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Development of Virtual Reality-Based Learning Media for Islamic Cultural History in Madrasah Ibtidaiyah

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Abstrak

Mata pelajaran SKI memiliki peran strategis dalam membentuk pemahaman dan apresiasi peserta didik terhadap perkembangan sejarah dan peradaban Islam. Namun, pelaksanaan pembelajaran SKI di tingkat Madrasah Ibtidaiyah (MI) masih menghadapi berbagai tantangan, terutama keterbatasan ketersediaan media pembelajaran visual serta kurangnya kontekstualisasi materi pembelajaran. Penelitian ini bertujuan untuk mengembangkan media pembelajaran berbasis Virtual Reality (VR) yang mampu menghadirkan pengalaman belajar yang imersif dan efektif dalam menyampaikan materi sejarah Islam, khususnya dalam konteks Nusantara. Penelitian ini menggunakan model Research and Development (RnD) ADDIE yang terdiri dari lima tahap, yaitu Analysis, Design, Development, Implementation, dan Evaluation. Hasil validasi dari ahli materi dan ahli media menunjukkan tingkat kelayakan yang tinggi, dengan masing-masing memperoleh skor sebesar 86% dan 81%. Uji coba lapangan yang dilakukan kepada peserta didik menunjukkan tingkat kepraktisan dengan rata-rata skor sebesar 87%. Efektivitas media yang dikembangkan dibuktikan melalui adanya peningkatan yang signifikan pada hasil belajar kelompok eksperimen dibandingkan dengan kelompok kontrol. Temuan ini menunjukkan bahwa media pembelajaran berbasis VR tidak hanya mampu meningkatkan pemahaman peserta didik, tetapi juga memberikan alternatif inovatif dalam pembelajaran SKI yang mengintegrasikan teknologi sekaligus tetap mempertimbangkan konteks lokal. Selain itu, media ini berpotensi untuk direplikasi pada berbagai topik lain dalam pendidikan Islam dasar guna memperkuat kualitas pembelajaran berbasis digital.

Kata kunci: Sejarah Kebudayaan Islam, virtual reality, media pembelajaran, Madrasah Ibtidaiyah, penelitian dan pengembangan.

Abstract

The subject of Islamic Cultural History (Sejarah Kebudayaan Islam/SKI) plays a crucial role in fostering students' understanding and appreciation of Islamic civilization. However, its implementation at the Madrasah Ibtidaiyah (MI) level often faces challenges, including limited visual learning resources and a lack of contextualized materials. This study aims to develop a Virtual Reality (VR)-based learning medium to provide an immersive and engaging experience, particularly in exploring the historical legacy of Islam in the Indonesian archipelago. This research employed the ADDIE model, consisting of Analysis, Design, Development, Implementation, and Evaluation stages. The results of expert validation indicate that the developed media is highly feasible, with scores of 86% from subject-matter experts and 81% from media experts. Field testing further shows a practicality level of 87%, demonstrating that the media is user-friendly and suitable for classroom use. Moreover, the effectiveness of the VR-based media is reflected in the significant improvement of students'

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learning outcomes in the experimental group compared to the control group. Overall, VR-based learning media enhances students' understanding and offers an innovative, technology-integrated, and contextually relevant approach to teaching SKI, with potential for broader application in Islamic education.

Keywords: Islamic Cultural History, virtual reality, instructional media, Madrasah Ibtidaiyah, research and development.

INTRODUCTION

The subject of Islamic Cultural History (Sejarah Kebudayaan Islam, SKI) constitutes an essential component of the Madrasah Ibtidaiyah (MI) curriculum. It is designed to foster students' historical understanding, appreciative attitudes, and analytical skills toward the development of Islamic civilization. Through SKI, students are not only introduced to past events but are also guided to internalize moral and cultural values embedded in Islamic history. These values play a crucial role in shaping students' religious identity and character formation. Therefore, SKI learning is expected to go beyond memorization and encourage meaningful engagement with historical narratives.

