* and students' understanding of abstract and historical Islamic Education concepts?
4. What are the main supporting and inhibiting factors in the process of implementing Virtual Reality technology for Islamic Religious Education learning in the context of secondary schools in Indonesia?

METHOD

This section systematically and in detail describes the methodological procedures used in the research to ensure the credibility, reliability, and validity of the findings (Sugiyono, 2019). The chosen approach is designed to capture the complexity of the phenomenon of technological innovation in an educational context in depth and holistically.

Type of Research: Qualitative with Case Study Approach

This study uses a qualitative approach. The purpose of this research is not to measure or generalize findings statistically, but rather to deeply understand the meanings, perceptions, and experiences of individuals within their specific contexts. As methodologists have argued, qualitative research excels at exploring the complexity of social phenomena,

uncovering the processes that occur, and understanding participants' perspectives from their own perspectives (*emic perspective*).

More specifically, this research uses a case study approach . Case studies allow researchers to conduct an intensive investigation of a single "case" in a real-life setting. In this study, the "case" examined is the implementation of a Virtual Reality-based Islamic Religious Education (PAI) learning program at a private high school in Indonesia. This approach is relevant because it allows researchers to explore in a rich and contextual way how this innovation was planned, implemented, accepted, and the accompanying dynamics within a single, limited unit of analysis.

Research Design: Embedded Single-Case Study

The research design used is an embedded single - *case study* . This design was chosen because although the focus is on a single case (one school), this study analyzes several different units of analysis within that case. These units of analysis (or "embedded units") include: (1) the group of students participating in VR learning, (2) the group of Islamic Religious Education teachers who design and facilitate the learning, and (3) the school leader (principal) who is responsible for policy and resource provision.

This design has the advantage of allowing for more in-depth analysis and comparisons between subunits, thus preventing the researcher from overly generalizing abstractions. The flow of this research design is as follows:

1. **Planning Stage:** The researcher formulates research questions, determines the cases and units of analysis, and develops a research protocol that includes interview and observation guides.
2. **Data Collection Stage:** Researchers went into the field to conduct intensive data collection for one academic semester, using various instruments to ensure data triangulation.
3. **Data Analysis Stage:** The collected data is analyzed continuously using the thematic analysis method.
4. **Reporting Stage:** The results of the analysis are presented in the form of a rich descriptive narrative, supported by quotations and evidence from the field, which are then interpreted in the discussion chapter.

Participants and Sampling Techniques

Participants in this study were selected using *purposive sampling*. This technique was chosen because the goal was to select individuals with rich knowledge, experience, and perspectives relevant to the phenomenon under study, rather than for statistical representation. The inclusion criterion for participants was their direct involvement in the VR-based Islamic Religious Education (PAI) learning program.

The total number of participants was 20 people, who were divided into three analysis unit groups:

1. **Students (15 people):** Consisting of eleventh-grade students taking Islamic Religious Education (PAI) and having participated in at least five learning sessions using VR. The student sample was selected to reflect diversity, including students with different levels of academic achievement (high, medium, low), varying levels of initial interest in PAI, and varying levels of comfort with technology.
2. **Islamic Religious Education Teachers (4):** All Islamic Religious Education teachers at the school were involved in designing and implementing the VR learning module. This included senior teachers with decades of teaching experience and younger teachers who were more familiar with technology.
3. **School Principal (1):** The principal who provided permission and support for this innovation program. This participant was selected to provide perspectives from the school's managerial, policy, and vision perspectives.

All participants were given a full explanation of the purpose of the study and signed an *informed consent form*. Their identities are disguised in the research report to maintain confidentiality.

Instruments and Data Collection

To ensure the richness and validity of the data, this study used source and method triangulation techniques. Data were collected through three main instruments:

1. **Semi-Structured Interviews:** This was the primary data collection instrument. Interviews were conducted individually with all participants (teachers and

principals) and in small focus groups *with* students. An interview guide was prepared to ensure all key topics were covered, but the format was flexible to allow the researcher to explore interesting and unexpected answers. Interviews with teachers focused on their experiences designing, facilitating, and the challenges they faced. Interviews with students explored perceptions, levels of engagement, and comparisons with conventional learning methods. Interviews with principals focused on the reasons behind adopting the innovation and future plans. All interviews were audio-recorded and transcribed verbatim.

