Preservation the Sundanese Wewengkon Kuningan Language through Android-Based Educational Games

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Abstract

This study explores the development and evaluation of Android-based educational games specifically designed to preserve the Sundanese language in the Kuningan region. This study uses mixed methods, this study combines in-depth literature review with empirical evaluation to assess the effectiveness of games in the context of language learning. These educational games are designed with local and cultural needs in mind, offering a contextual and engaging learning experience for users. The results of the study show that this game not only succeeded in significantly improving Sundanese language skills, but also contributed positively to the preservation of Sundanese language and culture. These findings underscore the potential of educational games as an effective tool in language education, emphasizing the importance of integrating local cultures in the learning process. This research highlights how technology and game design can play an important role in supporting the preservation of traditional languages and cultures in the digital era.

Keywords: *Educational games; Sundanese; cultural preservation; Android.*

Introduction

Sociolinguistics views language as a dynamic entity and is greatly influenced by social factors. In this framework, language defense has become an increasingly crucial issue in the midst of the pressure of globalization that encourages linguistic homogenization. According to Holmes and Wilson (2022), language is not only a means of communication, but also a symbol of group identity that can influence social solidarity and the status of the group in society. Meanwhile, Milroy and Gordon (2008) emphasized the importance of sociolinguistic methods and interpretations in understanding language change and the factors that encourage or inhibit language retention.

Wardhaugh and Fuller (2021) also added that language preservation efforts often depend on the awareness of the language user community as well as supportive linguistic policies. Factors such as the social environment, interactions between groups, and economic and political pressures often determine the success or failure of language retention efforts. In this context, this article will examine the various strategies used to maintain language in various communities, as well as analyze how social factors affect the effectiveness of these strategies. By integrating perspectives from Holmes and Wilson (2022), Milroy and Gordon (2008), and Wardhaugh and Fuller (2021), this article seeks to provide a deeper understanding of the dynamics of language retention in modern society.

Language defense is an increasingly urgent topic in the midst of globalization that threatens the existence of minority languages in various parts of the world. Language not only serves as a means of communication, but also as a symbol of cultural and social identity that is unique to each community. However, external pressures such as urbanization, cultural assimilation, and demographic changes have led to a decline in the number of speakers of minority languages, threatening their survival.

In the context of the archipelago, Siregar (2022) highlights the importance of implementing an effective and efficient language defense strategy to maintain the sustainability of regional languages. His research shows that contextual strategies, which take into account local social, cultural, and economic conditions, have greater potential to succeed. Siregar also emphasized the important role of local communities and the government in supporting sustainable language preservation programs.

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Pauwels (2004), in a broader discussion of language preservation, underlines the importance of language use in family and community settings as a key factor in transmitting language from one generation to the next. In addition, he also emphasized the need for education policy support and the role of the media in strengthening the visibility of minority languages in the public domain.

In addition, Siregar (2022) in his study on the strategy of preserving the Tabla language in Papua, revealed the challenges faced by minority languages in the region. He highlighted the importance of comprehensive language documentation, language teaching through the formal education system, and strengthening cultural identity through daily practices as an effort to protect languages from extinction.

Adam et al. (2022) enriched this discussion by analyzing the defense of the K 識 language through a typological framework of language threats. They found that factors such as demographic changes, migration, and lack of institutional support posed a significant threat to the Kensiu language. This study shows that the development of language learning materials, community awareness raising, and language recognition in the public domain are important strategies to ensure the survival of minority languages.

The preservation of the Sundanese language is one of the important efforts in preserving the cultural identity and ancestral heritage of the Sundanese people in the midst of ever-changing social dynamics. Sundanese, as one of the largest regional languages in Indonesia, faces serious challenges due to urbanization, migration, and globalization that are accelerating the language shift among its speakers. In response to this situation, various strategies and efforts have been made by the speaking community and related institutions to ensure that the Sundanese language continues to be used and appreciated by the younger generation.

Mascita, Sariah, and Susilowati (2021) in their study on the preservation of the Sundanese language in Lea, Indramayu, identified a number of strategies implemented by local communities. This study highlights the importance of the role of family, education, and community in maintaining the continuity of the Sundanese language in regions that experience linguistic pressure from the majority language. Their findings show that despite the challenges, the community's commitment to maintaining the Sundanese language as an integral part of their cultural identity remains strong.

