

Developing Virtual Reality-Based Interactive Learning Media to Strengthen Islamic Character Values in Early Childhood Education

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ARTICLE INFO

Article history:

Received December 04, 2025

Revised February 15, 2026

Accepted March 25, 2026

Available online June 23, 2026

Keywords:

Virtual Reality, Islamic Character, Interactive Learning, Early Childhood Education, Immersive Digital Media.



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ABSTRACT

This study was conducted to address the challenge of underdeveloped Islamic character values among early childhood learners, which is influenced by limited instructional media and the high exposure to inappropriate digital content. Conventional teaching methods have not been able to present moral values in ways that are concrete, engaging, and meaningful for young learners, thus highlighting the need for an immersive technology-based innovation. This research aims to develop and evaluate a Virtual Reality-based interactive learning media designed to strengthen key Islamic character values, including prayer discipline, honesty, trustworthiness, and tolerance. The study employed a Research and Development approach using the ADDIE model, consisting of analysis, design, development, implementation, and evaluation stages. Media expert validation resulted in a feasibility score of 93.33 percent, while the material expert scored the product at 90 percent, indicating that the media is highly feasible. Implementation with early childhood learners showed an improvement in character scores from an average of 65.75 in the pretest to 83.54 in the posttest, with consistent behavioral enhancement demonstrated by all participants. The findings confirm that Virtual Reality provides a concrete, engaging, and meaningful learning experience that effectively supports the internalization of Islamic values. This research contributes to the development of innovative instructional media relevant to contemporary Islamic education and offers a foundation for integrating immersive technologies into character learning at the early childhood level.

INTRODUCTION

Early childhood education plays a crucial role in shaping children's moral foundations (Zainuddin et al., 2022), behavioral patterns (Simanjuntak, 2021), and emotional maturity (Harianja et al., 2023). At this age, children require meaningful learning experiences that nurture honesty, discipline, responsibility, empathy, and worship practices in developmentally appropriate and engaging ways (Musfiroh, 2025). However, preliminary observations reveal a substantial gap between these ideal expectations and the actual learning conditions in early childhood settings. Learning activities remain dominated by conventional storytelling, singing, and free play, while the integration of interactive digital media is still very limited. At the same time, more than ninety percent of children at the study site regularly

use mobile phones for gaming at home, leading to behavioral issues such as inappropriate language, disrespectful expressions, and early signs of bullying. These observations indicate that traditional approaches may not be sufficient to capture children's attention or effectively internalize Islamic character values.

The findings also show that although most children participate in religious learning outside of school, fewer than half are consistent in performing daily prayers. This inconsistency highlights a gap between exposure to religious knowledge and internalized Islamic practices. The presence of undesirable behaviors learned from digital games, such as calling peers by their parents' names or refusing to take turns, demonstrates that children are more influenced by digital entertainment than by formal moral instruction. These realities underline the need for innovative pedagogical strategies that address both behavioral challenges and the impact of uncontrolled digital content. The main issue is therefore not the absence of moral teaching but the lack of engaging, developmentally appropriate, and technology-based media that can strengthen Islamic character in ways that are enjoyable and immersive for young children.

Previous research on Islamic educational media emphasizes the importance of using tools that are attractive (Anizak Umilatifah & Faridi Faridi, 2024), interactive (Ayu Ni Komang & Manuaba I.B Surya, 2021). Recent studies have also highlighted the growing integration of digital technology in education as part of the Education 4.0 transformation, encouraging educators to adopt technology enhanced and student centered learning approaches that are more compatible with children's digital habits and learning preferences (Bonfield et al., 2020). Studies have shown that digital and game-based learning can improve students' engagement, visual attention, and learning outcomes through interactive and personalized learning experiences (Panjaburee et al., 2024). Furthermore, immersive technologies such as Virtual Reality (VR) have been found to enhance children's curiosity, experiential learning, behavioral responses, and attention by providing realistic and interactive environments (Sando, Kleppe, et al., 2025; Sando, Schwebel, et al., 2025). In the context of Islamic education, recent studies indicate a transformation from traditional learning approaches toward digital learning models, reflecting the increasing acceptance of technology integration in Islamic educational environments (Askar et al., 2025; Suresman et al., 2025). Although previous studies have explored Islamic educational media such as storytelling, songs, picture cards, animated videos, and semi-digital learning tools, most of them still rely on passive learning activities and provide limited opportunities for immersive behavioral internalization among children (Purwanto, 2019; Ramadhani & Masykuroh, 2022; Sriyatin et al., 2023).