2. **Participatory Observation:** The researcher acted as a participant - *observer* in several Islamic Religious Education (PAI) learning sessions using VR technology. The researcher observed student interactions with the VR device, discussions between students, the teacher's role as a facilitator, and the general classroom atmosphere. Detailed field notes *were* taken to capture verbal and non-verbal behaviors, as well as classroom dynamics that may not have been revealed through interviews.
3. **Document Analysis:** Researchers collected and analyzed relevant documents to provide context and supporting data. These documents included: (a) the Learning Implementation Plan (RPP) specifically designed for the VR session, (b) the digital learning materials or modules used, (c) weekly reflective journals written by students after each VR session, and (d) school policy documents related to innovation and technology.

Data analysis

Data collected from interview transcripts, field notes, and documents were analyzed using **the thematic analysis approach** as outlined by Braun and Clarke. This process is inductive, in which themes emerge from the data itself, rather than being imposed by a pre-existing framework. The steps in data analysis are as follows:

1. **Familiarization with Data:** The researcher repeatedly read the entire transcript and field notes to gain a thorough understanding of the data.
2. **Initial Coding:** Researchers systematically identify segments of data that are interesting and relevant to the research question, then assign a label or “code” to each segment.

3. **Searching for Themes:** Similar or related codes are grouped together to form larger potential themes.
4. **Reviewing Themes:** Researchers review the themes that have emerged, ensuring that they are coherent, have sufficient data to support them, and accurately represent the overall data set. Some themes may be combined, split, or eliminated at this stage.
5. **Defining and Naming Themes:** Once the final themes are established, the researcher defines the essence of each theme and gives it a concise and clear name.
6. **Report Writing:** The analyzed themes are presented in the Results chapter as a coherent narrative, supported by direct quotes from participants to give the data a voice and enhance the report's authenticity. NVivo software was used to help manage and organize the large qualitative data set.

RESULTS

This section presents the research findings factually and descriptively, based on data obtained from interviews, observations, and document analysis. These findings are organized into four main themes that emerged from the thematic analysis process. The presentation of these results focuses on reporting the findings in the data, without in-depth interpretation or theoretical analysis, which will be discussed further in the Discussion chapter.

Key Finding 1: Transformation from Passive Learning to Immersive Engagement

The most dominant theme emerging from the data was a dramatic shift in student engagement. Before the VR implementation, both students and teachers described Islamic Religious Education learning as often one-way and passive. However, with VR, the classroom atmosphere became active, enthusiastic, and student-centered. This engagement manifested itself in three dimensions: emotional, cognitive, and behavioral.

- **Emotional Engagement:** Students consistently report feelings of awe, curiosity, and emotional connection to the material. The experience of “being there” triggers a strong emotional response.

Quote (Student A, Male): "Honestly, the first time I used VR and suddenly found myself in front of the Kaaba, I got goosebumps. It felt so different from seeing it in pictures or on TV. It was like... real. It made me think more deeply about it. Usually, when I'm studying Islamic history, I feel sleepy, but now I want to keep exploring." Quote (Teacher B, Female): "The children who usually stay in the corner or play with their phones are now the most excited. They shout 'Subhanallah!' when they see the architecture of the Cordoba Mosque. There are emotions coming out, not just the brain working. This is something I never get with lectures."

- **Cognitive Engagement:** Observations showed students were more focused and asking more in-depth questions. Their reflective journals also demonstrated more critical thinking.

Quote (Student C, Female): "After 'traveling' in Medina during the time of the Prophet, I started asking a lot of questions. Why was the Prophet's house so simple? Why was the mosque located there? So I started thinking, not just memorizing dates and names. In my journal, I started writing down the questions that came up, not just summaries from the teacher."