Wulandari (2014) examines the use of abbreviation in Sundanese as a form of linguistic adaptation among its speakers. This study shows that despite changes in language structure, the morphosemantic aspect of Sundanese language has survived, demonstrating the flexibility and ability of this language to adapt to the times without losing its essence.

In the context of language defense in urban environments, Wagiati and Zein (2017) examined the defense of Sundanese language in housing complexes in Bandung Regency. They found that despite the pressure of using Indonesian as a lingua franca, the Sundanese speaking community in the area continued to use Sundanese in daily communication, especially in the family sphere. This study emphasizes the importance of the social environment in supporting language defense, especially in urban areas that tend to be heterogeneous.

Furthermore, Rachma (2023) highlighted the role of Sundanese as a cultural identity among ethnic Sundanese students at Serang Raya University. His research revealed that despite being exposed to a multilingual academic environment, Sundanese students still show pride in their language and cultural identity. This shows that higher education can also be an important arena to strengthen awareness of the importance of preserving regional languages.

This research offers a significant and innovative contribution to the defense of the Sundanese language, particularly in Wewengkon Kuningan, through the development of Android-based educational games specifically designed for local contexts. Although many previous studies have explored the use of technology in language education, this study introduces a new approach by integrating Android-based educational games that focus on the Sundanese language. The novelty of this research lies in the

development of games that not only include Sundanese vocabulary and phrases, but also integrate local cultural elements that are relevant to the community in Wewengkon Kuningan.

In addition, the mixed methods approach—combining needs analysis from literature review and practical evaluation through game trials—provides a comprehensive understanding of the effectiveness of games in improving language skills and maintaining local culture. The study also provides new insights into how mobile technology can be used effectively in the context of specific and limited regional language preservation, and offers models that can be adapted to other regional languages in Indonesia. Thus, this research not only provides practical solutions for the defense of the Sundanese language, but also expands the understanding of the application of technology in language and cultural education.

This research provides benefits in the preservation of the Sundanese language in Wewengkon Kuningan by developing an Android-based educational game that combines elements of local language and culture. First, this research increases student engagement and use of Sundanese through attractive mobile technology. Second, the results can serve as a model for the development of educational games for other regional languages in Indonesia, offering effective design and implementation guidance. Third, this study provides empirical data that is useful for local governments, educational institutions, and cultural organizations to formulate more effective language defense policies and programs.

Method

This study adopts a mixed methods approach that combines the analysis of needs from literature review and evaluation of the implementation of Android-based educational games to maintain Sundanese language in Wewengkon Kuningan. The first phase of the study involved *the Systematic Literature Review (SLR),* where literature related to language defense and the use of technology in language education was studied in depth. This process includes the identification and selection of studies from academic databases such as Google Scholar and Scopus, as well as data extraction and analysis to determine the needs and challenges in the defense of the Sundanese language through educational games. The findings from SLR are used to design frameworks and relevant features in educational game development.

The second phase involves the development and trial of Android-based educational games designed based on the results of the needs analysis. This game covers vocabulary, phrases, and cultural aspects of the Sundanese language that are relevant to the local context in Wewengkon Kuningan. Once the game prototype was developed, trials were conducted involving around 100 students from primary and secondary schools in the region. The trial procedure includes user training on how to use the game and game integration in learning activities for 4-6 weeks. Quantitative data were collected through pretest and posttest to measure improvement in Sundanese language proficiency, while qualitative data were obtained from observations and interviews with students, teachers, and parents to get feedback on their experiences with the game.

Data analysis was carried out using descriptive statistical techniques and t-tests for quantitative data and thematic analysis for qualitative data. The results of the study will be compiled in a final report that includes findings from literature analysis and evaluation of game trials, as well as providing recommendations for the improvement of educational games and future strategies for the defense of the Sundanese language.