One of the key themes in SKI learning is the history of the arrival and development of Islam in the Indonesian archipelago. This includes the significant role of the Walisongo, who are widely recognized as the primary agents of Islamization in Java during the 15th and 16th centuries. Their approach to da'wah emphasized cultural adaptation and peaceful interaction with local communities. By integrating Islamic teachings with pre-existing Hindu-Buddhist traditions, they successfully facilitated a harmonious religious transformation (Saumantri, 2022). This historical model offers valuable lessons for contemporary Islamic education in fostering tolerance and cultural sensitivity.

In the context of primary education, the topic of Walisongo holds strategic importance within the SKI curriculum. It aims to provide students with an understanding of historical figures who contributed significantly to the spread of Islam. Additionally, it encourages students to appreciate the cultural and spiritual heritage of Islam in Indonesia. According to Himmah (2021), this topic is essential for building students' awareness of local Islamic history and identity. However, the delivery of such content often remains limited to textual explanations and lacks experiential engagement. (Himmah, 2021).

Despite its importance, the teaching of SKI at the MI level still faces several pedagogical challenges. Previous studies indicate that the learning process is largely dominated by conventional methods such as lectures and rote memorization. This approach tends to position students as passive recipients of information rather than active participants in the learning process. As a result, students often experience difficulties in understanding and appreciating historical content in depth. Farhurohman and Sa'adiah (2020) highlight that such practices reduce students' emotional and intellectual engagement in learning.

Another significant challenge lies in the abstract and narrative nature of historical content in SKI.(Farhurohman & Sa'adiah, n.d.). Students at the elementary level often struggle to visualize past events due to limited access to concrete learning resources. The absence of visual and contextual media makes it difficult for them to connect historical narratives with real-life experiences. Ulum (2022) explains that this limitation hinders students' ability to construct meaningful understanding of historical events. Consequently, there is a need for innovative instructional media that can bridge this gap. (Ulum, 2022).

In response to these challenges, recent developments in educational technology have introduced various interactive learning media. One of the most promising innovations is Virtual Reality (VR), which enables the creation of immersive and interactive learning environments. VR technology allows students to experience simulated historical settings as if they were physically present. Nurdyansyah (2019) states that such media can transform abstract concepts into concrete experiences.(Nurdyansyah, 2019) Similarly, Batubara (2020) emphasizes that effective learning media significantly enhance both the efficiency and effectiveness of the learning process.(Batubara, n.d.)

Empirical studies have demonstrated the potential of VR in improving learning outcomes across various disciplines. VR-based learning has been shown to increase students' motivation, engagement, and retention of knowledge. Eldiana et al. (2022) report that immersive environments help students better understand complex concepts.(Eldiana et al., 2022). further argue that VR enhances students' observational, classification, and communication skills.(Kang et al., 2022) In addition, Rahmawati (2023) finds that VR can significantly improve students' learning motivation and cognitive achievement.(Rahmawati, n.d.)

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However, despite these advancements, the application of VR in Islamic Cultural History learning remains limited. Most existing studies focus on science education or general subjects, with little attention given to Islamic education contexts. Furthermore, few studies specifically explore the integration of local Islamic historical content, such as the Walisongo, into VR-based learning media. This indicates a clear gap in the literature regarding the contextualization of VR technology in SKI learning. Therefore, further research is needed to develop media that combines technological innovation with culturally relevant content.

Based on this research gap, this study aims to develop and evaluate a VR-based learning medium focusing on the da'wah of Sunan Drajat. The media is designed to provide an immersive, contextual, and meaningful learning experience for students. It seeks to bridge the gap between abstract historical narratives and concrete learning experiences. The evaluation of this media includes aspects of validity, practicality, and effectiveness in classroom implementation. Ultimately, this study is expected to contribute to the advancement of technology-integrated Islamic education and to provide a novel approach to experiential learning in SKI at the MI level.