- **Behavioral Engagement:** Students actively interact with the virtual environment, discuss with friends, and show initiative to learn further outside of class hours.

Quote (Teacher A, Male): "They didn't just sit still. They looked in all directions, tried to 'touch' objects, and told each other, 'Hey, look what's over there!'. After the session was over, some of them even searched for additional videos on YouTube about the place they had just 'visited'. This shows strong intrinsic motivation."

Key Finding 2: Concretization of Abstract and Historical Concepts

The second powerful theme is VR's ability to make difficult-to-imagine concepts concrete and experiential. Islamic Religious Education (PAI) material previously considered abstract, distant, or merely narrative can now become a personal experience for students.

- **Hajj and Umrah Rituals:** All student participants felt much more aware of the sequence and meaning of each Hajj ritual after the VR simulation compared to just seeing diagrams or miniatures.

Quote (Student D, Female): "I used to be confused about the difference between sa'i and tawaf, I only knew about going back and forth. But after VR, I 'walked' from Safa to Marwah, I saw the crowd, I heard the voices, so I understood oh this is what Siti Hajar's struggle felt like. So it stuck in my head, not just memorizing it."

- **Islamic History and Civilization:** Visiting historical sites virtually provides context and scale that textbooks cannot convey.

Quote (Teacher C, Male): "Explaining about the glory of science in the Abbasid era is difficult. But when they were able to 'enter' the VR reconstructed version of Baitul Hikmah in Baghdad, see scientists discussing, see the giant astrolabe, they immediately 'gh'. History comes alive, not just dead text."

- **Visualization of Sirah Nabawiyah:** Events in the life of the Prophet Muhammad SAW become more memorable.

Quote (Student E, Male): "We had a simulation session of the Battle of Badr. Of course, it wasn't a real war, but we could see the positions of the Muslim and Quraysh troops, see the hilly terrain. So we understood why the Prophet's strategy was brilliant. It made more sense than just reading war stories."

Data Visualization: Theme Flowchart

To provide an overview of the analysis process, here is a simple flowchart showing how the raw data (codes) were organized into sub-themes and ultimately into main themes.

Key Finding 3: Practical Implementation Challenges (Negative/Anomalous Data)

While the overall response was very positive, the study also objectively identified a number of significant challenges and negative findings. These themes demonstrate that VR adoption is not without its challenges.

- **Technical and Infrastructure Limitations:** This is the most common complaint from students and teachers.

Quote (Student F, Female): "Sometimes I get dizzy if I wear it for too long, I get *motion sickness*. The headset is also a bit heavy, so my neck is sore. I've also had a really fun time when the picture started to stutter, and they said the school's internet was slow." Quote (Principal): "The initial investment is huge. Buying 20 high-quality VR headsets is equivalent to the cost of renovating a computer lab. Not to mention the maintenance costs and the need for high-spec PCs to run complex applications. This is a big challenge for many schools."

- **Learning Content Limitations:** Teachers voiced difficulties in finding or creating VR content that was relevant to the entire PAI curriculum.

Quote (Teacher D, Female): "The content currently available is good, but very limited. Most of it is about the Hajj or a few famous mosques. For materials like Islamic jurisprudence, inheritance, or stories of other prophets, we haven't found VR content yet. Creating our own? We don't have the expertise. This is the biggest *gap*."

- **Teacher Readiness and Competence:** Although teachers are enthusiastic, they acknowledge a steep learning curve.

Quote (Teacher B, Female): "At first, we were also technologically challenged. Learning how to operate the device, and *troubleshooting* when problems arose, it took time. We had to be trained before we could confidently teach with this device."

Key Finding 4: The Evolution of the Teacher's Role from Lecturer to Facilitator

The final significant theme is a fundamental shift in the teacher's role in the classroom. VR technology is naturally driving a pedagogical paradigm shift.

- **From Information Source to Experience Guide:** Teachers are no longer the sole source of knowledge. Their role has shifted to facilitator, guiding students in exploring and making sense of their virtual experiences.