Results and Discussion

Game Needs Analysis

The field of game design research is increasingly relevant and evolving, with a focus on creating rich and meaningful user experiences. In his study, Kultima (2015) emphasized that game design is not just a matter of aesthetics or entertainment; It also requires an in-depth iterative research process. Idea development, prototyping, testing, and evaluation are all parts of the game design process, all of which are done with the goal of creating an engaging and immersive game. A good game should consider many things, such as the

purpose of the game for entertainment or education as well as the user's reaction to the game elements. According to Hunicke et al. (2004), the MDA (Mechanics, Dynamics, Aesthetics) approach is proposed to provide a formal framework for designing and analyzing games. This approach starts with designing the mechanics, which are the basic rules and systems of the game. Next, the designer must look at the dynamics resulting from the interaction of these mechanisms. To ensure an optimal gaming experience, these dynamics analyze and adjust for behaviors that appear during gameplay. Finally, attention is paid to aesthetics—the emotional experience that the player feels. The MDA approach helps designers understand how mechanical changes can affect dynamics and aesthetics, resulting in a well-rounded and satisfying gaming experience.

To create an effective Android-based educational game in the defense of the Sundanese language, it is important to start with an in-depth needs analysis. This needs analysis serves as the basis for on-target and relevant game design in the local context. This process involves identifying and understanding critical aspects that need to be integrated into the game, including specific Sundanese vocabulary, phrases, and cultural elements. By conducting a needs analysis, designers can ensure that the game is not only engaging and fun, but also effective in achieving the educational goals that have been set.

In addition, a needs analysis helps in designing the game's mechanics, its dynamics, and aesthetics that will affect the user experience. By understanding the needs and preferences of users, designers can implement appropriate and relevant features, and ensure that the game is able to effectively meet the goals of Sundanese education and preservation. The process also includes gathering feedback from stakeholders such as students, teachers, and linguists to tailor the game to specific needs and ensure that the end result is a useful and effective educational tool.

	a	b	c	d	e	f	g	h	i	j
Series1	100.00	100.00	95.20%	95.00%	95.00%	98.00%	95.00%	92.00%	92.00%	100.00
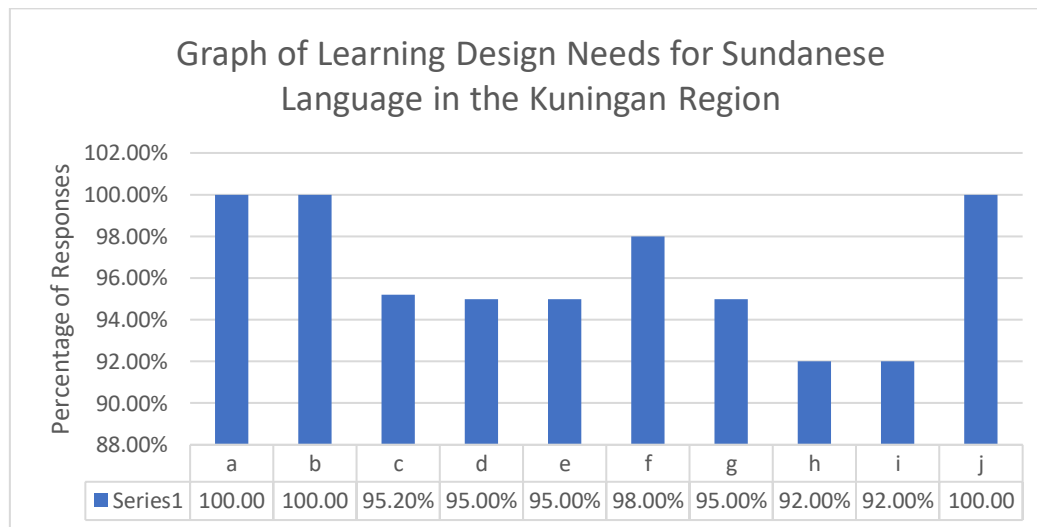
Figure 1 Learning Design Needs Sundanese Wewengkon Kuningan

Ket:

1. Interactive display of elements and icons

2. Presentation of visual or animated graphics

3. The navigation is presented simply

4. games that contain storylines

5. games that allow you to interact with in-game characters

6. Contains interaction between game characters for learning

7. likes challenges in the form of in-game levels

8. like the challenges or quis that each level presents

9. challenged in the overall completion of the game

Gadget-based games

From the results of the survey on the needs of game design, code transfer and code mixing, the results showed that the results of what was designed by the researcher were that the gadget-based game with the content of characters and the shape of the level and quis approved by students to develop game-based learning media was welcomed with open arms by them. Therefore, from the design, it is clearly illustrated what the students agree on and what the researcher designed to then be developed in a blueprint with various supporting items in the next stage of learning media development.

