

Development of Android-Based Indonesian Cultural Exploration Educational Game for Madrasah Ibtidaiyah Students

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Abstract

This research aims to develop an Android-based educational game to introduce Indonesian culture to Madrasah Ibtidaiyah students. Following the Research and Development methodology with ADDIE model, the study comprises three key stages: 1) analysis of students' and teachers' needs, 2) development of the educational game, and 3) testing the product's effectiveness. The study involved test subjects from twenty schools in Lamongan Regency. Data were collected using questionnaires and interviews, and data analysis encompassed both qualitative and quantitative methods. The material expert validation, media validation, and validation by learning experts collectively resulted in a 'very good' categorization. The educational game's effectiveness was substantiated by a t-test ($t_{\text{value}} > t_{\text{table}}$) and practicality tests, revealing a high interest level of 94.86%. In conclusion, this research significantly contributes to the development of an Android-based educational game for exploring Indonesian culture.

Keywords: android-based media, educational game, Indonesian culture

INTRODUCTION

In the pursuit of transforming into a developed country, fostering good character becomes imperative. As articulated by Indonesia's inaugural president, the foundational step towards greatness, advancement, and virtue involves shaping the national character (Fahdini et al., 2021). Presently, Indonesian society grapples with a decline in character (Suciati et al., 2023), attributed to various cultural shifts. Consequently, there is a pressing need to establish habits that cultivate positive traits, particularly among students at Madrasah Ibtidaiyah. The erosion of courtesy, discipline, and other commendable attributes, including Nationalism (love for one's nation), is evident among today's students (Asrial et al., 2022). The trend of emulating foreign cultures among the youth, fueled by technological advancements and easy access to social media, exacerbates this decline. The contemporary generation exhibits a preference for foreign culture, clothing, food products, and even songs over those indigenous to their nation (Kurniawaty et al., 2022). This inclination jeopardizes the preservation of Indonesia's rich cultures. Consequently, it is imperative to introduce early-age character education, particularly focusing on Nationalism, in Madrasah Ibtidaiyah (MI). This proactive approach aims to ensure the continued preservation and appreciation of Indonesian cultures by forthcoming generations.

The cultivation of Nationalism is essential to empower the younger generation in preserving Indonesian cultures and preventing their marginalization by foreign influences. Teachers play a crucial role in this endeavor through various activities aimed at nurturing students'

Nationalism (Daud & Triadi, 2021). Indonesia boasts a rich and diverse culture, with each region exhibiting unique characteristics that demand urgent preservation. To instill Nationalism in students, educators can incorporate activities such as singing cultural and nationalist songs during the learning process. Additionally, creating performances that showcase the distinctive cultures of each Indonesian region contributes to fostering a sense of national pride (Atika et al., 2019).

However, a survey (Nasution et al., 2023) revealed a concerning trend where a majority of students struggled to articulate their knowledge of Indonesian cultures when questioned by teachers. Conversely, they demonstrated proficiency in understanding and performing K-pop and foreign songs. Few students could accurately name traditional dances in Indonesia, reflecting a gap in cultural awareness. Furthermore, the learning process highlighted a preference among students for imitating foreign languages, (Ahmadin, 2023). neglecting the application of proper and indigenous language. Immediate attention is warranted to address this issue; otherwise, students risk growing increasingly ignorant of Indonesian culture, leading to its eventual loss with no preservation efforts in place.

The primary objective of education in Indonesia is the cultivation and development of character, aiming to produce citizens with noble morals and behavior, thereby contributing to the nation's intellectual advancement (Audina et al., 2022). The emphasis on these educational goals underscores the importance of fostering the culture and character of Indonesian citizens, particularly the character of Nationalism. Strengthening the character of

Nationalism is imperative to ensure that future generations embrace and preserve their cultural heritage. This can be achieved through activities that familiarize students with the diverse cultures surrounding them. By incorporating these habits into the learning process, students are expected to gain a deeper understanding of their own country's culture.

Educational games emerge as an effective method to introduce Indonesian culture, providing a platform for students to engage in competitive learning by answering questions (Borman & Purwanto, 2019). Beyond imparting knowledge, such games serve to enhance students' enthusiasm for mastering the material, including aspects of Indonesian culture. Games, inherently enjoyable for students, facilitate a dynamic and experiential learning process (Zeng et al., 2020). While games initially serve an entertainment purpose, they also function as valuable learning media, offering stimuli and encouragement for students to persevere until they emerge as champions (Setiawan et al., 2019). This approach significantly aids in the comprehension of Indonesian culture, making the learning process both enjoyable and impactful.

