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Effectiveness of VR/AR in Learning and Understanding Islamic History: A Critical Analysis

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Abstract

The Virtual and Augmented Reality technologies have played a pivotal role in the education sector over the past few years. These immersive technologies provide a digital environment through smartphones, tablets and AR glasses that completely overtake the real world. This paper analyzed the effectiveness of both Virtual Reality (VR) and Augmented Reality (AR) technologies in enhancing the learning and understanding of Islamic history among students of different levels. As immersive technologies progress in an academic environment, this study examines their potential impact on engagement, comprehension, and knowledge retention among learners. Using a mixed-methods approach, data were collected through a survey, and a questionnaire was developed targeting students and educators. Initial findings proposed that VR/AR tools greatly improve involvement and conceptual understanding of students, although challenges such as access to technology, exorbitant technical limitations, and cultural sensitivity remain. This research concludes

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with recommendations for integrating immersive technologies into Islamic history education.

Keywords: *Virtual Reality, Augmented Reality, Immersive Technology, Comprehension, Retention*

1. Introduction

Islamic history, with its staggering cultural and religious importance, is an essential part of the higher education sector in many Muslim countries including Pakistan. Learning history of Islam influences students' opinions on Muslims' contributions to world civilization and past events and gives them insight into how Islamic civilization has evolved globally. Despite that, the challenge of delivering history interestingly and comprehensively persists. Conventional methods of teaching *Islamic* history, such as giving lectures, visual aids, and textbooks are no doubt helpful but frequently fail to apprehend the depth of the subject matter.[1]

In recent years, with the rise of (AI) and different technological tools, virtual reality (VR) and augmented reality (AR) have also come up as groundbreaking aids in education. VR and AR are two advance computer based technologies that integrates input and output devices so one might can contact directly with the virtual environment. Through these approaches, students can learn Islamic history anytime and anywhere without any limitations. With immersive experiences history can become more interesting and interactive and students can virtually walk through historical places, to know the ancient civilizations of the world, can get information about the famous past personalities and

[1] Suryantini, Iis, Asep Nursobah, Mamang Subagja, Imas Masripah, and Rivan Widiana. "The Use of Virtual Reality Technology in Learning Islamic History." *International Journal of Education and Digital Learning (IJEDL)* 2, no. 5 (2024): 96-104.

witness historical events, rather than reading from books and learning through traditional methods[1].

The aim of this research paper is to critically examine the effectiveness of VR and AR in learning and understanding Islamic history. This paper explores how these technologies are being integrated into education, the prospective benefits, challenges, and the awareness of students and educators regarding their effectiveness.

1.1 Problem Statement

Although VR and AR technologies have considerably amplified education in numerous fields, their effectiveness in teaching and learning Islamic history remains unexplored. This study explores how VR and AR can refine student involvement, understanding, and retention of Islamic history. The study seeks to address the existing gap in research that focuses on the effect of these technologies in this specific area of education.

1.2 Research Questions

1. How do Virtual and Augmented reality impact students' learning and understanding of Islamic History?
2. What challenges do students and educators generally face while implementing these technologies?

1.3 Research Objectives:

[1] Sudiro, Sudiro, and Munjin Munjin. "Teaching Management of Islamic Religion Education Based on Virtual Reality at Junior High School." *AL-ISHLAH: Jurnal Pendidikan* 16, no. 4 (2024): 4599-4612.

1. To examine the effectiveness of VR and AR in enhancing comprehension and retention of Islamic history.
2. To observe the limitation, advantages and disadvantages assimilating VR and AR in Islamic history education.

1.4 Significance of the Study:

The objective of this research is to come up with awareness of the potential of VR and AR to amplify the learning of Islamic history, culturally rich and historically significant field. By understanding the effectiveness of these technologies, educators and policymakers can make well considered decisions on integrating VR and AR into their curriculums, possibly improving engagement and historical comprehension among students. Moreover, the research will add to the growing knowledge of educational technology in culturally specific contexts.