The results of the interviews showed the respondents' preferences and expectations for the display of games as well as the need for learning media to switch code and mix code created a significant link. Respondents consistently demonstrated a desire for interactive educational games, demonstrating an impetus for dynamic learning experiences. This raises the need for code-transfer learning media that is able to integrate interactive elements, allowing students to become active participants in the learning process.

The preference for visual graphics or animations reflects the need for compelling visual elements in the learning medium of code switching and code mixing. In this context, clear graphics and animations are needed that support the understanding of complex concepts. Furthermore, the desire for simple navigation indicates the need for an intuitive user interface in learning media, essential to ensure smooth student access to different types of content and activities.

Interest in storylines and interactions with characters in games emphasizes the importance of narratives and social elements in learning to switch code and mix code. It provides a foundation for content development that involves narratives and interactive simulations to support the understanding of complex concepts. Furthermore, the need for challenges and evaluations in the form of levels, quizzes, and game-wide completion challenges signifies the need for in-depth evaluative activities and challenges that evolve as students progress in learning code transfer.

The preference for device-based games highlights the need for learning media that can be accessed on a variety of devices, especially mobile devices. In the context of code switching and code mixing, this reflects a desire for learning that can be accessed anytime and anywhere. By understanding this link, developers of code-switching and code-mixing learning media can design solutions that are more appropriate and responsive to the needs of students in their learning experience.

Gameplay

In game development Algorithms play an important role in Learning Sundanese Wewengkon Kuningan by providing the necessary structure, logic, and interactivity to create an engaging and effective learning experience for players. This algorithm allows the game to adapt to the player's choices and progress, provide helpful feedback, and encourage them to continue learning and improving their Sundanese language skills. The development of the design creates a gameplay that can be observed in the image below.
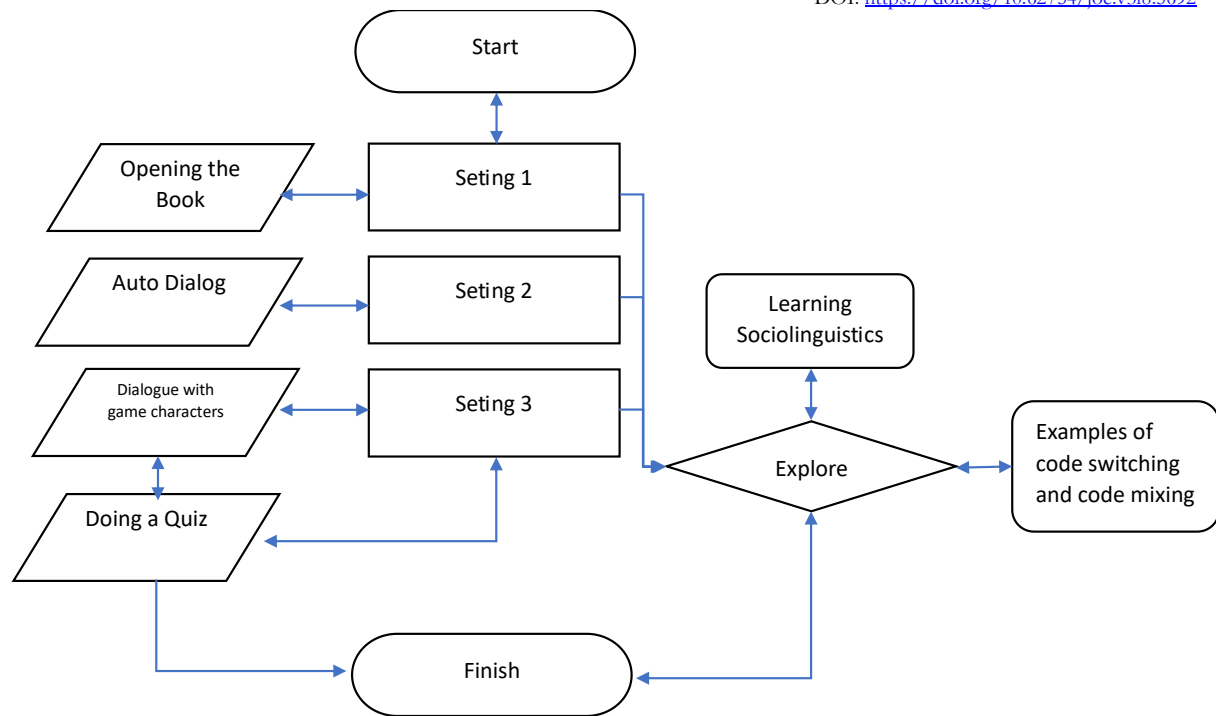
To ensure the success and relevance of RPG games, designs that integrate local wisdom, such as in the context of the Sundanese language region, require deep ethnolinguistic elements. These ethnolinguistic elements include an accurate understanding and representation of the local language, culture, and values that make up the identity of the Sundanese community. For example, the use of vocabulary, language structure, and cultural elements such as traditions and customs in games can enrich the gaming experience while providing significant cultural education. The incorporation of these elements in RPG games not only enhances the authenticity and depth of the story, but also allows players to experience and understand aspects of culture that may not be accessible in conventional learning approaches. Culture and language are inseparable. In language, the two influence each other and form a single entity. When studied in this way, the study of culture and language becomes an inseparable field of research. To achieve this process, the first step must involve analyzing people's behavior (Andriyana, 2024; Hymes, 1964). Ethnolinguistics is a discipline that can be used to study languages and cultures. The focus of this research is the relationship between human culture and linguistic perfection. According to Baehaqie (2017), the analysis area of this ethnolinguistic study consists of seven systems: language, two knowledge systems, three social organization systems, four systems of equipment and technology for life, five livelihood systems, six religious sites, and seven art systems.

