



Development Of Augmented Reality (AR) Media Based On Addie Model To Improve Fardhu Prayer Practice Skills In Class 2 Madrasah Ibtidaiyah

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Abstract:

As time goes by, all aspects of life must change to adapt to technological advances. Moreover, the current generation of students prioritizes convenience, innovation, and interactive and engaging experiences. Therefore, the use of conventional learning media based on two-dimensional (2D) textbooks and one-way demonstrations often makes students less interested and quickly bored. In Islamic jurisprudence (Fiqh) learning, learning media is one of the key factors influencing the effectiveness and smoothness of the learning process. The limitations of conventional media cause lower-grade students to have difficulty understanding the details of movement positions, the correct sequence of pillars, and the appropriate pronunciation of prayer recitations precisely. Therefore, the development of Augmented Reality (AR)-based learning media can provide a more enjoyable, interactive, visual, and immersive learning experience for students at MI Nurul Karim Bangsring and MI Al-Mufidah Sidodadi to facilitate understanding and improve their skills in practicing obligatory prayers. The purpose of this study is to describe the process of developing AR learning media based on Assemblr EDU in improving the practical skills of fardhu prayer and also to describe the impact of developing AR learning media on improving the practical skills of fardhu prayer of grade 2 students at MI Nurul Karim Bangsring and MI Al-Mufidah Sidodadi. The research method in this thesis is RnD (Research and Development) using the ADDIE (Analysis, Design, Development, Implementation, Evaluation) model. Data collection techniques include observation, interviews, documentation, questionnaires, and tests. The questionnaires were used for expert and student validation and peer assessment, while the performance test questions were used to assess students' prayer practice. The results of this study indicate the following: (1) The resulting learning media product is an AR-based Fiqh learning media using the Assemblr EDU platform based on flashcard markers that displays 3D animated projections of prayer movement demonstrations and audio pronunciation of prayer readings for class 2 of MI Nurul Karim Bangsring and MI Al-Mufidah Sidodadi. The product developed was declared very good and suitable for use after receiving assessments from media experts and material experts, and received positive responses from colleagues with an average score of 4.58 (Strongly Agree category), so it can help facilitate learning. (2) The use of AR learning media has a significant impact on improving students' fardhu prayer

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practice skills. This is shown by the evaluation results and very positive student responses in various aspects, namely media appeal (4.5), ease of operation (4.4), clarity of 3D visuals and audio (4.7), student learning activity (4.7), understanding of the sequence of prayer movements (4.6), mastery of memorizing readings (4.7), and improving overall fardhu prayer practice performance skills (4.7). This finding confirms that the AR media developed is effective in improving students' worship practice skills.

INTRODUCTION

In Islamic Jurisprudence (Fiqh) learning in Islamic Elementary Schools (Madrasah Ibtidaiyah), particularly in the lower grades, learning is not sufficient to emphasize cognitive understanding but also needs to be embodied in practical worship skills, including the practice of obligatory prayers. Prayer competency encompasses the accuracy of the sequence of movements, the appropriateness of the readings for each position, and the habituation of correct prayer procedures. For second-grade MI students, these skills are procedural skills that develop through repeated practice, observation of correct examples, and consistent feedback. Learning procedural skills requires demonstration, practice, feedback, and repetition to enable students to perform a procedure correctly (Burgess et al., 2020). The cognitive developmental characteristics of elementary school students also need to be taken into consideration when selecting learning media. Elementary school-aged students still require concrete learning experiences and visual aids to more easily understand a concept or procedure (Marinda, 2020). In the context of Islamic jurisprudence (Fiqh) learning, these characteristics are crucial because prayer material requires students not only to understand the concepts and recitations but also to be able to sequence and practice each movement correctly.