Quote (Teacher A, Male): "I no longer stand in front of the class and lecture for 45 minutes. Now, my job is to give a short introduction, help students get on their devices, then walk around to listen to their discussions, and prompt reflective questions after the session is over. My role is more like a spiritual tour guide than a conventional teacher."

- **Increased Preparatory Workload:** Behind the ease of teaching, there is an increased workload in the preparation stage.

Quote (Teacher C, Male): "Designing a VR learning session is much more complicated. We have to try out the application first, identify key points for observation, develop discussion-provoking questions, and prepare a backup plan in case the technology fails. The preparation can take three times longer than preparing materials for a regular lecture."

Overall, this results section presents raw data that demonstrates that the implementation of VR in Islamic Religious Education is a complex phenomenon, bringing transformative benefits in terms of engagement and understanding, but accompanied by significant practical challenges and demanding an evolution in the role of an educator.

DISCUSSION

This section analyzes and interprets the findings presented in the previous chapter. The analysis is conducted by linking the research findings to the research objectives, comparing them with relevant literature and theories, and discussing the implications and limitations of the study.

Analysis of Results: The Meaning Behind the Findings

The findings of this study comprehensively address the stated research objectives. The four main themes identified—increased immersive engagement, concretization of abstract concepts, practical challenges, and the evolution of teacher roles—are interrelated and paint a comprehensive picture of the dynamics of VR innovation in Islamic Religious Education.

First, the findings regarding **the transformation of student engagement** directly address the research objective of understanding learning perceptions and experiences. The increased emotional, cognitive, and behavioral engagement reported by students and observed by researchers is not simply a novelty effect. The significance of these findings is that VR successfully creates what experts call *a sense of presence*—the psychological illusion that one is actually in the virtual environment. This presence is key. When a student feels "present" in front of the Kaaba or in a historical event, learning ceases to be a purely cognitive activity and transforms into a holistic experience involving emotions and episodic memory. This explains why students report deeper understanding and longer retention. This experience aligns with the research problem, which asks how to make Islamic Religious Education more relevant for the digital generation. VR addresses this by transforming information into experience.

Second, the findings on **the concretization of abstract concepts** directly confirm the initial research hypothesis. Many Islamic Religious Education (PAI) topics, such as heaven and hell, supernatural events, or complex worship processes, pose pedagogical challenges due to their abstract nature. The results show that VR serves as a "visual and spatial bridge" between the abstract world and students' concrete understanding. For example, students' understanding of Sa'i is no longer simply the definition of "jogging between the hills of Safa and Marwah seven times," but rather a virtual memory of "my experience walking a long, crowded corridor, feeling the scale of the space, and reflecting on its historical significance." This demonstrates that VR not only transfers knowledge but also transfers context, an element often missing in traditional learning.

Third, identifying **practical challenges** provides a balanced and critical perspective. Findings regarding costs, technical constraints, and content limitations are crucial. This means that VR's extraordinary pedagogical potential cannot be realized without an adequate supporting ecosystem. This analysis demonstrates that successful implementation

is not simply about purchasing devices, but rather a holistic institutional commitment, encompassing infrastructure investment, human resource development (teacher training), and collaboration with developers to create curriculum-relevant content. These findings emphasize that even the most sophisticated technology will be ineffective if implemented partially or without strategic planning.

Fourth, **the evolution of the teacher's role** is one of the most significant pedagogical findings. The shift from "sage on the stage" to "guide on the side" is often discussed theoretically in educational literature, but this research demonstrates how VR can be a practical catalyst for this change. The teacher is no longer the primary transmitter of information, as that information is now presented by the virtual environment itself. The teacher's role shifts to a higher level: designing learning experiences, facilitating exploration, provoking critical thinking through reflective questions, and helping students construct meaning from their experiences. This is a more challenging yet more meaningful role, in line with the demands of 21st-century skills.