To ensure an accurate and in-depth representation of local culture in games that use the Sundanese language of the Kuningan region, the application of ethnolinguistic elements is essential. An important factor to consider is the language, as the vocabulary and phrases used in the original Sundanese language allow players to experience firsthand the nuances of the local language. In addition, social organization describes the structure of society, including the role and relationship of the family in Sundanese society. By looking at these elements in the game, players can understand the social dynamics and cultural norms that affect daily life in Kuningan. Finally, traditional tools, agricultural techniques, and local technology used by the community are included in the system of living equipment and technology. Incorporating these elements into the game not only enhances the gaming experience, but it also teaches about the traditional way of life that is still relevant. By combining these three components, games are not only a tool of entertainment but also a means of learning that promotes and preserves local Sundanese wisdom in the Kuningan region.

According to Ibrahim and Mayani (2018), in their study on language planning in Indonesia based on triglossia, the application of ethnolinguistic elements in games using Sundanese from the Kuningan region is very relevant. In the context of triglosia, where different types of languages are spoken in society, games

must accurately reflect the diversity of local languages. By incorporating elements such as language, social organization, and living equipment systems and technology in the game, the life of the Sundanese people in Kuningan can be better and correctly depicted. Games that consider aspects of triglosia can offer an experience that not only uses the local language and culture correctly, but also teaches players about the social dynamics and traditional technologies that affect local communities.

Interface Design

Game development in this study is carried out in a structured manner using various platforms and technologies. Game design starts with choosing templates and assets from itch.io, which provide high-quality resources. The game's maps and environments were then created using Tiled, which allowed for a complex and contextual design in accordance with the culture and geography of Kuningan. Game development uses web technologies, including HTML for structure, JavaScript for logic, and CSS for visual layout. All of these elements are integrated and built into Android Studio, which provides a development environment for importing designs, integrating code, and performing testing and debugging. During the development process, periodic testing is carried out to ensure good functionality and visual appearance, followed by an optimization phase to ensure optimal game performance on various Android devices.

1	Setting 1: teaching materials	
2	Setting 2: Ujang House	
3	Setting 3: Abah House	

In the development of this game design, RPG (Role Playing Game) games were chosen as the main format to represent dialogue in everyday life. RPG games were chosen for their ability to create immersive and

realistic interactive experiences, in keeping with the need to facilitate Sundanese language learning in an authentic and contextual context.

According to Fajriani (2023), RPG design can be applied to various concepts, including in teaching and training. RPGs allow for the development of dialogues that are relevant to everyday situations, increasing learning engagement and effectiveness. This is in line with the research of Wibowo and Xie (2022), which showed how the ADDIE method is used in RPG design for United Kingdom language learning, utilizing RPG structures to provide an engaging and interactive learning experience. Research by Wibowo and Nirmala (2022) emphasizes the importance of design tools such as RPG Maker MV in designing effective RPGs, providing a platform that facilitates the creation of game elements and dialogue interactions.