2. Literature Review

2.1 Influence of technology in education sector

Technology plays a prominent role in every sector of the economy, and without technology, economic growth would not be possible. Technology makes our work uncomplicated and more efficient. It is a technology that makes education interactive and aggressive instead of passive and reactive. The impact of technology can be seen in every field, including Education[1]. So no one can deny this fact that technology has revolutionized every aspect of life over the past few years.

[1] Raja, Rahat, and PC Nagasubramani. "Impact of Modern Technology in Education." *Journal of applied and advanced research* 3, no. 1 (2018): 33-35.

The implication of technology in education has expanded over the past few decades, with VR and AR offering distinctive learning opportunities. Virtual reality creates immersive and stimulated environment while augmented reality particularly portrays digital content into the real world. Both technologies have shown promise in engaging students, promoting active learning, and enhancing retention[1]. These technologies provide students with experiences that go beyond traditional teaching methods, making learning more dynamic and experiential[2].

VR and AR with different purposes and diverse features play a distinctive role in educational fields. VR provides a digital environment without leaving classrooms by using headsets or glasses. For enhancing the functionality of the digital world through overlaying digital objects onto it AR complements the real-world environment[3]. It is necessary for researchers to don't mix these two totally opposite technologies, VR in terms of vision, hearing and touch by using big data, AI and sensor technology is particularly alike to the real environment. In contrast AR superimposing digital content on physical objects like mobile devices[4].

2.2 VR/AR in Islamic History Education

In Islamic history education, from the past few years VR and AR technologies have been executed successfully to create imaginative, interactive and immersive experiences that

[1] Mikropoulos, Tassos A., and Antonis Natsis. "Educational virtual environments: A ten-year review of empirical research (1999–2009)." *Computers & education* 56, no. 3 (2011): 769-780.

[2] Slater, Mel. "Place Illusion and Plausibility Can Lead to Realistic Behaviour in Immersive Virtual Environments." *Philosophical Transactions of the Royal Society B: Biological Sciences* 364, no. 1535 (2009): 3549-57

[3] Al-Ansi, Abdullah M., Mohammed Jaboob, Askar Garad, and Ahmed Al-Ansi. "Analyzing augmented reality (AR) and virtual reality (VR) recent development in education." *Social Sciences & Humanities Open* 8, no. 1 (2023): 100532.

[4] Huang, Jun. "A Systematic Review of Virtual Reality/Augmented Reality Technology for History Teaching." *Augmented Reality Technology for History Teaching* (2022).

allow students to discover historical places, step into past events, and interact with historical personalities. Recent researches show that immersive learning experiences improve cognitive abilities and understanding[1]. For example, VR simulations of historical sites and ancient civilizations of history enable learners to enhance more personalized understanding of past events.

Nevertheless, there is limited research on the specific application of VR/AR in Islamic history education. This research will focus on filling this gap by evaluating the efficacy of these technologies in understanding Islamic history. The education sector focuses mainly on Hajj and Umrah education through VR/AR technology, and it is yet to be determined how to implement e-learning or VR/AR technology in the other sectors of history education.

Transformation and innovation in teaching methods are necessary for the spiritual, emotional, and physical development of this generation because of their relationship with technology. AR/VR is equally beneficial for educators, as they will no longer be bound to study tours to a particular place[2].

2.3 Islamic History Education and Its Challenges

History related education specifically Islamic history faces innumerable challenges some of them are the complex and often abstract concepts of history, religious practices, culture and civilization, political systems and conditions across centuries, the past events and the

[1] Radianti, Jaziar, Tim A Majchrzak, Jennifer Fromm, and Isabell Wohlgenannt. "A Systematic Review of Immersive Virtual Reality Applications for Higher Education: Design Elements, Lessons Learned, and Research Agenda." *Computers & education* 147 (2020): 103778.

[2] Ajmain, Muhammad Talhah, Mohamad Khairul Latif Jima'ain, Asma Nurul'Aqilah Mahpuz, Siti Fatihah Osman, Siti Nur Hadis A. Rahman, Siti Noraishah P. Othman, and Aminudin Hehsan. "Innovation in Teaching and Facilitation: Challenges of Islamic Education Teachers." *Studies and Human* 2, no. 1 (2019): 38-47.

need to engage students with the history subject. Static resources often used by the instructors to taught Islamic history which may not fully engaged learners and create interest in history education and they get bored easily. For this kind of subject interactive sources are required for the better understanding of the students[1].