Comparison with Literature and Theory

The results of this study strongly support and enrich several key learning theories. The finding that students actively construct understanding through virtual exploration is a clear manifestation of **constructivist learning theory**. Students are not simply told about Islamic history; they are placed within it to construct their own narrative. This aligns with Vygotsky's view of the importance of mediating tools (in this case, VR) in learning. These findings are also consistent with research in other educational contexts showing that well-designed technology-based learning can facilitate constructivist approaches.

Furthermore, the entire observed learning process aligns closely with Kolb's **Experiential Learning cycle**. The VR sessions provided *concrete experiences*. Post-session discussions and reflective journal writing are forms of *reflective observation*. The teacher's explanations linking the virtual experience to Islamic Religious Education theoretical concepts constitute *abstract conceptualization*. Finally, the shift in perspective or motivation to learn further constitutes *active experimentation*. These findings strengthen the argument that VR is not just a visual medium, but a platform for holistic, experiential learning.

Compared to previous research on VR in Islamic education, this study makes a significant contribution. While earlier studies, such as those focused on the Labbaik VR application or development at local universities, tended to focus on technical aspects and functionality for Hajj materials, this study goes further by exploring its qualitative impact on learning experiences across various Islamic education materials and in a real classroom context. Findings regarding implementation challenges, as reported in several literature studies, are also confirmed in this specific field context, but this study provides richer detail through direct quotes from practitioners.

Research Implications

The results of this study have important implications for various stakeholders, both theoretically and practically.

- **Theoretical Implications:** This study provides strong empirical evidence on how immersive technology can be a medium for applying constructivism theory and experiential learning in the context of religious education. This enriches the digital pedagogy literature, particularly in the field of Islamic Religious Education (PAI), which is often considered slow in adopting innovations. This study also proposes a conceptual model in which the effectiveness of VR in PAI depends on three pillars: (1) Quality of Technological Immersion, (2) Relevance of Pedagogical Content, and (3) Teacher Competence as a Facilitator.
- **Practical Implications:**
 - **For Educational Institutions and Principals:** VR adoption should be viewed as a strategic investment in pedagogical transformation, not simply a purchase. Careful planning is required, including the provision of a stable network infrastructure, high-performance computers, and, most importantly, budget allocation for ongoing teacher training.
 - **For Islamic Religious Education Teachers:** Teachers need to be open to changing their roles. They must be willing to learn not only about technology, but also about how to design project-based and experiential learning that facilitates, not dictates.
 - **For Content Developers and the EdTech Industry:** There is a significant market opportunity and responsibility to develop more diverse,

affordable, and curriculum-aligned VR Islamic Religious Education content. Collaboration between technology developers, Islamic Religious Education subject matter experts, and education practitioners (teachers) is crucial to ensure that the resulting products are not only technically sophisticated but also pedagogically robust and religiously accurate.

- **For the Government and Policymakers:** Policy support is needed to accelerate the adoption of educational innovation. This could include incentives for innovative schools, facilitating partnerships between the technology industry and educational institutions, and integrating digital pedagogical competencies into teacher education and training programs.

Research Limitations

The researchers fully acknowledge that this study has several limitations. First, as a qualitative case study conducted in a single school, **generalization of the findings** should be done with caution. The context of the private school where the study took place may have different resources and innovation cultures than public schools in general. Second, this study was conducted over **a relatively short period of time** (one semester). The long-term impact of VR use on students' knowledge retention, attitude change, and spiritual development cannot yet be measured in depth. It is possible that some of the students' enthusiasm was influenced by *the novelty effect*. Third, this study **did not measure** learning outcomes quantitatively. While qualitative data provides in-depth understanding, quantitative data from the control and experimental groups could provide stronger comparative evidence regarding the effectiveness of VR in improving academic performance. Fourth, the study focused on the implementation process, so **an in-depth analysis of the quality of VR content** from various providers was not the primary focus.

These limitations also pave the way for further research to refine our understanding of the role of VR in Islamic education.

CONCLUSION

This section presents a synthesis of the overall findings and discussion, summarizes the essence of the research, and articulates contributions and recommendations for the future. These conclusions are formulated by referring back to the initial research objectives.