Despite these advancements, a significant gap remains in the use of immersive technologies within Islamic early childhood education. Existing VR studies mainly focus on academic learning (Wulandari et al., 2025), digital literacy (Assulamy, 2024), science exploration (Rahmawati et al., 2024), and none have integrated Islamic character-building content for early learners. Research on Islamic character education also continues to rely on conventional or semi-digital media and has not explored VR as a tool for countering negative digital influences (Cyntia et al., 2021). Furthermore, available studies do not address the increasing exposure of young children to inappropriate digital content or propose VR as a

positive alternative that redirects their digital engagement toward purposeful, value-based learning experiences. Moreover, limited studies have specifically examined the use of immersive VR technology to foster Islamic character values in early childhood education contexts. No existing research has developed a VR prototype specifically designed to simulate Islamic practices such as prayer, honesty, trustworthy, or tolerance in ways that children can actively experience and respond to. This gap indicates an opportunity to explore VR's potential in promoting Islamic character development during early childhood.

The integration of Virtual Reality offers a promising solution to these challenges by providing immersive, interactive, and experience-based learning environments. VR enables children to “experience” Islamic values rather than merely listen to them, allowing moral concepts to be presented through realistic and relatable scenarios. Through scenes such as performing wudu, praying together, helping friends, waiting patiently, and choosing between honest and dishonest actions, VR can support deeper internalization of values. VR's immersive nature also reduces distractions and increases focus, addressing common challenges associated with children's short attention spans in conventional learning (Khalidy et al., 2024). In addition, VR provides an alternative digital environment that is equally stimulating as gaming content but guided by Islamic principles, allowing children to transfer their interest in digital media to meaningful learning experiences (Nichla Choirin Attalina et al., 2024).

Based on these considerations, this study aims to develop and examine the effectiveness of a Virtual Reality-based interactive learning media designed to strengthen Islamic character values in early childhood education. The study seeks to describe the existing problems related to Islamic character among young learners, develop a VR prototype that integrates key Islamic values, and evaluate its feasibility and effectiveness in improving children's understanding and behavior. The findings of this study are expected to contribute to the innovation of Islamic educational media by offering an immersive digital alternative that aligns with contemporary technological realities while reinforcing Islamic character values. Additionally, this research is expected to provide practical benefits for teachers and educational institutions seeking meaningful ways to incorporate digital technologies into Islamic character education that are safe, developmentally appropriate, and engaging for young children.

Moreover, limited studies have specifically examined the use of immersive VR technology to foster Islamic character values in early childhood education contexts. Therefore, this study aims to develop and evaluate Virtual Reality based learning media to foster Islamic character values among early childhood learners.

METHODS

This study employed a Research and Development approach using the ADDIE model, which consists of analysis, design, development, implementation, and evaluation. The ADDIE framework was selected to guide the systematic creation and testing of a Virtual Reality-based interactive learning media for strengthening Islamic character values in early childhood education. The study was conducted with 24 early childhood learners who were chosen through purposive sampling to represent children experiencing challenges related to

digital exposure and Islamic behavioral development. Teachers and expert validators participated to provide professional input throughout the process.