Utilizing learning media that are appropriate to student characteristics can help bridge conceptual material with practical experiences. In elementary school, prayer instruction still relies heavily on verbal explanations, two-dimensional picture books, and teacher demonstrations. This learning model has limitations, particularly when there are a large number of students and limited learning time. Not all students have the opportunity to observe the details of prayer movements from various perspectives, repeat the practice independently, and gradually correct errors. Therefore, innovations in learning media are needed to provide a more concrete, visual, and interactive learning experience. Advances in learning technology offer opportunities to introduce media that can enrich students' learning experiences. One technology that can be utilized is Augmented Reality (AR). AR technology allows virtual objects to be displayed in a real-world environment through digital devices. In learning, this technology can be used to visualize material that is difficult to explain solely through text or two-dimensional images. Research by Alfitriani, Maula, and Hadiapurwa (2021) shows that the use of Augmented Reality media in learning can help students recognize learning objects through more concrete visualizations. Research by Bara, Gasong, and Linggih (2025) also discusses the use of AR media in learning and its

relationship to student learning outcomes. These findings reinforce the potential of AR as a learning medium that provides visual and interactive experiences for students. Furthermore, research by Dewi, Popiyanto, and Yuliana (2024) demonstrated the use of AR media in science learning for elementary school students. Although the context of the material differs from Islamic jurisprudence (Fiqh) learning, the use of AR in the context of elementary education illustrates that visual technology can be utilized to support student learning. Indayana and Indrapangastuti (2025) also discussed the innovative use of AR-based learning media to improve elementary school students' science learning outcomes. Thus, the use of AR is relevant for development in learning at the elementary education level. The relevance of AR for prayer learning, more specifically, has been demonstrated by Kurniawan et al. (2021) through the development of an Augmented Reality application for elementary school students to learn about prayer. This medium uses three-dimensional visualizations to assist in conveying prayer procedures. This research provides evidence that AR can be used as an alternative learning medium for procedural worship materials.

The development of AR media in this study is not aimed solely at producing digital products, but rather at building learning experiences that encourage meaningful learning while improving practical performance. In Islamic Religious Education (ISE) instruction, AR has the potential to help students understand the material more deeply through richer learning experiences. This aligns with research by Albab et al. (2025), which examined the impact of AR use on meaningful learning in ISE. In terms of effectiveness, research by Agung, Sudiatmika, and Fadly (2023) shows that the use of AR in education has an impact on learning outcomes based on a review of experimental and quasi-experimental research. Chang et al.'s (2022) study on the use of AR in education also demonstrates the technology's potential to support learning outcomes. However, the success of technology use is determined not only by the technology used, but also by the learning design and how it is integrated with learning activities. This is in line with the study by Jongbloed, Chaker, and Lavoué (2024) on procedural training using immersive technology.

The study showed that immersive technology can be used in procedural learning, but its effectiveness is still related to how the training and evaluation processes are designed. Therefore, the application of AR to learning obligatory prayers is not sufficient simply by displaying movement animations; it also needs to provide a learning structure in the form of a sequence of steps, practice, repetition, and visual experiences that support practical skills. The media developed in this research uses the Assemblr EDU platform with flashcard markers. When the markers are scanned using a smartphone, students can see a three-dimensional animation of prayer movements accompanied by audio recitations. This media is expected to help students connect the movements, sequence, and recitations of prayer through a more concrete learning experience. The urgency of this research lies in the need to strengthen basic religious competencies from an early age through learning tailored to student characteristics and the potential for utilizing AR technology in madrasah learning. Empirically, various studies on AR demonstrate the technology's potential to support learning outcomes and experiences in both elementary and religious education. Based on the description, this study aims to describe the process of

developing Augmented Reality (AR) learning media based on Assemblr EDU on the material of fardu prayer practice and to determine the effectiveness of using this media in improving the skills of fardu prayer practice of class II students of MI Nurul Karim Bangsring and MI Al-Mufidah Sidodadi.

RESEARCH METHOD

This research employs the Research and Development (R&D) method. Research and development is used to develop a learning product and test its feasibility and effectiveness in the learning process. In this thesis, research and development is positioned as an approach oriented toward product development to address learning problems. The use of learning media as part of educational innovation also aligns with studies on the development of learning media, which position media as a crucial component in supporting the learning process (Shoffa et al., 2021). The development model used is the ADDIE model, which consists of five stages: Analysis, Design, Development, Implementation, and Evaluation. This model was used because it provides systematic development stages, starting from needs analysis to product evaluation. In the context of Islamic Religious Education, learning needs analysis is also important to ensure the media developed aligns with student characteristics and learning objectives (Rifa'i et al., 2022).