Research has been conducted to enhance Nationalism through the implementation of ethno-edutainment. This research offers students a unique learning experience by directly engaging with culture through modules supported by videos and interactive games (Ardianti & Wanabuliandari, 2021). Subsequent research focused on developing flash-based educational games, positively impacting students' comprehension of

the material (Ma'ruf, 2021). However, these games were limited to operation on laptops or computers, restricting students' access.

Another study introduced an educational game accessible via students' cellphones through a website using the 'Genially' application (Enstein et al., 2022). Although this approach garnered high enthusiasm, it was confined to a snakes-and-ladders game without substantive content. Further research explored the creation of an archipelago exploration game, proving to be interesting and popular among students (Syabilillah et al., 2023). Additionally, the development of 3D games successfully fostered Nationalism and increased students' interest in the subject (Hariyani & Fitri, 2023). In light of these findings, researchers aim to continue developing educational games

Building upon the aforementioned research, this study attempts to develop an educational game as learning media, delving into Indonesian culture through visualizations of diverse cultures in each region. The Assemblr Edu application serves as the platform for developing this educational game. The researchers will initiate the game development process by designing gameplay, incorporating subsequent tests, and providing materials within the game (Hartfill et al., 2020). Leveraging Assemblr Edu's capability to create 3D interactive learning media with high-quality animations, the game can be seamlessly operated on mobile phones or laptops (Carrión et al., 2023). The envisioned educational game simulates a journey through different areas, prompting students to answer questions on their cellphones during exploration activities (Morales et al., 2022).

This research specifically aims to develop an Android-based educational game for Madrasah Ibtidaiyah students, assessing its validity, practicality, and effectiveness. The researchers are motivated to introduce nuances of national cultural diversity through this media, enabling students to gain profound insights into and memorize Indonesia's culture.

METHOD

The research methodology employed in this study is the Research and Development (RnD) approach utilizing the ADDIE model. The selection of this model is based on its systematic and pertinent stages, particularly suited for the development of learning media. The ADDIE model comprises five stages: analysis, design, development, implementation, and evaluation. (Kurt, 2019).

The educational game underwent testing in fourth-grade classes at Madrasah Ibtidaiyah in Sekaran, Maduran, Laren, and Karanggeneng Districts, where blended learning activities and mobile phones were utilized as alternative learning media. The total number of students in the control and experimental classes equaled 187 each, resulting in a total of 374 test subjects for this research.

Data collection techniques included interviews and questionnaires. Data were analyzed using qualitative and quantitative data analysis techniques (Sugiyono, 2012) Qualitative data consisted of interview responses and suggestions from validators and students, while quantitative data included media validation scores from validators and student

assessment questionnaires. The average scores derived from the quantitative data were calculated, and validation categories were assigned based on a Likert scale using a 4-point scale. Quantitative calculations involved testing the experimental and control classes using a t-test. The analysis compared the t-value to the t-table, determining statistical significance ($t_{\text{value}} > t_{\text{table}}$) (Yusmawati & Lubis, 2019).

RESULT AND DISCUSSION

The research outcomes on the development of an Indonesian culture exploration educational game encompassed the analysis of teacher and student needs, the development process, and the feasibility test based on validators' assessments and students' responses.

Analysis

This stage aimed to scrutinize field-related issues, analyze the needs of teachers and students, and address the phenomenon of students' lack of understanding and awareness of Indonesian culture. Interviews with fourth-grade teachers at Madrasah Ibtidaiyah in Lamongan, reveal the following results: 1) Teachers had not used learning media to introduce Indonesian culture; 2) Students' preference for foreign cultures on social media via their cellphones; 3) A tendency among students to imitate foreign languages instead of applying good and correct language; 4) Students' inability to articulate Indonesia's cultural diversity; 5) Students' reluctance to preserve Indonesian culture; 6) Students' difficulty in memorizing national and regional songs.

Subsequently, an educational game accessible on smartphones was developed with the aim of fostering the character of Nationalism among students. This initiative also served as a solution for teachers, providing diverse learning media to enhance the explanation of Indonesian culture materials.