Historical events due to their vast and diverse nature, make it difficult to provide a coherent and engaging learning experience. Therefore, to explore Islamic history in a more interactive and relatable manner VR/AR allows students to potentially address these challenges by offering immersive technology.

3. Methodology

3.1 Research Design

This study utilize a mixed methods research design, incorporating both qualitative and quantitative data collection. The primary method for data collection is a survey, complemented by a questionnaire designed to assess the discernment of students and educators regarding the effectiveness of VR/AR in learning Islamic history.

3.2 Survey and Questionnaire Development

The survey was designed to include a combination of open ended questions, Likert-scale, and multiple-choice questions. For the better response only 15 questions were designed for students and only 5 for educators. The questions aimed to assess participants' familiarity with VR/AR technologies, their experience using these technologies in learning Islamic

[1] Putra, Sudarmadi, Duarte Heraldo, Muhammad Rizaq, Muqarramah Sulaiman Kurdi, Nasiruddin Nasiruddin, and Muhammad Raffin Althafullayya. "Strategies of Religious Teachers to Overcome Students' Difficulties in Learning Islamic History." *Al-Hijr: Journal of Adulearn World 3*, no. 1 (2024): 120-39

history, and their opinions on how effective VR/AR is compared to traditional learning methods. A copy of the questionnaire is included in Appendix A.

3.3 Sample Selection

The study targeted students as well as educators at universities level offering courses in Islamic history and those who are using any AR/VR technology. A total of 50 participants (40 students and 10 to 12 educators) were selected through purposive sampling to provide insights into both student and instructor perspectives on VR/AR effectiveness.

3.4 Data Collection Process

The survey was distributed online through Google forms. Participants were informed about the research objectives, and their consent was obtained before taking their opinions. Data was collected over a two weeks period, with follow-up reminders to ensure a sufficient response rate.

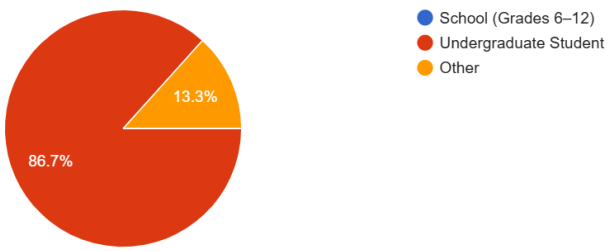
3.5 Data Analysis

The data collected from the survey was analyzed using tools provided within Google Forms. Quantitative responses were summarized using built-in charts and response summaries, while qualitative responses were reviewed manually and analyzed thematically.

4. Results and Findings

4.1 Demographics of Survey Participants

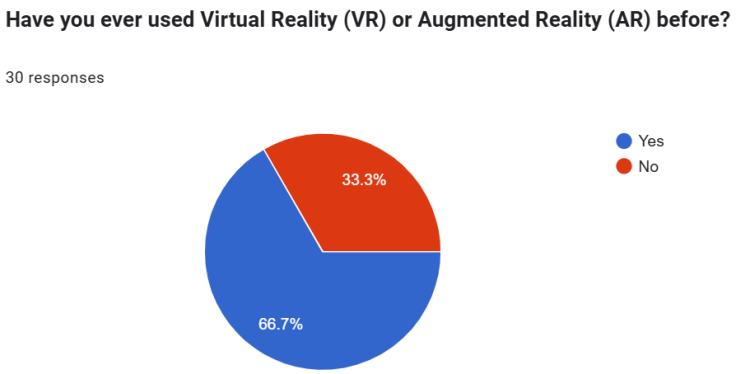
Chart 1: Demographics (n = 30)



The survey respondents were divided into two groups: students (90%) and educators (10%). However educators didn't participate in student's section. Among the student participants, 86.7% were undergraduates, and 13.3% were PhD candidates. 10 university teachers participated in survey. The educators had varying levels of experience, ranging from 5 to 15 years in teaching Islamic history.