In the context of this educational game, the RPG was chosen for its ability to present realistic and situational scenarios, allowing players to practice Sundanese in a variety of detailed, everyday situations. Foriansyah and Taurusta (2022) and Malingkas et al. (2021) underline the importance of designing games with structured methodologies, such as Finite State Machine and application integration, to ensure the quality and effectiveness of the gaming experience. Using RPG as a format, the game's design aims to create a dynamic and immersive learning environment, where players can interact with dialogues that reflect real-life situations, while deepening their understanding and skills of the Sundanese language.

The game developed in this study is titled "Sunda-Mix" and is designed to be playable through Android devices. "Sunda-Mix" is an RPG-based educational game designed to introduce and deepen the understanding of the Sundanese language through interactive and situational experiences. By utilizing Android technology, the game provides players with extensive accessibility and ease of use, allowing them to practice Sundanese directly in a context that is close to everyday life. Through "Sunda-Mix," players can engage in authentic dialogues and scenarios, supporting an effective and enjoyable language learning process.

Effectiveness Test

The test in this study aims to explain the methodology and results of the evaluation of the effectiveness of Android-based educational games in the defense of the Sundanese language. This study used various test methods to assess the impact of the designed intervention. The normality test was performed to ensure that the pretest and posttest data followed the normal distribution, with the results indicating that the data met the normality assumption. Furthermore, the variance homogeneity test is used to verify that the variance between the groups is homogeneous, which is important to ensure the accuracy of the subsequent analysis.

The results of the normality and homogeneity test in this study showed that the pretest and posttest data did not differ significantly from the normal distribution, with Shapiro-Wilk values of 0.939 (p = 0.229) for the pretest and 0.929 (p = 0.147) for the posttest, respectively, indicating that the data followed the normal distribution. In addition, the variance homogeneity test showed that the variance between the groups was not significantly different, with the Levene Statistic value based on the mean of 0.283 (p = 0.598), based on the median of 0.514 (p = 0.478), and based on the trimmed mean of 0.320 (p = 0.575). All p-values are greater than 0.05, indicating that the variance between groups is homogeneous.

After ensuring that the data meet the assumptions of normality and homogeneity of variance, this study will proceed with an effectiveness test to evaluate the extent to which Android-based educational games affect students' Sundanese language skills. This effectiveness test will include a comparative analysis between pretest and posttest scores to assess students' improvement in language skills as well as engagement after using the game. In addition, additional analyses will be conducted to evaluate feedback from students, teachers, and parents regarding their experiences with the game and its impact on the retention of the Sundanese language.

Table 4.17 t-Test Results

	Test Value = 0					
	T	df	Sig. (2-tailed)	Mean Difference	95% Confidence Interval of the Difference	
					Lower	Upper
Ngain_persen	10,242	19	,000	44,79762	35,6433	53,9519

The results of the analysis of the game test that has been developed show that there is a significant difference between the average improvement score (ngain_persen) and the zero value. With a t-value of 10.242 and a degree of freedom (df) of 19, as well as a bidirectional significance value (Sig.) of 0.000, this result shows that the average increase of 44.79762% is very statistically significant. The 95% confidence interval for this mean difference ranges from 35.6433 to 53.9519, confirming that the increase that occurred was within a range that was consistently higher than zero. These findings indicate that the intervention or treatment tested had a positive and significant impact on the improvement measured.

The effectiveness of games in language learning has attracted growing attention, with various studies showing potential benefits in vocabulary acquisition, engagement, and interactive learning. Klimova and Kacet (2017) assessed the effectiveness of computer games in language learning, emphasizing that well-designed games can significantly improve language acquisition by providing immersive and interactive experiences. Their findings suggest that games facilitate language learning by making them more engaging and contextually relevant, which is in line with the practical needs of using the language.

Games and acquisition of Sundanese wewengkon kuningan

Perveen et al. (2016) highlighted the effectiveness of language games in vocabulary acquisition, showing that games can significantly improve students' vocabulary retention and applicability. They explained that games create a dynamic environment that allows students to practice new words in relevant contexts, thus strengthening their comprehension and memory. This is especially useful for the Sundanese language, where contextual understanding and practical application are essential for successful learning. Sykes (2018) expands this insight by exploring how digital games provide unique opportunities for language practice through interactive and engaging methods. Digital games can cater to a variety of learning styles and offer personalized experiences, making them a valuable tool in language education. Su et al. (2021) continued with a comparative review between mobile and non-mobile games for language learning, emphasizing that mobile games provide much-needed flexibility and accessibility for language practice. Mobile games offer live feedback and practice opportunities in a variety of contexts, supporting effective and contextual language learning.

