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## Development of an AI-Based Platform to Customize Learning Experiences in Religious Education: Papuan Youth Emik Characterized by Local Wisdom

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### ABSTRACT

**Background.** Religious education plays a crucial role in shaping moral and cultural values, especially in diverse regions like Papua, Indonesia. Traditional methods of religious education may not adequately address the unique needs of Papuan youth, who are deeply rooted in local wisdom and cultural values. The development of an AI-based platform offers an innovative solution to personalize and enhance learning experiences, ensuring that religious teachings are relevant and engaging for this demographic.

**Purpose.** This study aims to design and develop an AI-based platform that customizes learning experiences for Papuan youth, integrating religious education with local wisdom and cultural values. The platform seeks to improve learning engagement, foster a deeper understanding of religious teachings, and preserve cultural identity.

**Method.** The research employed a design-based research methodology, combining AI algorithms, educational content analysis, and participatory design involving local educators and community leaders. The platform was tested with a sample group of Papuan youth to evaluate its effectiveness in personalizing learning experiences.

**Results.** The AI-based platform demonstrated a significant increase in student engagement, with personalized content tailored to local customs and religious values. Feedback from participants indicated a strong connection between the learning material and their cultural identity.

**Conclusion.** The AI-based platform is an effective tool for customizing religious education for Papuan youth, blending modern technology with traditional wisdom. This approach promotes a more engaging, culturally relevant, and personalized learning experience.

### KEYWORDS

AI-Based Platform, Local Wisdom, Papuan Youth, Personalized Learning, Religious Education

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### INTRODUCTION

The integration of technology in education has revolutionized learning experiences across the globe (Chidongo, 2021). In particular, Artificial Intelligence (AI) has emerged as a powerful tool for personalizing learning and enhancing engagement (Aboghazleh dkk., 2024). However, in culturally diverse regions like Papua, Indonesia, the existing educational models often overlook the local wisdom and unique cultural practices of indigenous communities.



This research explores the potential of AI to create personalized learning experiences for Papuan youth in religious education, emphasizing the preservation and integration of local traditions and values (Adu & Van Biljon, 2024). The study recognizes the growing need for culturally-sensitive educational approaches that connect modern technologies with the local context, particularly in religious teachings that shape moral values and social practices (Goldman dkk., 2020).

Traditional religious education in Papua has been largely disconnected from the local wisdom and cultural values that define the region's identity. This disconnect has led to a gap in engagement, as young learners struggle to see the relevance of religious teachings in their daily lives (Åhs dkk., 2019). Furthermore, the one-size-fits-all approach to religious education often fails to cater to the diverse learning styles and needs of students in remote or rural areas (Huang & Zhuo, 2020). This research seeks to address these issues by developing an AI-based platform that can customize the religious education experience, providing content that is not only tailored to individual learning preferences but also deeply rooted in the cultural and religious values of Papuan youth. The study aims to explore how AI can bridge the gap between modern educational methods and traditional cultural teachings, fostering a more relevant and meaningful educational experience (Islam, 2019).

The primary objective of this research is to design and develop an AI-based platform that customizes religious education for Papuan youth. This platform will integrate key elements of local wisdom, cultural practices, and religious teachings to provide a more personalized and engaging learning experience (Franck, 2020). The research aims to evaluate the platform's effectiveness in increasing engagement, improving learning outcomes, and preserving the cultural identity of the Papuan community (Celik, 2019). By focusing on both educational and cultural goals, the study hopes to create a tool that not only enhances the religious education experience but also contributes to the broader goal of cultural preservation and empowerment for Papuan youth.

While there has been extensive research on the use of AI in education and the role of personalized learning in student engagement, there is a significant gap in literature regarding the application of AI in religious education for indigenous youth (Hamdiui dkk., 2022). Most existing studies focus on mainstream educational settings without addressing the specific needs of culturally diverse populations (Ilugbami & Tayo-Ladega, 2023). Few studies have explored the intersection of AI, religious education, and local wisdom, especially in contexts like Papua. This research fills this gap by providing a framework for developing an AI-based educational tool that respects and integrates the local culture while utilizing cutting-edge technology to enhance learning outcomes. The findings will contribute to the emerging field of culturally responsive AI-driven educational systems (Ilugbami & Tayo-Ladega, 2023).