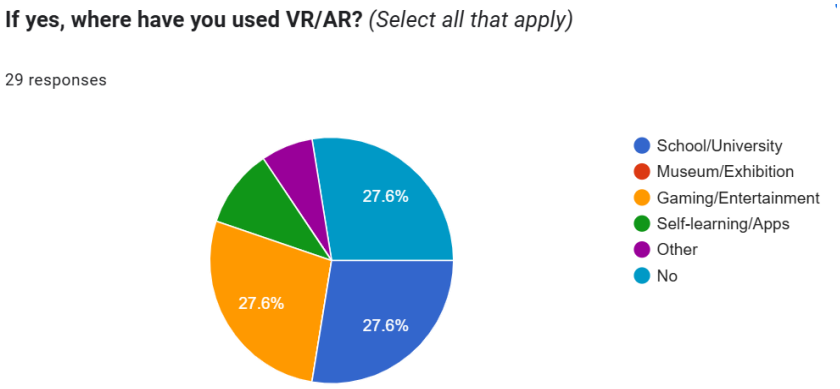
4.2 Key Findings

Chart 2: Have you ever used VR/AR before (n = 30)



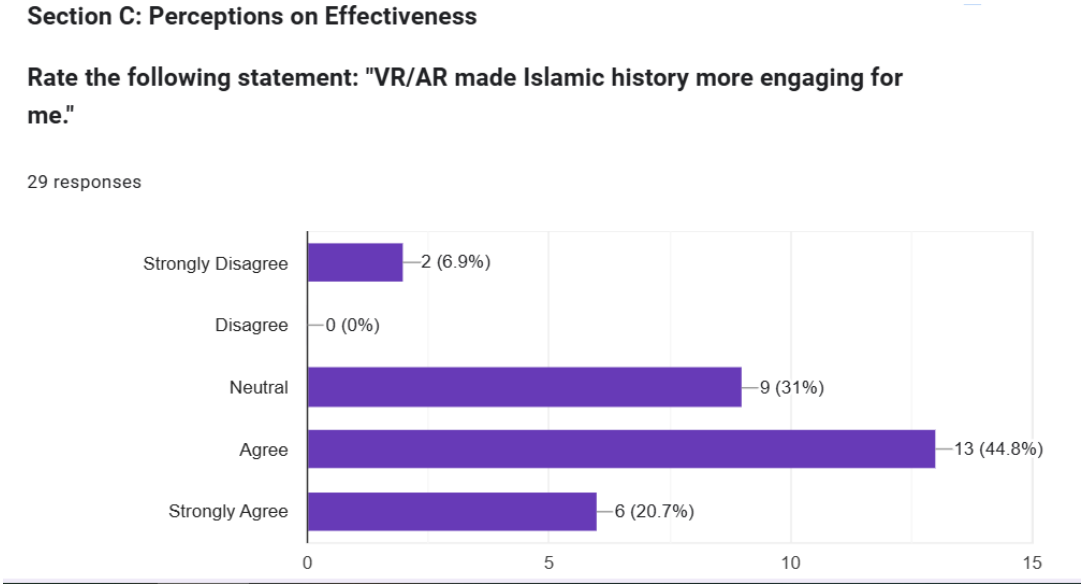
The survey results of question no. 2 and 3 indicate that 33.3% participants never used any immersive technology and 66.7 % participants used these technologies either in gaming, educational institutions or self-learning apps etc.

Chart 3: Where have you used VR/AR? (n = 29)



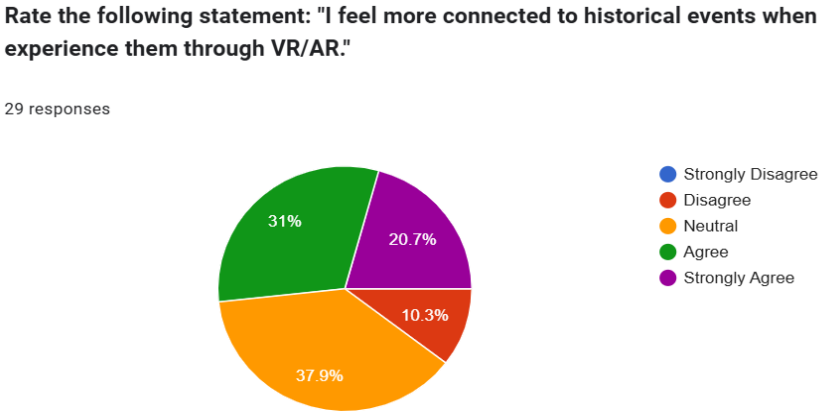
Among 29 responses 27.6% used AR/VR in Gaming and entertainment. 27.6 % used these technologies in university level.