Summary of Research Results

This study aims to explore in-depth innovations in Islamic learning media using Virtual Reality (VR) technology. The results conclusively confirm that the integration of VR in Islamic Education (PAI) learning can fundamentally transform the learning experience. Key findings indicate that VR significantly increases student engagement at the emotional, cognitive, and behavioral levels, as addressed in the research problem formulation. This technology successfully addresses one of the biggest challenges in Islamic Education (PAI): transforming abstract and historical concepts into concrete, personal, and meaningful experiences. The results indicate that this immersive experience significantly impacts the depth of student understanding, supporting the initial hypothesis. Other key findings include the identification of substantial practical challenges, such as high investment costs, technical constraints, and a scarcity of relevant content, as well as the revelation of the evolution of the teacher's role from a preacher to a facilitator of learning experiences. These findings are consistent with the context of the challenges of educational technology adoption in developing countries.

Contribution to Science

This study makes three main contributions to the body of knowledge, particularly in the fields of educational technology and Islamic studies.

1. **Developing a Theoretical Model in the Context of Islamic Religious Education:** This study provides empirical and contextual validation of constructivist learning theory and experiential learning in the realm of Islamic Religious Education. The study develops a conceptual model integrating technological, pedagogical, and content perspectives, which can be used as a framework for future VR implementation and research. This fills a theoretical gap where discussions of technology in Islamic Religious Education are often technical in nature without a strong pedagogical foundation.
2. **Empirical Validation of the Concept of "Presence" in Religious Learning:** This study provides rich qualitative evidence on how the concept of *sense of presence* generated by VR can be a catalyst for spiritual and historical meaning-making. This is an empirical validation of a cognitive psychology concept in the context of

religious education that has not been widely documented before, demonstrating that "feeling presence" can deepen the appreciation of religious values.

3. **Refining Understanding of Teacher Roles in the Digital Age:** This research not only reaffirms the shifting role of teachers but also documents in detail the complexities and challenges that accompany this transition from the perspective of teachers themselves. It refines our understanding that facilitating a high-tech classroom demands a new set of competencies and a more intensive preparation burden, an important contribution to the discourse on teacher professional development.

Recommendations for Further Research

Based on the findings and limitations of this study, several directions for further study can be recommended to build a more comprehensive and robust understanding.

1. **Quantitative and Comparative Exploration:** It is recommended to conduct a quasi-experimental study with a control group to statistically measure the impact of VR on academic learning outcomes, knowledge retention, and changes in students' attitude scores compared to conventional learning methods.
2. **Longitudinal Studies:** To verify the stability of the findings and address the potential *novelty effect*, longitudinal studies following a group of students over several years are needed to see whether the increased engagement and understanding persist over the long term and how it affects their character development and spirituality.
3. **Sample and Context Expansion:** Future research should expand the sample to a variety of school types with different socio-economic backgrounds, including public schools in urban and rural areas, to increase the generalizability of the findings and understand implementation challenges in more resource-constrained contexts.
4. **Research & Development:** There is an urgent need for research focused on the design, development, and evaluation of VR content for currently underserved Islamic Religious Education (PAI) topics. Such studies could pilot collaboratively designed content interventions between religious scholars, educators, and

technologists, such as the one proposed in this study, to ensure their substantive validity and pedagogical effectiveness.