Furthermore, the media development stages in this study were aimed at producing products that can be used as alternative solutions to learning problems (Mu & Doi, 2025). The analysis phase was conducted to identify learning issues and the needs of students and teachers. The analysis included performance and needs analysis. This phase revealed that the practical teaching of obligatory prayers still largely relies on conventional media, such as two-dimensional picture books and teacher demonstrations. This situation makes it difficult for students to understand the details of the movements, their sequence, and the appropriateness of the recitations for each prayer movement. The analysis also took into account the characteristics of second-grade MI students, who require concrete, visual, and interactive learning. Based on these results, AR media was developed to help students observe prayer movements more clearly and repeat the exercises. The design phase involved developing product specifications, learning materials, media displays, and research instruments. The media was designed using the Assemblr EDU platform with flashcard markers. The product features three-dimensional characters demonstrating the sequential movements of obligatory prayers and is accompanied by audio recitations. The media was also designed to be used with smartphones, allowing students to observe three-dimensional objects from various angles.

Furthermore, instruments were prepared for validation by subject matter experts, validation by media experts, student response questionnaires, peer assessments, and performance tests for prayer practice. The development phase involved realizing the product design into AR learning media. The media components consisted of the Assemblr EDU application, three-dimensional animated prayer movement objects, prayer recitation audio, flashcard markers, and instructions for using the media. The developed product was then validated by material experts and media experts. The material expert validation rate was 94%, while the media expert validation rate was 87%. These results indicate that

the product is considered very suitable for use after improvements were made based on validator input. The implementation phase involved small group trials and large group trials. The small group trial involved six students. The results showed an average pretest score of 60.00, which increased to 85.00 in the posttest. All students in the small group achieved completion. Next, a large-group trial was conducted on 41 students, consisting of 18 from MI Nurul Karim Bangsring and 23 from MI Al-Mufidah Sidodadi. At this stage, students used AR media to practice obligatory prayers, and their abilities were then assessed through a performance test.

The evaluation phase was conducted to determine the feasibility, practicality, and effectiveness of the product. The evaluation was based on expert validation results, student responses, peer assessments, and pre- and post-test results of prayer practice skills. Data collection techniques in this study included observation, interviews, documentation, questionnaires, and tests. The questionnaires were used to obtain expert validation data, student responses, and peer assessments. Meanwhile, performance tests were used to measure students' practical skills in performing obligatory prayers. Effectiveness analysis was conducted by comparing pretest and posttest results and using regression analysis to determine the effect of AR media on practical skills in performing obligatory prayers. Thus, the data obtained not only illustrates the product's feasibility but also provides insight into changes in students' practical skills after using the developed media.

FINDINGS AND DISCUSSION

The research results show that the Augmented Reality-based Fiqh learning media developed using the Assemblr EDU platform is suitable and practical for use in teaching the practice of obligatory prayers. The media utilizes flashcard markers that, when scanned with a smartphone, display three-dimensional animations of prayer movements and audio recitations. The 94% validation result from material experts indicates that the media content meets learning needs. Meanwhile, the 87% validation result from media experts indicates that the visual aspects, usage, and presentation of the media are highly appropriate. Peer assessment also yielded an average score of 4.58, which falls into the strongly agree category. These findings indicate that media development should not only consider technological aspects but also their suitability to learning objectives. The learning media developed should consider the relationship between media characteristics, materials, and student needs.

The AR media developed provides a more concrete visual experience than two-dimensional learning media. Students can see prayer movements in three-dimensional objects and observe their sequence more clearly. This aligns with the characteristics of second-grade MI students, who still require concrete and visual experiences to understand learning materials (Marinda, 2020). In terms of practical skills, the research results showed an increase in student abilities after using AR media. In the small-group trial, the average student score increased from 60.00 to 85.00. All students in the small group achieved completion. These results indicate a 25-point increase. In a large-group trial involving 41 students, the average pretest score of 64.02 increased to 85.85 on the posttest, representing a 21.83-point increase. Thirty-eight students, or 92.68%, achieved mastery, while

three students, or 7.32%, did not. These improvements demonstrate that AR media can assist students in learning practical prayer skills. The use of three-dimensional animation allows students to see examples of movements sequentially, while audio helps them connect the movements with the appropriate reading. Thus, the learning process can occur through the activities of observing, imitating, repeating, and practicing. These findings align with research by Kurniawan et al. (2021), who developed an AR application for teaching prayer to elementary school students. Using three-dimensional visualizations in prayer instruction can be an alternative to assist in delivering material that was previously primarily presented through text and two-dimensional images. The results of the study also showed a very positive student response.