Chart 4: VR/AR made Islamic History more engaging for me (n = 30)



While exploring perception of effectiveness, 44.8% of students found VR/AR technologies engaging and effective in helping them understand historical events. 6.9 % strongly disagreed with the statement. 31% were neutral on the effectiveness of these technologies. And 20.7% were strongly agree. Final result concluded that students agreed that these immersive technologies are making Islamic history more engaging and effective.

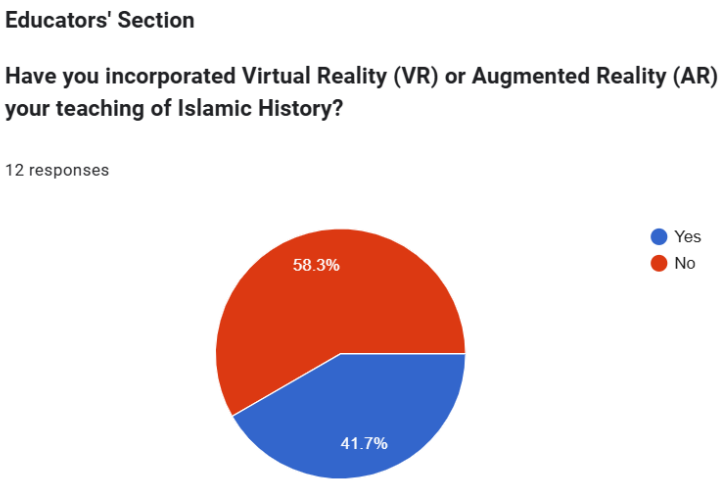
Chart 5: I feel more connected to historical events when I experience them through VR/AR (n = 29)



Over 51.7% of respondents agreed that VR/AR provided a more interactive experience than traditional classroom learning methods. 38% were neutral indicating they want more experience and learning of these two technologies.

Specifically, 60% of students reported that VR/AR allowed them to engage with historical content in ways that traditional textbooks could not, such as virtually experiencing the Battle of Badar or visiting historical Islamic landmarks.

Chart 5: Have you incorporated VR/AR tools in your teaching of Islamic History? n = 29)



Educators, however, had a more mixed response. While 55% of educators acknowledged the potential of VR/AR, only 41.7% reported using these technologies in their teaching.

Many cited practical challenges, including institutions in Pakistan that lack sufficient space, face difficulties incorporating technology, experience frequent electricity issues, and lack the funding to invest in such tools. One of the biggest challenges is the cost and availability of VR/AR equipment. Not all students have access to devices like VR headsets or smartphones that support AR applications, and most Pakistani universities are not well-equipped with modern technology. Additional challenges included a lack of appropriate content specifically tailored to Islamic history.

4.3 Patterns and Trends

The data suggests a general agreement among students that VR/AR further improve the quality and engagement and also provides a deeper understanding of Islamic history. However, educators indicate concerns about the usefulness and effectiveness of VR/AR in the classroom without sufficient resources and training of teachers on this advance technology.

5. Discussion

5.1 Interpretation of Findings

The result and findings show that virtual and augmented realities can enhance the learning of Islamic History and have the potential to notably increase the effectiveness of these technologies in the education sector by offering an interactive and immersive proficiency. Students reported that VR/AR technologies enhanced their engagement and comprehension of historical events. To virtually experience the key moments of Islamic history such as the civilizations, past events, and the rise and fall of nations amplify the ability to contribute and a deeper connection with the material.

However, this study also culminates some barriers and critical limitations. In the education sector of Pakistan, students as well as educators don't have access to these technologies, and there is the absence of customized content for Islamic history. In addition, educators are reluctant to incorporate VR/AR into their teaching methods because of the lack of professional development and technological barriers.