METHODS

a. Type and Research Approach

The Research and Development (R&D) method is a research approach aimed at producing a particular product while simultaneously testing its effectiveness in real-use contexts (Sugiyono, 2013). One of the models widely used in developing educational products within the R&D framework is the ADDIE model, which stands for Analysis, Design, Development, Implementation, and Evaluation.

This model is systematic and structured, and it is grounded in learning theories used to design solutions to problems within educational contexts (Supriyati, 2015). Hidayati explains that the ADDIE model is a pragmatic and methodological instructional approach that emphasizes individualized learning by applying a comprehensive perspective on human learning systems(Hidayat & Nizar, n.d.).

In general, the ADDIE development model consists of five stages: Analysis, Design, Development, Implementation, and Evaluation. Steps of the ADDIE Development Model

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Table 1
Steps of the ADDIE Development Model

Step	Concept
Analysis	Identifying the causes of problems in history learning
Design	Designing the product
Development	Developing virtual reality-based history learning media
Implementation	Implementing virtual reality-based history learning media in the classroom
Evaluation	Assessing the feasibility of virtual reality-based history learning media

b. Product Testing and Research Subjects

This study will be conducted at MINU Unggulan, with sixth-grade students as the research subjects. Two classes will be involved in this study: the experimental class will use Virtual Reality-based learning media on the da'wah of Sunan Drajat, while the control class will receive conventional learning methods.

c. Data Collection Techniques

In this study, the data collection techniques used by the researcher are:

1. Observation
2. Literature Review
3. Questionnaire
4. Test

d. Research Instruments

Research instruments are tools used in the process of obtaining and collecting data in order to draw conclusions or answer research questions (C. R. Semiawan, 2010). These instruments are employed to measure various aspects, such as user experience and effectiveness. The instrument used in this study is a questionnaire, as follows:

1. Media Expert Validation Questionnaire Sheet

The validation of the Virtual Reality-based learning media on the da'wah of Sunan Drajat is conducted by media experts. The purpose of this validation is to determine whether the developed learning media is appropriate and feasible to be disseminated to the target schools for use as an instructional medium. The assessment is carried out by completing a questionnaire using a Likert scale.

Table2
Aspects Assessed by Media Experts

No	Aspects Assessed
1.	Product Display Aspect
2.	Content Feasibility Aspect
3.	Product Usability Aspect

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2. Content Expert Validation Questionnaire Sheet

The content expert validation is conducted by the SKI subject teacher at MINU Unggulan, with the aim of assessing the depth of the material presented and its relevance to the expected competencies for instructional use. The instrument used in the content expert validation questionnaire includes aspects of content feasibility, language, and material suitability. The evaluation of the questionnaire is carried out using a Likert scale. The aspects assessed in the content expert validation are as follows:

Tabel 3
Aspects Assessed in the Validation

No.	Aspects Assessed
1.	Learning Aspect
2.	Material Suitability Aspect
3.	Language Aspect

3. Respondent Questionnaire Sheet

The respondent questionnaire sheet is administered to sixth-grade students of MINU Unggulan Bojonegoro as the research subjects. The assessment of the respondent questionnaire in this study uses a Likert scale. The aspects evaluated are as follows:

Table 4
Aspects Assessed in Content Expert Validation

No.	Aspects Assessed
1.	General Aspect
2.	Product Feasibility Aspect
3.	Ease of Learning Aspect

4. Test Instrument

The researcher uses test instruments to measure students' abilities. The types of tests used in this study are pre-test and post-test. The test instruments are subjected to validity, reliability, item difficulty level, and discrimination power analysis.

e. Data Analysis and Interpretation

After the data have been collected, the next stage is to conduct data analysis and interpretation to determine the results. Data analysis is carried out after all data from media expert validation, content expert validation, and respondents have been gathered. In this research and development study, data are analyzed using questionnaire techniques with a Likert scale. The effectiveness of the developed media is tested using a paired sample t-test and N-gain analysis