Design

The subsequent stage involved planning the design of the educational game based on the outcomes of the need analysis. The steps in designing the educational game included determining indicators and learning objectives, creating questions and answers, defining characters for the story, designing images, backgrounds, covers, storyboards, and other content for the educational game. Additionally, the Assemblr Edu software application was installed, and validation forms for media assessment by experts were prepared. Educational game storyboards were crafted in accordance with students' needs, aiming to acquaint them with and motivate them to understand the culture in Indonesia. Furthermore, students were expected to engage in independent learning without direct teacher supervision.

The educational game, developed by the researcher, utilizes Augmented Reality through the Assemblr Edu application. The creation process involves initiating the gameplay, administering tests, and providing materials within the game. Augmented Reality serves as an application that facilitates the generation of 3D interactive learning media designs with high-quality animations, operable on mobile phones or laptops (Yuen et al., 2011). Augmented Reality proves beneficial in illustrating abstract concepts,

enhancing student learning activities, simplifying comprehension of complex learning materials, and presenting practical media for learning, all within an easy-to-operate application (Arena et al., 2022).



Figure 1. Example of an educational game scene exploring Indonesian culture

Development

The development process of the educational game exploring Indonesian culture by the researcher involved the following steps: 1) Log in to the Assemblr Edu application at <https://edu.assemblrworld.com/> or download the application from the Play Store; 2) Create an educational game project by adding 3D nature land images to the Assemblr Edu application template; 3) Insert visual images of traditional clothing, traditional houses, and regional songs in Indonesia; 4) Insert audio and video files for regional songs. 5) Incorporate next and back buttons for navigation; 6) Develop questions along with correct and incorrect answers

for the game; 7) Preview the educational game before it is published; 8) Publish the educational game.

The feasibility test for the developed educational game relied on the validators' assessment using the educational game assessment form provided by the researchers. Apart from assessing, validators also provided many suggestions for improvements for the educational game being developed. Table 1 below presents the suggestions:

Table 1. The validators' Suggestions

Media Validation	Content Validation
The next button is non-functional.	Include clear instructions on how to use the educational game.
Enlarge the font size on the names of traditional clothing.	Add detailed characteristics of traditional clothing to the educational game material.
Rectify an image of traditional Aceh clothing overlapping with a tree picture.	

Revisions were implemented based on the validators' suggestions, and all validators confirmed its feasibility. This was substantiated by assessments derived from questionnaires distributed to validators, encompassing material experts, media experts, and fourth-grade Madrasah Ibtidaiyah social studies teachers, all recognized as learning experts.

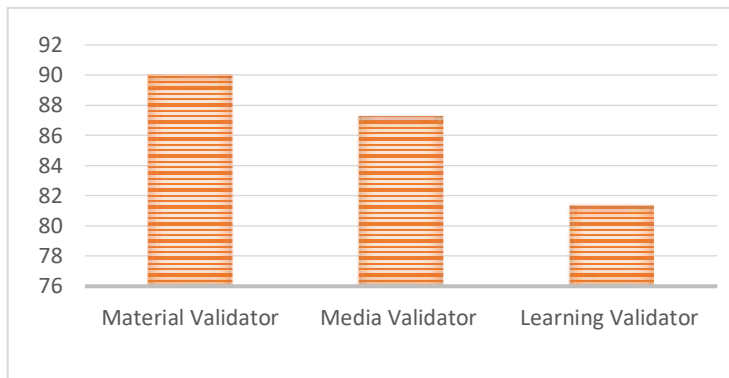


Figure 2. Validation results of the Indonesian Cultural Exploration Educational Game

The validation results of social studies learning content experts on the educational game yielded a score of 54 out of a maximum score of 60. This corresponds to a percentage score of 90%, classified as 'very good.' The material within the educational game, developed by the researcher, is deemed effective as a medium to elucidate abstract social studies concepts related to Indonesia's cultural diversity. In terms of the educational game's design, a score of 48 out of a maximum of 55 was obtained from validators, resulting in a percentage score of 87.27%, also classified as 'very good.' This indicates that the educational game possesses an appealing design and is well-suited as a supplementary resource for social studies learning at MI. For the validators assessing the educational game's impact on social studies learning, a score of 61 out of a maximum of 75 was achieved, resulting in a percentage score of 81.33%, again falling within the 'very good' classification. This underscores the educational game's suitability in aiding

the attainment of learning objectives for fourth-grade social studies, specifically concerning cultural diversity in Indonesia.