5.2 Strengths and Limitations of VR/AR in Islamic History Education

The strengths of VR/AR in Islamic history education include its ability to make history more tangible and emotionally impactful, allowing students to interact with historical events and figures. Students can experience the prominent achievements of Islam and historical events which have been hidden by human eyes or places destroyed by time and urbanization[1]. The immersive experience can foster a deeper understanding and empathy for historical contexts.

[1] Siddiqui, Muhammad Shoaib, Toqeer Ali Syed, Adnan Nadeem, Waqas Nawaz, and Ahmad Alkhodre. "Virtual tourism and digital heritage: an analysis of VR/AR technologies and

On the other hand, the limitations include the high cost of VR/AR equipment, the education sector of Pakistan usually doesn't spend on technology-based education rather they are still relying on traditional methods of education. More time is required to prepare lectures through VR/AR, and educators are reluctant to adopt new teaching methodologies. Moreover, the technology's effectiveness may depend on the quality of the content and the pedagogical approach used. Another challenge is content sensitivity. Islamic content must be handled with great care to avoid misrepresentation. The abstract content cannot be visualized nor can the personalities of messengers, Angels, etc.

5.3 Comparison with Previous Literature

The results of this research align with previous researches, which suggests that VR/AR can play a prominent role in the enhancement of historical understanding and engagement. Iis Suryantini Explores how VR can create immersive experiences to make Islamic history lessons more interesting and engaging for students'[1].Yulita Salim, Irawati Irawati, and Alifah Rahmayani, describes the development of AR-based learning tools aimed at increasing students' interest and comprehension in Islamic history[2]. Anisa Jaya Rahmawati, Gunarhadi Gunarhadi, and Moh. Muchtarom, discusses teaching strategies for enhancement of AR into Islamic higher education to encourage active learning in their paper "How to Apply Augmented Reality Based Active Learning in Islamic Higher

applications." *International Journal of Advanced Computer Science and Applications* 13, no. 7 (2022).

[1] Suryantini, Iis, Asep Nursobah, Mamang Subagja, Imas Masripah, and Rivan Widiana. "The Use of Virtual Reality Technology in Learning Islamic History." *International Journal of Education and Digital Learning (IJEDL)* 2, no. 5 (2024): 96-104.

[2] Salim, Yulita, Irawati Irawati, and Alifah Rahmayani. "Development of Islamic History Learning Media Using Augmented Reality." In *BOOK OF ABSTRACT INTERNATIONAL CONFERENCE ON HALAL, POLICY, CULTURE AND SUSTAINABILITY ISSUES*, vol. 3, no. 1, pp. 54-54. 2021.

Education"[1]. Aziza Aryati Analyzes the use of VR to simulate spiritual journeys like Hajj, making religious education more experiential and meaningful[2].Cahyana Cahyana et al., Highlights the use of AR to introduce young learners to the pillars of Islam in an interactive and age-appropriate way[3]. Hasan Ruzakki et al., Provides a comprehensive overview of AR/VR adoption trends in Indonesian Islamic education and its growing impact[4]. Muhammad Iqbal and Silahuddin, presents a case study showing how AR helped improve students' understanding of the concept of Tawhid (monotheism) in their research "Transforming Tawhid Learning with Augmented Reality: A Case Study in Madrasah Ibtidaiyah,"[5].Linatul Uyun Examines how AR transforms traditional history teaching methods, making historical content more engaging and dynamic[6].Rabea Mohammad Alsqria and Mohsin Nasser Al-Salmi, Studies how AR impacts student motivation and learning outcomes in Islamic education within UAE secondary schools[7]. Sigit Purnama et

[1] Rahmawati, Anisa Jaya, Gunarhadi Gunarhadi, and Moh Muchtarom. "How to Apply Augmented Reality based Active Learning in Islamic Higher Education?" *Proceedings Series on Physical & Formal Sciences* 3 (2022): 1-4.

[2] Aryati, Aziza, Jamrizal Jamrizal, Khairul Anwar, Zulkarnain Zulkarnain, M. Zaharuddin, and Arham Junaidi Firman. "Spiritual Pilgrimage through Virtual Reality (VR): Transforming Islamic Religious Education in Madrasahs." *Ta'dib* 27, no. 2 (2024): 435-445.