The average student practicality response reached 4.7 on a scale of 5. In several aspects, the scores obtained included media appeal of 4.5, ease of operation of 4.4, 3D visual and audio clarity of 4.7, learning activity of 4.7, understanding the sequence of prayer movements of 4.6, mastery of memorizing readings of 4.7, and improvement in overall practical skills of 4.7. These responses demonstrate that AR media can be used not only to convey information but also to provide a more interactive learning experience. This finding aligns with research by Albab et al. (2025), which demonstrated AR's potential to support meaningful learning in Islamic Religious Education. Practical skills cannot be developed through a single observation. Students require repeated practice and guidance to perform a procedure correctly. Burgess et al. (2020) explain the importance of demonstration, practice, feedback, and repetition in learning procedural skills. The findings regarding improved practical skills can also be linked to research by Miranti, Rusyadi, and Fahmi (2022) on student psychomotor skills training. Psychomotor skills require student engagement in practical activities so that learning doesn't stop at understanding theory but develops into the ability to perform actions. The use of AR in teaching religious practices is also relevant to Rohmah's (2025) research on the use of AR in teaching ablution practices. This research demonstrated that AR technology can be used for religious instruction requiring demonstration and practice.

This supports the use of similar technology in teaching obligatory prayers. From a constructivist perspective, the use of AR media provides students with the opportunity to construct understanding through direct experience. Students not only receive explanations from the teacher but also observe objects, imitate movements, perform exercises, and gain hands-on experience. Learning that involves concrete experiences and student activity aligns with the principles of constructivism in learning (Fitri, 2020; Nerita et al., 2023). The results of the regression analysis showed a significance value of $0.034 < 0.05$, with a regression coefficient value of 0.691, an R value of 0.332, and an R Square value of 0.110. These results indicate a statistically significant relationship and influence between the use of AR media and the skills of practicing obligatory prayers. The R Square value of 0.110 indicates that AR media contributed 11% to the variation in students' prayer practice skills, while the other 89% was related to other factors outside the variables analyzed in this study. These findings need to be interpreted proportionally. While there was a significant effect, the 11% contribution indicates that the improvement in prayer practice skills was not solely influenced by the use of AR media. Other factors such as students' initial abilities, training intensity,

teacher guidance, motivation, learning environment, and prior learning experiences may also play a role in student skill development. Thus, the success of AR media in this study was not only due to its three-dimensional appearance, but also because it was used as part of a learning process involving demonstration, observation, practice, repetition, and practice. AR media can enhance the learning process, while teachers still play a crucial role in providing guidance, correction, and feedback on students' prayer practices.

CONCLUSION

Based on the research results and discussion, it can be concluded that the Augmented Reality (AR)-based Fiqh learning media developed using the ADDIE model and the Assemblr EDU platform produces a learning media for the practice of fardhu prayer that is feasible and practical to use for second-grade students of Madrasah Ibtidaiyah. The developed media uses flashcard markers that display 3D animations of prayer movements and audio prayer readings. The product's feasibility is supported by the validation results of material experts by 94% and media experts by 87%, while the response of practitioners or colleagues obtained an average score of 4.58 in the strongly agree category. The use of Augmented Reality media also demonstrated an improvement in students' practical skills in performing obligatory prayers. In the small-group trial, the average student score increased from 60.00 in the pretest to 85.00 in the posttest, with all students achieving completion. In the large-group trial, the average score increased from 64.02 to 85.85, representing a 21.83-point increase and a completion rate of 92.68%. The results of the regression analysis showed a significance value of $0.034 < 0.05$, with an R Square value of 0.110.