Research by As (2024) confirms that creative methods, including games, can significantly improve language skills in primary school, emphasizing the importance of innovative approaches to language learning. Atiasih et al. (2024) showed that computer programs, including games, are very effective in teaching Sundanese vocabulary to children, providing a fun and interactive way to reinforce vocabulary learning. Kurniawaty et al. (2021) highlighted the importance of integrating local culture in games for educational purposes, strengthening cultural relevance in the learning process. Overall, both digital and mobile games offer great potential for the preservation of the Sundanese language by providing an engaging and contextual platform, which supports effective and culture-based language learning.

This research has succeeded in identifying the concept of preserving the Sundanese language through the use of games as an effective learning tool. Various studies that have been discussed show that games, both digital and mobile, are not only able to improve vocabulary acquisition and student engagement, but also strengthen cultural relevance in language learning. By incorporating interactive, immersive, and contextual elements, the game provides an engaging and effective learning environment, which supports the preservation of the Sundanese language among the younger generation.
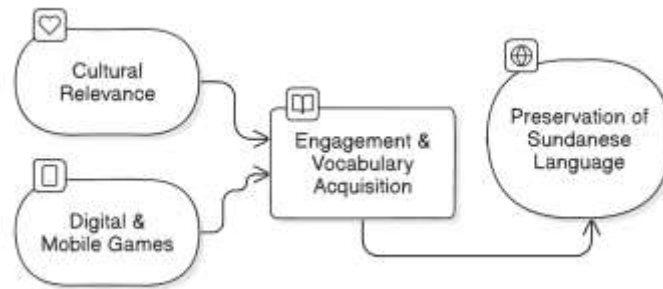
Games are an effective strategy for the preservation of the Sundanese language through the use of modern technology. In this context, digital and mobile games serve as innovative tools that are able to bridge the gap between traditional language learning and the needs of the younger generation who are increasingly familiar with technology. By offering an immersive and interactive experience, the game is able to increase student engagement in the learning process. This high engagement is crucial because it can increase vocabulary acquisition, which is a key foundation in language mastery.

The integration of cultural elements in games, such as the use of stories, cultural symbols, or the typical Sundanese colloquialism, reinforces the relevance of learning to real-life contexts. This not only makes language acquisition more attractive, but also instills a deep sense of cultural pride, which is key to language preservation. Thus, the relationship between digital and mobile games and the preservation of the Sundanese language becomes very clear. Through a contextual and culturally relevant approach, games not only support effective language learning but also encourage the sustainable use of Sundanese in the midst of the challenges of globalization. This innovation shows that language preservation can be achieved in a creative and adaptive way to the times, ensuring that the Sundanese language remains alive and thriving in the future.

Conclusion

This research focuses on the development and evaluation of an Android-based educational game designed to preserve the Sundanese language in the Kuningan region. In the face of the challenges of globalization, where local languages and cultures are often endangered, this research offers innovative solutions by utilizing digital technology for the purpose of cultural preservation. Through a mixed methods approach, this study combines literature analysis with empirical evaluation to obtain a comprehensive understanding of the effectiveness of games in the context of Sundanese language learning.

The educational games developed in this study are designed by considering the needs of modern education that demand interactive and interesting learning methods. By utilizing local cultural elements, such as Sundanese folklore, art, and local wisdom, the game is able to create a learning environment that is not only informative but also contextual, allowing students to learn Sundanese in a more relevant and meaningful way.

The results of the study show that this game not only improves students' Sundanese language skills, but also makes a positive contribution to their cultural awareness. The use of mixed methods provides higher validity to the research findings, with qualitative and quantitative data that support each other in revealing the effectiveness of games. Further, this game development model has the potential to be adopted and applied in other language and cultural contexts, providing an opportunity to expand the impact of this research more broadly in the context of education and cultural preservation. This research paves the way for similar innovations that can support global efforts to preserve local languages and cultures in the midst of modernization.

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