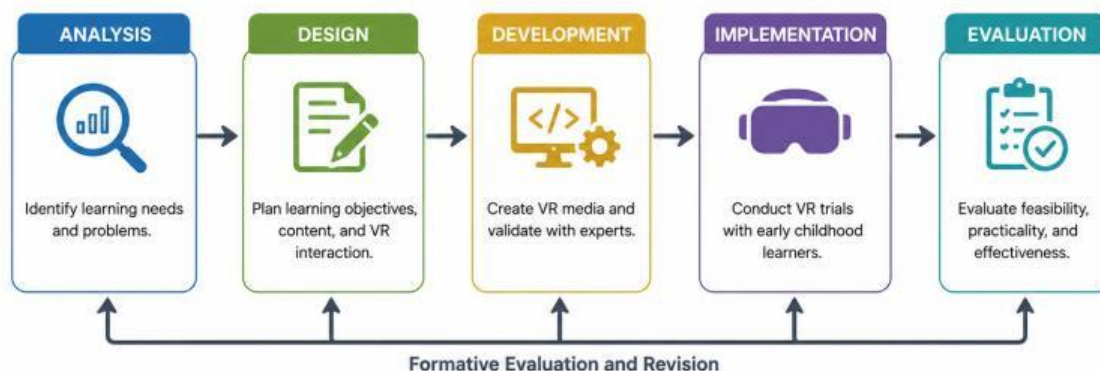


Figure 1. Implementation flow of the ADDIE model in developing VR-based Islamic character learning media.

The observation sheets, interview guidelines, and validation instruments were reviewed by two experts in early childhood education and educational technology to ensure content validity and alignment with Islamic character learning objectives. The expert validation process assessed aspects of content relevance, language clarity, usability, and age appropriateness. The average validation score indicated that the instruments were highly valid for implementation in early childhood learning contexts. To strengthen data reliability, triangulation techniques were applied through observations, interviews, and documentation, while inter-rater agreement among validators was used to ensure consistency of the assessment process.

The research began with an analysis stage aimed at identifying learning needs, existing problems, and contextual challenges. Data were collected through classroom observations, teacher interviews, and document analysis. The findings showed that learning activities relied heavily on conventional storytelling and singing, while children exhibited inappropriate language, bullying tendencies, and inconsistent prayer habits, partly due to high exposure to mobile gaming. Teachers also expressed a need for more engaging and interactive media aligned with Islamic teachings. These insights served as the pedagogical foundation for designing the VR-based learning media. Following the analysis, the design stage involved determining learning objectives, Islamic character values to be emphasized, content scope, and interaction types suitable for young children. The design process produced storyboards, flowcharts, and visual concepts that simulated real-life situations such as prayer activities, honesty scenarios, and helping behaviors. The user interface was planned to be simple, visually clear, and intuitive to accommodate the developmental characteristics of early childhood learners. Hardware and software considerations were established to ensure accessibility using mobile-based VR devices. The implementation stage consisted of pilot testing the revised VR media with a group of early childhood learners. Children participated in guided VR sessions under teacher supervision to ensure safety and to support navigation. Observation sheets were used to record students' behavioral responses, engagement levels, and interactions during and after the VR experience. Teachers also provided qualitative input on practicality, clarity, and children's reactions. Pre- and post-observation data were collected

to assess changes in prayer discipline, honesty, social behavior, trustworthy, and general moral conduct. The evaluation stage involved analyzing both formative and summative data to assess the feasibility, practicality, and effectiveness of the VR media. Formative evaluation occurred throughout the ADDIE process and informed iterative revisions, while summative evaluation analyzed expert validation scores, teacher feedback, and student behavior data. Quantitative data obtained from validation sheets and observation checklists were analyzed descriptively using percentage scores to determine the feasibility and practicality levels of the VR learning media. The percentage results were categorized into validity criteria ranging from low to highly feasible. Observation data were analyzed to identify changes in students' prayer discipline, honesty, social interaction, trustworthy, and moral behavior before and after VR implementation. Meanwhile, interview data from teachers and participants were processed using thematic descriptive analysis by categorizing recurring responses related to engagement, usability, clarity, and Islamic character development. The combination of quantitative and qualitative analysis enabled comprehensive evaluation of the effectiveness of the VR-based learning media.

RESULT

This section presents the findings obtained throughout the five stages of the ADDIE development model: Analysis, Design, Development, Implementation, and Evaluation. The results include problem identification, prototype creation, expert validation, pilot testing with children, revision processes, and the final output of the Virtual Reality based Islamic character learning media.