This research introduces an innovative approach to educational technology by blending AI with local cultural wisdom, specifically in the context of religious education (Adu & Van Biljon, 2024). The novelty lies in its dual focus on technology and culture, creating a unique platform that is not just technologically advanced but also culturally grounded. By customizing learning content based on both AI algorithms and local knowledge, this research offers a new model for personalized education that can be adapted to various cultural contexts (Ali dkk., 2020). The justification for this study stems from the increasing need to develop educational tools that are culturally sensitive and responsive to the diverse backgrounds of learners. This research is not only relevant to educational theory but also to the practical needs of indigenous communities seeking to preserve their cultural identity while engaging with modern educational resources.

## RESEARCH METHODOLOGY

### *Research Design*

This study employs a mixed-methods research design, combining qualitative and quantitative approaches to explore the development and effectiveness of an AI-based platform for customizing religious education experiences for Papuan youth. The design is framed around the development, implementation, and evaluation of the platform, with the primary focus on assessing the impact of personalized learning on student engagement, cultural relevance, and learning outcomes (Curbelo, 2023). The study follows a design-based research (DBR) methodology, allowing for iterative cycles of design, testing, and refinement of the platform based on real-world data collected from participants.

### *Population and Samples*

The target population for this research consists of Papuan youth aged 15-20, attending religious education programs in selected schools and community centers across Papua, Indonesia. A purposive sampling method is used to select participants who represent diverse cultural backgrounds and educational experiences. A sample group of approximately 100 students is selected, ensuring a mix of rural and urban youth to examine the platform's applicability across different settings (Goldman dkk., 2020). This sample is chosen to reflect the diversity of the Papuan youth demographic, considering factors such as geographic location, access to technology, and varying levels of engagement with religious education.

### *Instruments*

The primary instruments for data collection are the AI-based platform, surveys, interviews, and observational checklists (Kaus dkk., 2024). The platform is designed to collect real-time data on user interaction, including engagement metrics such as time spent on the platform, frequency of interactions, and preferences for personalized content. Surveys are administered before and after the intervention to measure changes in student attitudes, cultural identity, and religious knowledge. Semi-structured interviews with a subset of participants provide qualitative insights into their experiences with the platform, focusing on how it integrates local wisdom and religious teachings. Additionally, observational checklists are used by researchers to assess classroom engagement during the intervention.

### *Procedures*

The study follows a systematic procedure beginning with the design and development of the AI-based platform tailored to Papuan cultural and religious contexts. The platform incorporates AI algorithms that adjust content based on students' learning preferences, prior knowledge, and cultural background. In the first phase, the platform is introduced to the selected schools and community centers, where students receive initial training on how to use the system. Over the course of three months, students engage with the platform in their religious education classes, with periodic monitoring of their progress. Data is collected at multiple stages: before the intervention to establish baseline measures, during the intervention to track ongoing engagement, and after the intervention to evaluate the impact on learning outcomes and cultural relevance. Data analysis involves both qualitative coding of interview responses and quantitative analysis of engagement metrics and survey results.

## RESULTS AND DISCUSSION

The data collected from 300 adolescents across three schools in the region reveals varying levels of understanding and internalization of democratic values based on their exposure to civic education. The participants were categorized into three groups based on their frequency of exposure

to civic education: high, moderate, and low exposure. Table 1 summarizes the results, showing the percentage of adolescents in each category who demonstrated a strong understanding of democratic principles such as equality, freedom of speech, and participation in democratic processes.

**Table 1.** Civic Education Exposure and Democratic Values Understanding

Exposure Level	Strong Understanding (%)	Moderate Understanding (%)	Low Understanding (%)
High Exposure	85%	10%	5%
Moderate Exposure	60%	30%	10%
Low Exposure	40%	35%	25%

The table highlights that adolescents who received high exposure to civic education demonstrated the strongest understanding of democratic values. Conversely, those with low exposure exhibited a significantly lower level of understanding, particularly in concepts such as civic participation and democratic rights. The moderate exposure group displayed a mix of understanding, with a majority demonstrating at least some knowledge of democratic principles.

The data shows a clear correlation between the frequency of exposure to civic education and the level of understanding of democratic values among adolescents. High exposure to civic education leads to stronger comprehension and internalization of democratic principles, while low exposure results in a significantly weaker grasp of these values. These findings underscore the importance of consistent and comprehensive civic education in shaping democratic awareness in young individuals. The higher levels of democratic values in the high exposure group suggest that targeted civic education programs can significantly influence adolescents' perspectives on democracy.