The Likert scale is a method used to measure positive or negative responses to statements. In this study, four response options are used in the questionnaire, as shown in the table below:

Table 5

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The Likert scale

Description	Score
Strongly Agree (SA)	4
Agree (A)	3
Disagree (D)	2
Strongly Disagree (SD)	1

The percentage score of the Likert scale feasibility is calculated using the following formula:

$$P = \frac{\text{Total Score}}{\text{Max Score}} X\ 100\%$$

The results are then converted into percentage interval criteria as follows:

Table 6
Percentage Interval Scale

No.	Percentage	Criteria
1	0% – 25%	Very Infeasible
2	26% – 50%	Infeasible
3	51% – 75%	Feasible
4	76% – 100%	Very Feasible

The product is considered feasible if it falls within the 76%–100% interval with the criterion "Very Feasible" or within the 51%–75% interval with the criterion "Feasible." Conversely, if the product falls within the 0%–25% interval ("Very Infeasible") or 26%–50% interval ("Infeasible"), it is considered not feasible.

RESULT AND DISCUSSION

This study aims to develop a Virtual Reality (VR)-based learning media for Islamic Cultural History (SKI) featuring the *da'wah* of Sunan Drajat at MINU Unggulan Bojonegoro. This media is designed to address the challenges in SKI learning, which has been largely conventional and insufficiently contextual, particularly in presenting narrative-based local Islamic historical content. The development process employs the ADDIE model. This model consists of five main stages: (1) Analysis (needs and context analysis), (2) Design (initial product design), (3) Development (product development), (4) Implementation (application of the product in learning), and (5) Evaluation (evaluation of the effectiveness and feasibility of the product).

The trial subjects consisted of two groups, namely the control class and the experimental class, each comprising 26 students. The effectiveness of the media was measured through expert validation (media and content), student practicality, and learning outcomes assessed through pre- and post-tests in both classes. The media is considered successful if it meets three main criteria: valid (in terms of content and design), practical (easy for students to use), and effective (positively impacting students' learning outcomes).

1. **Analysis Stage**

At this initial stage, the researcher conducted observations and reviewed the SKI learning process implemented at MINU Unggulan Bojonegoro. This observation aimed to identify gaps between ideal learning needs and actual classroom conditions, particularly regarding the use of interactive technology, such as Virtual Reality, in Islamic history learning. The information obtained served as the basis for developing media designs aligned with the characteristics of MI students.

2. **Design Stage**

This stage involves the initial design of the Virtual Reality-based learning media. The design was developed using the theasys.io platform, which enables the creation of interactive 360-degree virtual tours. The initial design includes a main page (landing page), instructional content aligned with the SKI curriculum, interactive visual elements, and simulation scenarios for virtual visits to Islamic historical sites in the Indonesian archipelago. The design of the VR-based learning media is as follows:

a. Home Page

On the main page, there are two buttons: one button directs users to the learning material on the da'wah of Sunan Drajat, and the other is a profile button that displays the developer's profile.

b. Profile Page

On the profile page, there are three buttons: one to navigate to the Part 1 content page, one to proceed to the next material page, and one to return to the home page. The content page of Part 1 includes material on the coastal area of Lamongan and the profile of Sunan Drajat. This page also contains one button to close the Part 1 material content.

c. Part 2 Material Page

On the initial page of Part 2, there are three buttons: a button to access the content of Part 2, a button to return to the previous page, and a button to proceed to the next page. The content of Part 2 discusses the da'wah methods of Sunan Drajat. This page includes one button to close the Part 2 material content.

d. Part 3 Material Page

On the initial page of Part 3, there are three buttons: one to access the content of Part 3, one to go to the next page, and one to return to the previous page. The content page of Part 3 presents material on the historical heritage of Sunan Drajat. This page

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includes three buttons: one to proceed to the next material, one to return to the previous material, and one to close the Part 3 content.

e. Final Page

This page contains a globe-shaped button that, when clicked, directly connects users to the Quizizz page.