1.1 Analysis Results

The analysis phase revealed substantial challenges related to the development of Islamic character among early childhood learners at RA Cenderawasih. Observations indicated that classroom learning relied heavily on conventional approaches such as storytelling, singing, and simple free play. Although these methods are commonly used in early childhood settings, they were insufficient in fostering sustained engagement or building Islamic behavioral habits. During lessons involving moral instruction or character-based storytelling, many children were easily distracted, talking loudly, or disengaging from the learning process.

The analysis stage identified high levels of digital exposure among early childhood learners, which influenced children's behavioral patterns and reduced engagement in conventional Islamic learning activities. Most students frequently interacted with mobile games outside the classroom, contributing to behavioral issues such as inappropriate language use, low discipline in worship practices, and limited social sensitivity. Although many students participated in Qur'anic learning activities, the internalization of Islamic character values in daily behavior remained inconsistent. These findings indicate the need for immersive and interactive learning media capable of integrating Islamic values into meaningful behavioral experiences.

Interviews with teachers indicated a strong need for interactive, engaging digital media capable of capturing children's attention and modeling Islamic values more

effectively. Teachers expressed that traditional media lacked the immersive qualities needed to compete with the high appeal of mobile games. This analysis justified the need for a Virtual Reality-based learning media that provides immersive Islamic experiences, encourages moral decision-making, and counteracts negative digital influences with positive, value-oriented content.

Table 1. Baseline Analysis Findings

Indicator	Findings
Learning method	Predominantly storytelling and singing
Student engagement	Easily distracted during moral learning
Mobile phone usage	High exposure to digital games
Prayer discipline	Inconsistent daily prayer habits
Social behavior	Bullying tendencies and inappropriate language
Teacher needs	Interactive and immersive Islamic learning media

1.2 Design Results

The design phase consisted of translating the identified needs into a conceptual and technical blueprint for the VR learning media. The design focused on four Islamic values considered essential for early childhood character education: prayer discipline, honesty, amanah (trustworthiness), and tolerance. Each value was represented through a series of immersive VR scenes intended to simulate real-life situations that children frequently encounter.

A storyboard was developed to outline the flow of activities within the VR environment. The learning sequence began with a simple interaction scene in which children were greeted with *Assalamu'alaikum* and encouraged to respond politely. This was followed by scenes such as performing wudu, queuing to enter a prayer room, choosing between honest and dishonest actions, helping a friend pick up dropped items, and sharing toys. Each scene incorporated clear instructions and visual cues to support children's understanding.