Educational games offer various advantages when incorporated into the learning process, including: Novel and Enjoyable Learning Atmosphere, Improved Concentration, Precision and Speed Mastery, Technological Proficiency (Windawati & Koeswanti, 2021). The Android-based educational game mentioned above is a game that can be accessed on a cellphone anywhere and independently (Sarifah et al., 2022). The Android operational system has its own charm nowadays. Everyone cannot be separated from their smartphone. For this reason, developing an Android-based educational game is necessary (Kholil et al., 2020).

Indicators of Android-based educational games are said to be good and appropriate if: they guide students in completing the material in the quiz, the language in the quiz is easy for students to understand, foster motivation to master the material, the images presented are clear, the animation presented attracts students' attention, they are supported by background sound which fosters competitiveness, the game flow is interesting, the game can make students active, the buttons in educational games function well (Herfandi et al., 2020).

Implementation

The implementation phase involves putting the educational game into practice after development and validation by the validators. The researcher divided the implementation of this educational game into three cycles: 1) The game was initially applied to randomly selected individuals, totaling 5

students. Limited trials were conducted for intensive observation and to record crucial aspects performed by students, which served as valuable input for enhancing the initial product. 2) The game was then introduced to a small group comprising 30 students. This step aimed to ensure that the developed products met predefined standards. 3) The final trial involved implementing the educational game in 20 schools across Lamongan. The total number of students in the experimental class and the control class was 187 each, serving as a comparison with an equal number of students. This extensive trial aimed to assess the effectiveness of the educational game in enhancing the character of Nationalism.

Students were initially instructed to download the Assemblr Edu application from the Play Store. Subsequently, they were guided to open the educational game using the provided link: <https://asblr.com/PGnvP> or by scanning the QR code <https://asblr.com/PGnvP>.



Figure 3. QR code of the Indonesian culture exploration educational game using the application assemblr edu

The students initiated the process by logging into their respective smartphones and engaging with the explanatory pictures provided.



Figure 4. Front page of the educational game with augmented reality
Subsequently, students progressed to the next phase, where they responded to various questions related to the diversity of Indonesian cultures.



Figure 5. Examples of questions in educational game.

The image illustrates examples of questions within the educational game. If students select the correct button, the answer to the question is revealed; selecting the wrong button prompts the display of a cross image on the question.



Figure 6. Students Playing Indonesian Cultural Exploration Educational Game

As depicted, students actively engage with the educational game, fostering independent understanding of Indonesian culture. After that, students were asked to answer the questions in this educational game. Following the completion of the educational game learning process in the experimental class, with regular learning as a comparison in the control class, the researchers proceeded to administer a questionnaire on the character of Nationalism. This questionnaire aimed to discern any variations between the experimental and control classes. Table 2 presents the statistical data:

Table 2. t_{test} statistics

Data	T_{value}	t_{table}	P	Explanation
Test	2.705	1.972	0.005	$T_{\text{value}} > t_{\text{table}}$ = There is a difference

In this table, the T-value is 2.705, compared to the T_{table} value of 1.972. The statistical analysis demonstrates that $T_{\text{value}} > T_{\text{table}}$ ($2.705 > 1.972$). This signifies that the Nationalism character of students who used the game experienced greater improvement compared to those who did not utilize the educational game. Therefore, it can be concluded that the game is effectively applied to Madrasah Ibtidaiyah students.

The character of Nationalism manifests in attitudes, actions, and thoughts expressing care, loyalty, and profound respect for one's country, encompassing race, ethnicity, ethnic culture, language, economics, and politics (Taskiyah & Widyastuti, 2021). A high sense of Nationalism instills a desire to defend one's country without succumbing to fanaticism (Nuryani et al., 2020). Understanding regional culture and customs is integral to Nationalism, ensuring the defense and preservation of cultural heritage against external claims (Aji & Wangid, 2022). Cultivating the character of Nationalism is vital for preserving the essence of a country's culture and fostering international competitiveness.