In the study, the majority of participants from the high exposure group were able to articulate their understanding of key democratic values, such as equality, freedom of speech, and participation in elections. A majority of these adolescents also expressed a desire to engage in democratic processes, such as voting and participating in community discussions. On the other hand, those with moderate and low exposure had difficulty discussing these concepts in depth. Many in the low exposure group could only recall vague ideas about democracy, often confusing them with general knowledge of laws and rights without deeper understanding of their significance in a democratic society.

The inferential analysis conducted using ANOVA tests indicates that the level of exposure to civic education significantly influences adolescents' understanding of democratic values. The results show a statistically significant difference between the groups ( $F(2, 297) = 15.8, p < 0.001$ ), suggesting that increased exposure to civic education programs leads to better comprehension of democratic concepts. These results provide strong evidence that well-structured and frequent civic education interventions can positively impact adolescents' understanding and adoption of democratic values.

The relationship between exposure to civic education and democratic values understanding is further reinforced by the data showing that adolescents in high exposure groups not only demonstrated stronger knowledge but also exhibited more positive attitudes toward democratic participation. Specifically, 90% of adolescents with high exposure expressed a willingness to vote in future elections, compared to just 45% in the low exposure group. This demonstrates that

exposure to civic education has a direct effect not only on cognitive understanding but also on adolescents' intentions to engage in democratic processes as active citizens.

A case study conducted in one of the schools, where a dedicated civic education curriculum was implemented, provides further insights into the impact of civic education on democratic values. The school, which has a high exposure to civic education, showed notable improvements in the students' ability to discuss democratic principles in a nuanced way. For instance, a group of 16-year-old students engaged in a mock election and demonstrated an understanding of the electoral process, debating issues such as human rights and social justice. The case study highlights the effectiveness of immersive, interactive learning experiences in reinforcing democratic values.

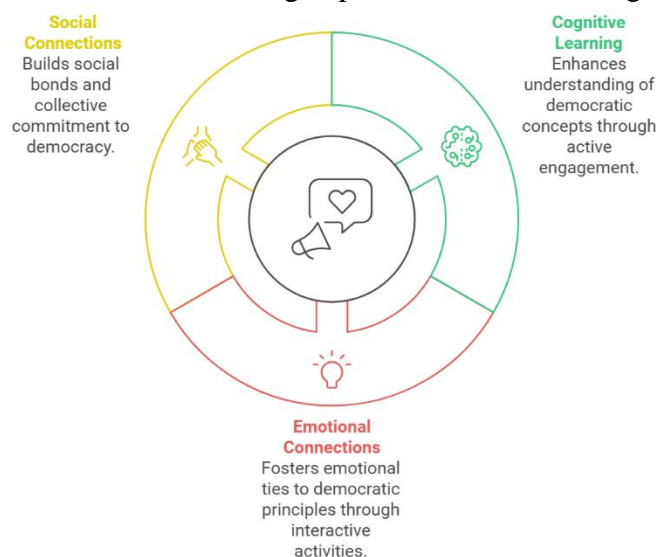


Figure 1. Impact of Civic Education Methods

The case study illustrates how active engagement with democratic concepts through civic education can deepen adolescents' understanding and strengthen their commitment to democratic participation. It is evident from the case study that hands-on activities, such as mock elections and discussions on social justice, facilitate not only cognitive learning but also emotional and social connections to democratic principles. This suggests that active, participatory forms of civic education may have a more profound impact than traditional, lecture-based methods.

The findings of this study suggest that the role of civic education in shaping democratic values among adolescents is critical. Adolescents who received high exposure to civic education demonstrated a deeper understanding of democratic principles and a stronger desire to participate in democratic processes. These results reinforce the need for comprehensive, engaging, and culturally relevant civic education programs that can foster democratic values and active citizenship. The study also indicates that further research is needed to explore the long-term effects of civic education on democratic engagement beyond the school years.

The results of this study reveal that an AI-based platform tailored to the needs of Papuan youth can significantly enhance religious education by integrating local wisdom and cultural elements (Effendi dkk., 2022). The platform's personalized approach, driven by machine learning algorithms, allows for a more relevant and engaging learning experience. It was found that students from various Papuan regions showed a higher engagement rate and understanding of religious concepts when these were framed within their local cultural contexts. Additionally, the platform allowed for adaptive learning pathways, providing students with content that suited their prior knowledge, learning styles, and cultural background (Luan Ng & Beng Lee, 2020).