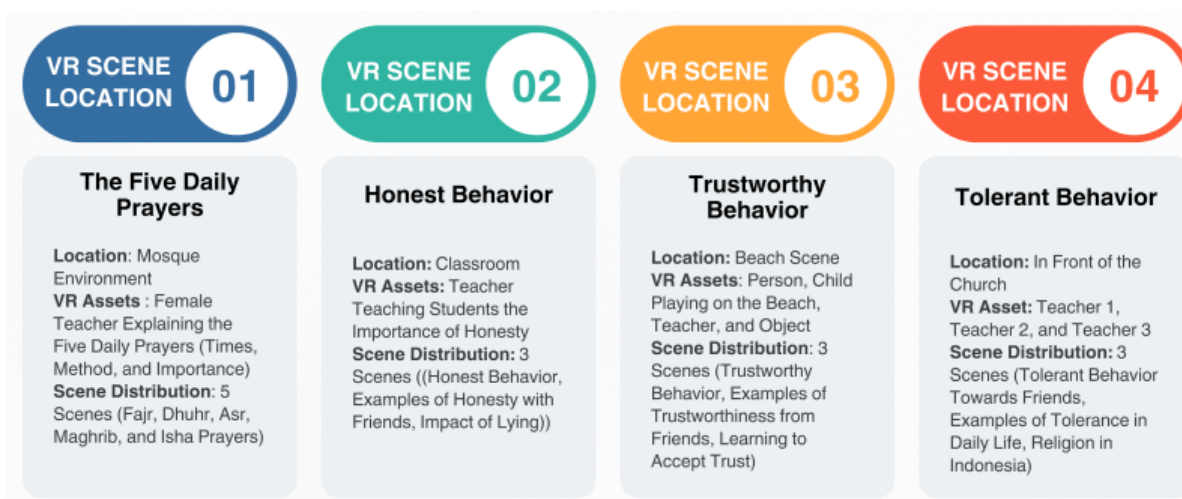


Figure 2. VR Storyboard Flowchart

The user interface (UI) was designed using large icons, simple gestures (point-and-gaze selection), and minimal text to match early childhood cognitive characteristics. Background colors and 3D objects were selected to create a warm, friendly Islamic environment, including masjid interiors, home settings, and playground scenes. A flowchart of the VR learning journey (Figure 1) was created to guide developers during the creation process.

Table 2. Mapping of Islamic Values to VR Scenes

Islamic Value	VR Scene Title	Scene Description	Intended Behavioral Outcome
Prayer Discipline	In Front of the Mosque Building	The child follows the VR direction, meets the teacher, and listens to an introduction about the importance of the Five Daily Prayers.	The child understands the importance of performing the five daily prayers.
Honesty	Lost Item Scenario	A child-character finds a dropped item. The player chooses whether to return it to the teacher or keep it. Each choice leads to different consequences.	The child learns that honesty brings goodness and peace, while dishonesty creates discomfort.
Trustworthiness	Class Duty Scene	The player is given simple tasks (e.g., arranging books, distributing prayer mats) and must complete them correctly.	The child learns to complete assigned responsibilities and maintain the trust given by others.
Tolerance	Helping a Friend Scene	A friend-character drops an item or struggles with a task. The player chooses whether to help or ignore.	The child develops empathy, cooperation, and a willingness to help others in daily life.

1.3 Development Results

Based on the design specifications, the development phase produced the first prototype of the VR-Based Islamic Character Learning Media. The prototype was built using Unity 3D and incorporated simple, high-contrast textures suitable for young children. Several 3D assets such as books, prayer mats, masjid elements, and animated characters were created or adapted from child-friendly asset libraries. The interactive elements such as selecting choices, navigating rooms, or responding to prompts were integrated using raycast selection commonly used in VR interaction systems.

Expert feedback guided several revisions during development. For example, the initial prayer scene included text-based instructions, which were then replaced with audio narration to make the experience more accessible to pre-literate children. The character animations were adjusted to ensure smooth and natural movement, especially during prayer gestures. Additional environmental sound effects (bird chirping, masjid ambience, soft Islamic background music) were added to enhance immersion without overwhelming the user.



Figure 3. Screenshot of VR



Figure 4. Screenshot of VR



Figure 5. Screenshot of VR



Figure 6. Screenshot of VR

1.4 Expert Validation Results

Two expert validators assessed the prototype: one media expert and one Islamic early childhood education expert. Validation focused on feasibility, usability, accuracy of Islamic content, and developmental appropriateness. A four-point Likert scale was used.

1.4.1 Media Expert Validation

The media expert assessed the Virtual Reality-based Islamic character learning media across five major aspects: Technical Quality, User Interface (UI), Usability, Functionality, and Aesthetic Design. The evaluation results are summarized in Table 2.

Table 3. Media Expert Validation Percentages

Aspect	Percentage	Category
Technical Quality	83.33%	Very Good

User Interface (UI)	100%	Excellent
Usability	91.66%	Very Good
Functionality	91.66%	Very Good
Aesthetic Design	100%	Excellent

These results indicate that the VR learning media demonstrates a high level of feasibility and is suitable for use in early childhood Islamic education. The highest scores were obtained in the User Interface and Aesthetic Design aspects (100%), showing that the media is visually appealing, age-appropriate, and intuitive for young learners. The character designs, color harmony, and interface elements were considered highly engaging and culturally aligned with Islamic educational contexts.

The Usability and Functionality aspects also scored very high (91.66%), reflecting that the media is practical for classroom implementation, easy for teachers to operate, and stable during user interaction. The VR system responds accurately to children's actions, and scene transitions run smoothly.

The Technical Quality aspect received a slightly lower score (83.33%), which still falls into the "Very Good" category. The expert noted that the visual clarity and animation smoothness were strong, but recommended minor improvements to audio synchronization and system performance during transitions to enhance immersion. These refinements were implemented in the revised version of the VR media before pilot testing with children.