3. Development Stage

At the development stage, the product design prepared according to the initial plan is implemented in a Virtual Reality format via the Theasys website. Theasys is a platform for creating virtual reality content that can be easily accessed and used on Android and iOS devices. The completed design is then developed into a VR-based learning media on the da'wah of Sunan Drajat. After the development process is complete, the learning media undergo validation by media and content experts.

4. Expert Validation Results

The VR-based learning media on the da'wah of Sunan Drajat is evaluated for its feasibility through expert validation. This validation consists of media-expert validation, content-expert validation, and language validation. The results are presented as follows:

Table 7
. Expert Validation Results

No.	Institution	Validator	Validation Type	Result
1	UNUGIRI	ST	Media 1	89%
2	UNUGIRI	AR	Media 2	86%
3	MINU	FZ	Content 1	86%
4	MINU	KK	Content 2	86.2%
5	UNUGIRI	DW	Language 1	90%
6	UNUGIRI	NM	Language 2	87%
			Average	87.4%

Based on the validation results, media experts obtained an average score of 87% categorized as "Very Feasible," content experts obtained an average of 86% categorized as "Very Feasible," and language experts obtained an average of 88% also categorized as "Very Feasible." Overall, the validation results indicate that the VR-based learning media for SKI is highly feasible for use in the learning process.

5. Implementation Stage

At the implementation stage, the developed product and concept are applied in real classroom settings (Tanjung & Nababan, 2018). The designed learning media is then tested and simulated with students. The implementation is conducted on a limited basis at MINU Unggulan. The researcher involves two classes: Class VI A as the

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experimental group and Class VI B as the control group. In the control class, learning is carried out using conventional methods, followed by a pre-test and a post-test. Meanwhile, in the experimental class, learning is conducted using the VR-based media.

Based on the *N-gain* test results, the average score of the experimental class increased by 70.35% after learning with the VR-based media, indicating that the media is quite effective in improving students' literacy. In contrast, the control class showed an average increase of only 20.89%, which falls into the ineffective category.

The pre-test and post-test were conducted to measure students' abilities in both the experimental and control groups and to obtain data for evaluating the media's effectiveness in improving students' literacy skills.

6. Evaluation Stage

The evaluation stage aims to analyze students' responses to the learning media that have been used in the learning process, as well as the changes resulting from its use (Batubara, 2020). At this stage, the Virtual Reality-based learning media on the da'wah of Sunan Drajat, which has previously undergone validation by media and content experts, is tested on a limited basis with sixth-grade students (Class VI A) at MINU Unggulan. Students then provide feedback on the learning media by completing a questionnaire.

The percentage of practicality of the VR-based learning media is calculated using the following formula:

$$P = \frac{1546}{1768} X\ 100\% = 87\%$$

Based on the results of testing the VR-based learning media and the questionnaire responses from 26 sixth-grade students at MINU Unggulan, the developed learning media is categorized as "very feasible," with a percentage score of 87%. Therefore, the media can be effectively implemented as a learning tool to support the SKI learning process.

7. Discussion of Learning Media Practicality

The practicality of learning media is an important indicator in the development of digital instructional tools. Effective learning media must not only be valid in terms of content but also efficient and enjoyable to use in real classroom contexts (Suryadi, 2020). In the context of educational technology, practicality also includes technical feasibility, ease of use, and flexibility within classroom settings (Heinich, 2002). Based on this theoretical framework, this study evaluates the practicality of the Virtual Reality

(VR)-based learning media developed on the topic of Walisongo *da'wah,* particularly Sunan Drajat, in Islamic Cultural History (SKI) at the Madrasah Ibtidaiyah level.