This indicates a statistically significant influence between the use of AR media and the skills of practicing obligatory prayers, with a contribution of 11%, while the other 89% is related to other factors outside the study. Thus, Assemblr EDU-based Augmented Reality learning media can be used as an alternative Islamic jurisprudence learning medium to support the understanding and practical skills of obligatory prayers in second-grade students of Islamic elementary schools. This media provides a more visual, interactive, and practical learning experience, particularly in helping students understand the sequence of movements and prayer recitations. However, the use of AR media still requires teacher guidance and direct practice activities to optimally develop students' practical skills.

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REFERENCES

- Agung, I., Sudiarmika, R., & Fadly, W. (2023). Augmented reality in education: A meta-analysis of (quasi-) experimental studies to investigate the impact. [Nama Jurnal], 3(2), 74–87.
- Albab, U., Ta, A., Novianti, D., & Safitri, H. H. (2025). Exploring the impact of augmented reality on meaningful learning in Islamic religious education: A quantitative analysis. [Nama Jurnal], 23(1), 1–25.
- Alfitriani, N., Maula, W. A., & Hadiapurwa, A. (2021). Penggunaan media augmented reality dalam pembelajaran mengenal bentuk rupa bumi. *Jurnal Penelitian Pendidikan*, 38(1), 30–38.
- Bara, Y. P., Gasong, D., & Linggih, I. K. (2025). Pengaruh media pembelajaran augmented reality terhadap hasil belajar peserta didik kelas VIII pada mata pelajaran IPA di SMP Kristen Sangalla'. [Nama Jurnal], 8, 1431–1441.
- Burgess, A., van Diggele, C., Roberts, C., & Mellis, C. (2020). Tips for teaching procedural skills. *BMC Medical Education*, 20(Suppl. 2), 458.
- Chang, H.-Y., Binali, T., Liang, J.-C., Chiou, G.-L., Cheng, K.-H., Lee, S. W.-Y., & Tsai, C.-C. (2022). Ten years of augmented reality in education: A meta-analysis of (quasi-) experimental studies to investigate the impact. *Computers & Education*, 191, 104641.
- Dewi, T. N., Popiyanto, Y., & Yuliana, L. (2024). Pengaruh media augmented reality terhadap hasil belajar IPAS siswa kelas V sekolah dasar. [Nama Jurnal], 2, 212–219.
- Indayana, S. A., & Indrapangastuti, D. (2025). Inovasi penggunaan media pembelajaran berbasis augmented reality (AR) untuk meningkatkan hasil belajar IPAS siswa sekolah dasar. *Social, Humanities, and Educational Studies (SHES): Conference Series*, 8, 1762–1772.
- Jongbloed, J., Chaker, R., & Lavoué, E. (2024). Immersive procedural training in virtual reality: A systematic literature review. *Computers & Education*, 221, 105124.
- Kurniawan, Y. I., Fajar, A., & Kusuma, S. (2021). Aplikasi augmented reality untuk pembelajaran salat bagi [judul lengkap artikel]. [Nama Jurnal], 8(1), 7–14.
- Miranti, K., Rusyadi, A., & Fahmi, F. (2022). Melatih keterampilan psikomotorik siswa melalui penggunaan lembar kerja siswa (LKS). *Journal of Banua Science Education*, 2(2), 93–98.
- Mu, J., & Doi, A. (2025). [Judul artikel tidak tersedia]. *Jurnal Mu'allim*, 7(1). <https://doi.org/10.35891/muallim>
- Rifa'i, A., Asih, N. E. K., & Fatmawati, D. (2022). Penerapan Kurikulum Merdeka pada pembelajaran PAI di sekolah. *Jurnal Syntax Admiration*, 3(8), 1006–1013.
- Rohmah, S. (2025). Pemanfaatan augmented reality (AR) dalam pembelajaran praktik wudhu untuk siswa kelas III di MIS Guppi Citiusari. *Jurnal Studi Tindakan Edukatif (JSTE)*, 1(2), 115–119.

Shoffa, S., Holisin, I., Palandi, J. F., Cacik, S., Indriyani, D., Supriyanto, E. E., Basith, A., Giap, Y. C., & Kom, S. (2021). Perkembangan media pembelajaran di perguruan tinggi. Agrapana Media.

Sugiono. (2018). Metode penelitian kombinasi. Alfabeta.