Based on the expert evaluation, the VR-based Islamic character learning media obtained an overall feasibility score of 93.33%, categorizing it as "Very Feasible" for early childhood classroom use. The high ratings across all aspects demonstrate that the media is technically sound, child-friendly, aesthetically appealing, and pedagogically aligned with the objectives of Islamic character education.

1.4.2 Material Expert Validation

The material expert evaluated the accuracy of Islamic content, pedagogical appropriateness, character development alignment, instructional design quality, and the clarity of language used within the VR-based Islamic character learning media. The results of this evaluation are presented in Table 3.

Table 4. Material Expert Validation Percentage Scores

Aspect	Percentage	Category
Content Accuracy	91.66%	Very Good
Pedagogical Appropriateness	83.33%	Excellent
Character Development	100%	Very Good
Instructional Design	83.33%	Very Good
Language and Communication	91.66%	Very Good

The material expert noted that the VR media demonstrates a high level of accuracy in presenting Islamic teachings related to prayer discipline, honesty, amanah, tolerance, and polite communication. The 100% score in Character

Development reflects that all scenes and learning interactions effectively reinforce Islamic values through clear modeling, consistent narrative guidance, and realistic child-centered scenarios.

Pedagogical appropriateness and instructional design, both scoring 83.33%, indicate that the content aligns well with the developmental characteristics of early childhood learners. The structure and flow of the VR scenes were deemed logical, age-appropriate, and supportive of active learning. However, the expert recommended minor refinements, particularly in simplifying certain narration sentences and improving clarity in the instructions given during value-based decision-making scenes.

The Language and Communication aspect received 91.66%, demonstrating that the language used in the VR environment is generally clear, polite, and suitable for PAUD learners. Islamic expressions such as *Assalamu'alaikum*, *Bismillah*, and polite conversational cues were correctly integrated.

Overall, the VR-based Islamic character learning media achieved an average feasibility score of 90%, placing it in the “Very Feasible” category. The material expert concluded that the VR content is accurate, pedagogically sound, and developmentally appropriate for strengthening Islamic character values in early childhood education.

1.5 Implementation Results

The pilot implementation of the Virtual Reality based Islamic character learning media was conducted with 24 children at RA Cenderawasih. Each child participated in a guided VR session lasting approximately 10–12 minutes, during which teachers observed student engagement, interaction, and behavioral responses. A behavioral observation sheet was used to record Islamic character indicators before and after the intervention. The indicators included prayer discipline, honesty, trustworthiness and tolerance.

1.5.1 Pre Post Behavioral Comparison

Table 5. Pre–Post Behavioral Improvement

Indicator	Pre-Test	Post-Test	Improvement
Prayer Discipline	65	84	+19
Honesty	66	85	+19
Trustworthy	64	82	+18
Tolerance	68	83	+15
Average	65.75	83.54	+17.79

Based on the assessment results of 24 students, the overall Islamic character score increased from an average of 65.75 (pre-test) to 83.54 (post-test), demonstrating a significant improvement of 17.79 points or 27.07%.

Students demonstrated higher engagement, improved focus, and more positive emotional responses during the VR sessions. Many students followed instructions better, showed enthusiasm when interacting with the VR environment, and displayed stronger moral reasoning in post-test discussions.

Teachers reported that children were “more enthusiastic and more attentive than usual lessons”, especially during scenes involving prayer activities and helping friends. The immersive VR environment was able to maintain students’ attention for longer periods compared to traditional storytelling or conventional PAUD media.

1.5.2 Qualitative Feedback

Teachers reported that the VR learning media significantly increased children’s engagement, focus, and emotional involvement during Islamic learning activities. Compared to conventional storytelling methods, students appeared more attentive and enthusiastic when interacting with immersive VR scenarios. Teachers also observed that children were more willing to discuss moral behaviors such as helping others, honesty, and prayer discipline after participating in the VR sessions. These findings suggest that immersive VR experiences can support the internalization of Islamic character values in early childhood learning environments.