The results of the practicality test, obtained through questionnaires distributed to 26 students of Class VI A at MINU Unggulan, show an average score of 87%, which falls into the "very feasible" category for use in the learning process. This finding supports the view of Morrison, Ross, Kalman, and Kemp (2011) that the practicality of media can be assessed from its ability to support learning objectives by reducing students' cognitive load and maximizing engaging learning experiences (Mcmurtry, 2013). In this context, VR technology provides simulation-based learning experiences that create realistic and immersive environments, helping students develop spatial, visual, and historical understanding simultaneously.

Furthermore, according to Mayer (2009) in the Multimedia Learning Theory, media that integrate text, images, and digital interaction in a structured manner enhance memory retention and knowledge transfer, particularly when presented in a narrative context such as the da'wah of Sunan Drajat. The reflections of students in this study indicate that they were able to connect virtual experiences with Islamic historical and spiritual values, such as tolerance, peaceful da'wah, and cultural acculturation. This demonstrates that VR media functions not only as an informational tool but also as a medium for internalizing values and emotional learning experiences.

From a pedagogical perspective, the use of VR in SKI learning aligns with constructivist learning theory. According to Jonassen (1999), interactive digital media enable learners to actively construct knowledge through direct interaction with virtual learning environments that are exploratory and reflective (Rosen et al., 2015). Students are not merely passive recipients of information but actively explore the historical narratives of Walisongo da'wah through immersive spatial experiences, thereby enhancing engagement and affective involvement.

Technically, this media also aligns with the principles of user-centered design in instructional system development theory, which emphasizes the needs and characteristics of users (Dick et al., 2015). The researcher utilized the Theasys platform, which is responsive and user-friendly across student devices, minimizing barriers related to access and navigation. This indicates that the media has been designed in accordance with technology-based instructional design principles.

In terms of contextual relevance, practicality is also evident in the media's ability to address geographical and logistical challenges in teaching history at madrasahs. As stated by Molenda (2008), effective educational technology should overcome limitations related to learning resources, time, and space. In this regard, VR media allows students to virtually "visit" historical sites such as the tomb of Sunan Drajat, ancient mosques, and Islamic trade ports without the need for physical travel, which is often constrained by cost and time. (Heinich, 2002)

These findings are consistent with studies by Radianti et al. (2023), which emphasize that VR-based learning can improve the effectiveness of instruction in narrative and spatial subjects such as history and geography, and has a significant impact on students' motivation and depth of understanding.(Radianti et al., n.d.) Similarly, Sudjana and Rivai (2019) highlight that VR supports experiential learning, which significantly enhances student engagement and learning outcomes compared to conventional methods.(Sudjana & Rivai, n.d.)

In this context, the VR-based learning media on the da'wah of Sunan Drajat is highly practical, as it is well received by students and supports both affective and cognitive learning outcomes. Its practicality is not limited to technical ease of use; it also lies in its ability to create meaningful, immersive learning experiences while encouraging students to think critically and reflectively about the history of Islam in the Indonesian archipelago.

CONCLUSION

This study aims to develop a Virtual Reality (VR)-based learning media on the *da'wah* of Sunan Drajat using the ADDIE model (Analysis, Design, Development, Implementation, and Evaluation). The development results indicate that the media meet the validity criteria, with average scores of 81% from media experts and 86% from content experts. In addition, the media's practicality is demonstrated by positive responses from 87% of sixth-grade students, indicating that it is highly feasible for use in Islamic Cultural History (SKI) learning at the Madrasah Ibtidaiyah level.

Pedagogically, this VR-based learning media can present complex historical content in an interactive, immersive format, thereby facilitating deeper, more meaningful learning experiences. By applying an experiential learning approach, students not only understand historical facts but also experience and internalize them within the cultural context of Islam in

the Indonesian archipelago. The integration of Islamic content, digital technology, and character values constitutes the main strength of this media.

Therefore, this study contributes to the development of technology-based learning innovations for Islamic primary education. These findings open opportunities for broader integration of immersive technologies into the SKI curriculum and encourage further research on the effectiveness of VR media in strengthening historical understanding, spirituality, and students' character development in the digital era.

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