[3] Cahyana, Cahyana, Rizza Indah Mega Mandasari, Fat'hah Noor Prawita, Conny Tria Shafira, and Diffo Elza Pratama. "Implementation of Augmented Reality in Introducing Islamic Pillars Appication for Young Children." In *5th International Conference on Early Childhood Education (ICECE 2020)*, pp. 100-103. Atlantis Press, 2021.

[4] Ruzakki, Hasan, Nashrullah Nashrullah, Dedi Junaedi, Siti Khoiriyah, and Moh Asror. "Trend Pemanfaatan Teknologi Augmented Reality Dan Virtual Reality Dalam Pembelajaran Pendidikan Agama Islam Di Indonesia." *Edukasi Islami: Jurnal Pendidikan Islam* 13, no. 01 (2024).

[5] Iqbal, Muhammad. "Transforming Tawhid Learning with Augmented Reality: A Case Study in Madrasah Ibtidaiyah." *Journal of Community Research and Service* (2024): n. pag.

[6] Uyun, Linatul. "The utilization of augmented reality (ar) in history education: transforming teaching methods towards the digital era." *International Journal of Educational Technology and Innovation (EduTechno)* 1, no. 1 (2025): 26-31.

[7] Mustafa, Fekra, Mayudin Bin Daud, Ahmad Bin Yussuf, Nabeeh Kasasbeh, and Othman Abu Khurma. "The Practice of Augmented Reality in Islamic Education and the Level of Motivation among UAE Secondary School Students." *Social Sciences* 14, no. 2 (2025): 80.

al., discusses the broader implications of AR in education, including its potential for teaching religious and historical subjects effectively[1].

However, the use of Augmented and virtual reality in the subject of history specifically in Islamic history is relatively new and yet too developed in the countries like Pakistan. In addition, advanced research is needed to improve and adapt VR/AR content to this field.

5.4 Recommendations

The following recommendations are proposed to enhance the use of VR/AR in learning and understanding Islamic History based on the findings of the above critical analysis.

Develop Affordable and Culturally Sensitive VR/AR Modules

Developers and educational content creators should prioritize the creation of cost-effective VR/AR learning modules that are culturally and religiously appropriate. This includes accurate representation of Islamic historical events, respectful portrayal of religious figures, and alignment with diverse cultural contexts within the Muslim world.

1. **Train Educators in the Use of Immersive Technologies**

Professional development programs should be established to equip Islamic studies educators with the technical and pedagogical skills needed to maximize the effectiveness of virtual and augmented reality into education sector. Such learning programs should emphasize not only the operation of immersive tech but also instructional methodologies for maximizing student engagement and learning outcomes.

[1] Purnama, Sigit, Nazilatus Syukriyah, Maulidya Ulfah, Ahmad Arifuddin, and Hafidh Aziz. "Augmented reality in education in era 4.0." In *ICONEBS 2020: Proceedings of the First International Conference on Economics, Business and Social Humanities, ICONEBS 2020, November 4-5, 2020, Madiun, Indonesia*, p. 349. European Alliance for Innovation, 2021.

2. **Promote Blended Learning Approaches**

A hybrid model that combines traditional Islamic teaching methods with modern VR/AR technologies should be encouraged. This blended approach respects the value of classical pedagogy while enriching it with immersive tools that make historical content more vivid, interactive, and accessible to contemporary learners.

These recommendations aim to bridge the gap between innovation and tradition, ensuring that the application of immersive technologies in Islamic history education is both effective and contextually grounded.

6. Conclusion

This study highlights the growing effectiveness of Virtual and Augmented Reality in teaching Islamic history by making learning more interactive, immersive, and accessible. VR/AR technologies enhance student engagement and understanding, particularly among younger, tech-savvy learners. However, issues such as cost, cultural accuracy, and teacher readiness remain significant challenges. To maximize their impact, these tools should be developed with cultural sensitivity and integrated alongside traditional methods. When balanced appropriately, VR/AR has the potential to enrich Islamic history education and bridge the gap between classical knowledge and modern learning approaches.

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