1.6 Evaluation Results

The evaluation stage included both formative and summative assessments to determine the feasibility and effectiveness of the Virtual Reality-based Islamic character learning media. Formative evaluation was conducted through expert reviews. The media expert recommended minor improvements related to audio synchronization, scene transitions, and icon contrast, while the material expert suggested simplifying narration and clarifying instructional guidance. All recommendations were incorporated into the revised prototype.

Summative evaluation was carried out after implementation with 24 students. The results showed a substantial improvement in Islamic character scores, increasing from an average of 65.75 (pre-test) to 83.54 (post-test), with a gain of 17.79 points (27.07%). All students demonstrated positive progress, with varying levels of improvement—some showing high gains, others moderate, and a few lower but still positive improvements. Teacher observations indicated that the VR media enhanced student engagement, focus, and understanding, making Islamic values more concrete and meaningful.

Expert validation further confirmed the media’s high feasibility, with scores of 93.33% from the media expert and 90% from the material expert. Overall, the evaluation results conclude that the VR learning media is feasible, effective, and capable of providing an immersive learning experience that positively influences students’ Islamic character development.

DISCUSSION

This study aimed to develop and evaluate a Virtual Reality based interactive learning media designed to strengthen Islamic character values among early childhood learners. The

findings from expert validation, pilot implementation, and evaluation processes demonstrate that the VR media is highly feasible, pedagogically relevant, and effective in improving children's understanding and practice of Islamic values such as prayer discipline, honesty, trustworthiness, tolerance, helping others, and polite communication. This section discusses the implications of the findings, relates them to previous research, and provides insights into the broader significance of integrating VR technology into Islamic early childhood education.

The findings show that the VR-based learning media produced a significant positive impact on children's Islamic character development. Quantitatively, students' average scores increased from 65.75 in the pre-test to 83.54 in the post-test, reflecting a substantial improvement of 17.79 points (27.07%). All students exhibited progress, although the degree of improvement varied: some achieved high gains (≥ 20 points), others moderate gains (15–19 points), and a smaller group demonstrated lower but still meaningful improvements (≤ 14 points). These variations reflect natural differences in learning readiness and engagement, but overall illustrate that the VR intervention successfully enhanced children's understanding of Islamic values. These findings are consistent with previous studies demonstrating that immersive and game-based digital learning environments can significantly improve students' engagement, behavioral participation, and learning outcomes through interactive experiences and personalized feedback. Similar improvements in attention and experiential learning have also been reported in VR-based educational studies involving young learners and behavioral simulations (Panjaburee et al., 2024; Sando, Kleppe, et al., 2025; Sando, Schwebel, et al., 2025).

Expert evaluations further confirmed the quality and viability of the product. The media expert provided an overall feasibility score of 93.33%, indicating strong technical performance, intuitive user interfaces, and engaging aesthetic design. Similarly, the material expert rated the product at 90%, validating the accuracy of Islamic content, the appropriateness for early childhood development, and overall instructional coherence. These results validate that the product is both technically sound and pedagogically meaningful. The high validation scores support previous findings that educational technologies integrating immersive interaction, intuitive interfaces, and developmentally appropriate content can improve the feasibility and acceptance of digital learning media in early childhood education contexts (Bonfield et al., 2020).

Qualitative feedback from teachers strengthened these findings. Teachers observed increased engagement, attention, and enthusiasm among children during VR sessions, behaviors not typically seen in conventional learning activities. Children also demonstrated spontaneous moral reflection after the VR experience, such as expressing their desire to pray on time, return lost items, or help classmates. These affective responses indicate that the VR media successfully bridged the gap between moral instruction and internalized behavior. These findings support previous studies emphasizing that immersive digital learning environments increase children's emotional engagement, concentration, and reflective thinking more effectively than conventional instructional approaches. Similar observations have been reported in studies on VR-assisted learning and technology-enhanced moral education (Sando, Schwebel, et al., 2025).