Daftar Pustaka

- Abdjul, T., Ntobuo, N. E., & Payu, C. (2019). Development of Virtual Laboratory-Based of Learning to Improve Physics Learning Outcomes of High School Students. *Jurnal Pendidikan Fisika Indonesia*, 15(2), 97–106. <https://doi.org/10.15294/jpfi.v15i2.12367>
- Adijaya, M. A., Armawan, I. K., & Kristiantari, M. G. R. (2023). Mobile-Assisted Language Learning (MALL) Innovation for Vocational Education. *International Journal of Language Education*, 7(3), 469–480. <https://doi.org/10.26858/ijole.v7i3.52910>
- Agusalim, A., Suryanti, S., & Irwan, I. (2021). Media Words Card to Improve Reading Skills at the beginning of the First Grade Students in Primary School. *Jurnal Basicedu*, 5(2), 531–537. <https://doi.org/10.31004/basicedu.v5i2.701>
- Anand, K., Urolagin, S., & Mishra, R. K. (2021). How does hand gestures in videos impact social media engagement - Insights based on deep learning. *International Journal of Information Management Data Insights*, 1(2), 100036. <https://doi.org/10.1016/j.jjime.2021.100036>
- Arifin, Z., Desrani, A., Ritonga, A. W., & Ibrahim, F. M. A. (2023). Arabic Language Learning Approach Using Smart Technology in Higher Education. *Izdibar: Journal of Arabic Language Teaching, Linguistics, and Literature*, 6(1). <https://doi.org/10.22219/jiz.v6i1.25011>
- Aswirna, P., Roza, M., & Zainia, M. (2023). Integrated Science E-Module assisted by the Flip PDF Professional Application to Integrate Character Education Values in Science Learning for Junior High Schools. *Journal of Natural Science and Integration*, 6(1), 14. <https://doi.org/10.24014/jnsi.v6i1.16262>
- Irvani, A. I., & Warliani, R. (2022). Development of Physics Demonstration Videos on Youtube (PDVY) as Physics Learning Media. *Jurnal Pendidikan Fisika Indonesia*, 18(1), 1–12. <https://doi.org/10.15294/jpfi.v18i1.26723>
- Karimizadeh, K., & Yi, J. (2023). Modeling Hydrological Responses of Watershed Under Climate Change Scenarios Using Machine Learning Techniques. *Water Resources Management*, 37(13), 5235–5254. <https://doi.org/10.1007/s11269-023-03603-z>
- Nugroho, D. E., & Khasanah, R. N. (2023). The Effect of Using Devlabs Learning Media on Improving Students' Understanding of Concepts on Buffer Solution Materials.

- Social, Humanities, and Educational Studies (SHES): Conference Series*, 6(4).
<https://doi.org/10.20961/shes.v6i4.81282>
- Paminto, J., Yulianto, A., & Linuwih, S. (2023). Development of PJBL-Based Physics Edu Media to Improve The 21st Century Learning Skills of High School Students. *Jurnal Pendidikan Fisika Indonesia*, 19(2), 180–192. <https://doi.org/10.15294/jpfi.v19i2.44703>
- Pérez-González, J. C., Filella, G., Soldevila, A., Faiad, Y., & Sanchez-Ruiz, M. J. (2022). Integrating self-regulated learning and individual differences in the prediction of university academic achievement across a three-year-long degree. *Metacognition and Learning*, 17(3), 1141–1165. <https://doi.org/10.1007/s11409-022-09315-w>
- Sandy, S., Nurhamzah, N., & Ismilah, S. (2023). PAI teacher leadership paradigm in achieving learning optimization at SMPIT Titian Ilmu Bekasi. *MANAZHIM*, 5(1), 386–399. <https://doi.org/10.36088/manazhim.v5i1.2961>
- Stebner, F., Schuster, C., Weber, X. L., Greiff, S., Leutner, D., & Wirth, J. (2022). Transfer of metacognitive skills in self-regulated learning: effects on strategy application and content knowledge acquisition. *Metacognition and Learning*, 17(3), 715–744.
<https://doi.org/10.1007/s11409-022-09322-x>
- Sugiyono. (2019). *Metode Penelitian Kuantitatif dan Kualitatif dan R&D* (Bandung). Alfabeta.
- Taouki, I., Lallier, M., & Soto, D. (2022). The role of metacognition in monitoring performance and regulating learning in early readers. *Metacognition and Learning*, 17(3), 921–948. <https://doi.org/10.1007/s11409-022-09292-0>
- Tirza, J., & Cendana, W. (2023). Social Media as an Appliance to Pancasila Education for the Young Generation. *Jurnal Minfo Polgan*, 12(1), 183–190.
<https://doi.org/10.33395/jmp.v12i1.12332>