Characteristics of students with Nationalism include understanding cultural diversity, appreciating domestic products, emulating national heroes, cherishing the beauty of culture and nature, and actively preserving them, along with a willingness to memorize regional and national songs

(Nurdian et al., 2021). Indicators of Nationalism include: Using good and correct language; Preserving unique characteristics of Indonesia; Valuing products created by one's own country; Achieving success to bring pride to the nation; Demonstrating a willingness to continue learning and developing for personal improvement (Fauziyah & Tabi'in, 2021). Meanwhile, the function of Nationalism includes 1) Cultivating positive attitudes, behaviors, and speech, 2) Strengthening diverse citizen behaviors, 3) Fostering a culture of competitiveness on an international scale. The character of Nationalism can be instilled through various channels, including the school environment, family, social media, local communities, and the government (Kurniawaty et al., 2022).

Evaluation

The final stage involved evaluating the educational game developed by the researcher. Before assessing the strengths and weaknesses, the researchers analyzed the results of the questionnaire filled out by respondents to gauge the practicality of the educational game. Respondents filled out a questionnaire after using the exploring Indonesian culture educational game, resulting in a score of 94.86%. This score, based on the Likert scale, designates the educational game as very interesting, providing evidence of practicality. With this proof of practicality, the educational game emerges as a viable alternative or media variation for strengthening the character of Nationalism.

In addition to the questionnaire, a comments column was provided for respondents. Many expressed interests in studying the cultural diversity

of Indonesia, especially those initially drawn to foreign cultures. Students found the game engaging, making the learning process more meaningful and fun.

Upon obtaining the practicality results and comments, the researchers conducted an evaluation of the attractiveness and shortcomings of the developed product. This assessment derived from comments, observations, and analysis conducted throughout the research. The product serves as an interesting means for students to explore Indonesian culture, designed to spark interest and foster love for their homeland. Game utilization on students' gadgets enhances enthusiasm, making the learning process enjoyable and fun. It makes students feel like they are playing while learning, adding depth and meaning to the educational process. The application's 3D visualization adds an extra layer of interest to the educational game. The inclusion of a review feature for answers supports learning by providing feedback when errors are made. The educational game encourages and familiarize students with independent learning.

The identified shortcomings of the developed product include signal dependency, difficulties in displaying augmented reality images on students' cellphones, and the inability to add regional songs due to the limitations of the free application. Based on the identified shortcomings, it is recommended to provide a strong WiFi signal to mitigate interruptions in educational game usage, encourage students to become accustomed to augmented reality-based learning media, and suggests acquiring a premium

account for more comprehensive features in the application, potentially allowing the addition of regional songs.

Educational games have the potential to increase students' knowledge about Indonesian culture by motivating them to achieve mastery of the material. Mastery of the names of Indonesian cultures becomes a crucial aspect for students aiming to excel and become champions in the game (Hariyani & Fitri, 2023). Similarities exist with other research in the development of educational game media, particularly in the concept of introducing Indonesian culture to students. This research, however, is limited to the creation of learning media without direct application to students (Ahmadin, 2023).

CONCLUSION

The current trend among today's young generation, particularly students at Madrasah Ibtidaiyah, leans towards favoring foreign cultures, clothing, food products, and songs over their own nation's heritage. This inclination raises concerns about the potential loss and neglect of Indonesian culture. Without immediate intervention, there is a risk that students will continue to lack understanding and awareness of their own cultural heritage, leading to the erosion of Indonesian cultural identity. In response to this pressing need, the development of an educational game exploring Indonesian culture was undertaken through a systematic process: 1) Interviews were conducted to understand the needs of teachers and students, highlighting the phenomenon of increasing cultural ignorance

among students, 2) The educational game exploring Indonesian culture was designed and developed to address the identified needs and challenges; 3) Rigorous validation processes involving material experts, media experts, and class IV MI social studies teachers were conducted. The results indicated a 'very good' category for material and media validation; 4) The developed educational game underwent revisions based on feedback and evaluations, ensuring continuous improvement. The research findings demonstrate the effectiveness of the educational game, supported by the t-test results ($t_{\text{value}} > t_{\text{table}}$) and practicality test results, indicating a high level of interest (94.86%). This Android-based Indonesian culture exploration educational game stands as a valuable contribution to addressing the cultural awareness and knowledge gap among students.

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