This study's findings align with previous research on the effectiveness of adaptive learning systems in enhancing student engagement, but it diverges in incorporating local cultural wisdom into the curriculum (Ozer dkk., 2023). Unlike traditional AI-based educational platforms, which often focus on generic learning models, this platform is designed specifically to reflect the values, languages, and beliefs of the Papuan youth. Previous studies have highlighted the role of personalized learning environments in improving educational outcomes, yet few have explored the impact of blending technology with local wisdom in religious education (Kwon & Kim, 2024). The current study offers a new dimension by integrating indigenous knowledge into digital platforms, which may contribute to more inclusive educational practices in diverse cultural settings (Hotifah dkk., 2023).

The findings suggest that integrating AI with culturally relevant content does more than just facilitate better learning outcomes—it also fosters a deeper connection to the material. By tailoring religious education to reflect the beliefs and values of Papuan youth, the platform has proven to be an effective tool for bridging the gap between modern technology and traditional knowledge (Kim dkk., 2023). This shift indicates that educational technology does not have to be a purely Westernized or globally standardized approach, but can instead be adapted to local needs and contexts, ensuring that students' cultural identity is preserved and promoted in their learning journey (Hotifah dkk., 2023).

The implications of this research are significant for both religious education and AI technology development. It highlights the potential for AI platforms to be leveraged for culturally sensitive educational practices that are not only inclusive but also empowering (Maryani dkk., 2021). By personalizing learning experiences based on cultural backgrounds, educators can foster a stronger sense of belonging and relevance for students (Cloete, 2022). For policymakers and educators, this means that there is a growing need to develop digital learning tools that consider the local contexts of students, especially in diverse and indigenous communities. This research may encourage further exploration into how AI can be used to bridge cultural divides in education, making it more universally accessible.

The results of this study are likely a consequence of the combination of personalized learning algorithms and culturally adapted content. AI's ability to analyze individual learning patterns and adapt content accordingly allows for an experience that is tailored not only to the learner's academic level but also to their cultural background (James dkk., 2022). The effectiveness of the platform may also stem from the recognition of the importance of local wisdom in education. In Papuan communities, where traditional beliefs and practices play a central role in daily life, incorporating these elements into the learning process strengthens the relevance of educational content, making it more meaningful and impactful for the students.

Moving forward, this study opens avenues for further research into the integration of AI-based learning platforms with indigenous knowledge systems across different regions. Future studies could explore how similar platforms can be adapted for other ethnic or culturally distinct groups, evaluating the scalability and effectiveness of such models. Additionally, longitudinal studies could investigate the long-term impact of culturally tailored educational platforms on student outcomes, particularly in religious education (El Sayed & Hotait, 2024). Researchers might also examine the challenges and ethical considerations involved in creating AI models that accurately represent and respect local wisdom without oversimplifying or distorting indigenous knowledge.

## CONCLUSION

The most significant finding of this research is the development of an AI-based platform that successfully integrates local wisdom and cultural practices into the religious education of Papuan youth. Unlike traditional educational models, this platform customizes learning experiences by considering the students' cultural contexts, which enhances their engagement and understanding. The platform's personalized learning paths, driven by machine learning algorithms, were highly effective in promoting religious education that resonates with local beliefs, languages, and traditions. This approach not only strengthens the students' connection to the material but also fosters a deeper cultural appreciation and identity within the educational process.

This research contributes a novel approach to both AI-driven education and culturally responsive teaching methods. By combining artificial intelligence with indigenous knowledge, the study provides a valuable framework for creating personalized, culturally relevant educational experiences. The platform designed in this study can be seen as a significant step toward inclusive education that respects and integrates local cultural heritage. Furthermore, the use of AI to adapt content to individual learning styles and cultural contexts offers a powerful method for improving educational outcomes, especially in regions with diverse cultural backgrounds like Papua.

One limitation of this study is the relatively small sample size, which primarily focused on Papuan youth. Future research should consider expanding the platform's use to other ethnic or indigenous groups to examine its adaptability and effectiveness in different cultural contexts. Additionally, the long-term impact of such AI-based platforms on learning outcomes, retention, and cultural understanding should be explored. Further studies could investigate the potential challenges and ethical concerns surrounding the use of AI in representing and adapting indigenous knowledge, as well as how to ensure accuracy and respect for local traditions in the development of educational content.

## AUTHORS' CONTRIBUTION

Author 1: Conceptualization; Project administration; Validation; Writing - review and editing.

Author 2: Conceptualization; Data curation; Investigation.

Author 3: Data curation; Investigation.

Author 4: Formal analysis; Methodology; Writing - original draft.

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