The results support the notion that Virtual Reality can be a powerful tool for character education. The immersive nature of VR allows children to “experience” moral scenarios rather than merely hearing or reading about them. In this study, students interacted with realistic simulations of wudu preparation, mosque environments, honesty dilemmas, and opportunities to help others. Such experiential learning aligns with constructivist principles, which emphasize the importance of hands-on, meaningful experiences in shaping young children’s understanding. This finding is in line with previous research indicating that immersive learning environments encourage active knowledge construction, emotional involvement, and value internalization through experiential interaction. In Islamic educational contexts, digital learning transformation has also been shown to increase students’ participation and engagement with value-based learning materials (Askar et al., 2025; Suresman et al., 2025).

Furthermore, VR’s capacity to simulate consequences for ethical choices such as rewarding honest behavior or showing discomfort when making poor decisions helps children internalize values more effectively. This aligns with behavioral and socio-emotional learning theories that highlight the importance of feedback, modeling, and emotional engagement in character formation. The ability of VR to maintain focus is also significant. Teachers reported that children were calmer, more attentive, and more motivated during VR sessions. This suggests that immersive technology may help mitigate common challenges in early childhood classrooms, such as distractibility, short attention spans, and inconsistent engagement with traditional storytelling or worksheets.

Compared with conventional storytelling and worksheet-based instruction, the VR learning media developed in this study provided a more immersive and interactive learning experience for children. Previous studies on Islamic educational media primarily focused on animated videos, storytelling approaches, picture cards, and semi-digital instructional tools. While these approaches were effective in improving cognitive understanding, they often provided limited opportunities for behavioral simulation and experiential moral learning. In contrast, the VR media in this study enabled children to actively participate in simulated moral situations, allowing Islamic values to be experienced rather than merely memorized. This supports recent educational technology studies emphasizing that immersive learning environments can strengthen behavioral engagement, emotional involvement, and long-term value internalization among young learners (Bonfield et al., 2020; Nichla Choirin Attalina et al., 2024; Orsicha et al., 2024; Ramadhani & Masykuroh, 2022; Sriyatin et al., 2023).

Research Limitations

This study has several limitations. First, the implementation involved a relatively small sample of early childhood learners from a single educational institution, which may limit the generalizability of the findings. Second, the intervention was conducted over a limited period, preventing the observation of long-term behavioral changes in children’s Islamic character development. Third, the study primarily relied on observational and descriptive measures, which may not fully capture the complexity of children’s emotional and moral development. In addition, variations in VR device accessibility and classroom infrastructure may influence implementation consistency in different educational settings.

Recommendations for Future Research

Future research is recommended to involve larger and more diverse participant groups across multiple early childhood institutions to improve the generalizability of findings. Longitudinal studies are also needed to examine the long-term impact of VR-based Islamic learning media on children's behavioral development. Furthermore, future studies may integrate more advanced immersive technologies such as augmented reality, adaptive learning systems, or artificial intelligence to enhance interactivity and personalized learning experiences in Islamic early childhood education.

CONCLUSION

This study concludes that the development of Virtual Reality-based interactive learning media effectively supports the enhancement of Islamic character values in early childhood education. The research objectives related to the design, development, feasibility, and implementation of VR media were successfully achieved, as demonstrated through expert validation results, implementation outcomes, and positive behavioral improvements among learners. The immersive and experiential characteristics of VR enabled children to engage more meaningfully with moral scenarios, helping Islamic values become more concrete and easier to internalize in daily behavior. The findings indicate that VR can serve as an innovative and pedagogically relevant medium for Islamic character education in PAUD settings. This study also contributes to the development of Islamic educational technology by demonstrating the potential of immersive learning media to support early moral and behavioral development. Future research is recommended to improve technical aspects of VR media and expand implementation across broader educational contexts to examine long-term impacts on children's Islamic character development.

DECLARATIONS

The authors would like to express their sincere gratitude to the Ministry of Higher Education, Science, and Technology of the Republic of Indonesia for providing research funding through the *Penelitian Dosen Pemula* (PDP) program, which has enabled the successful completion of this study. The authors also extend their appreciation to the Institute for Research and Community Service (LPPM) of UNUGIRI for the continuous support, guidance, and facilitation provided throughout the research process. Their assistance has been instrumental in ensuring the smooth execution and completion of this work.

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