

Designing an Educational Application Based on Passura Toraya Toraja Carvings to Strengthen Cultural Understanding in Elementary Schools

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Abstract

This research focuses on designing an educational application drawing from Passura Toraya Toraja Carvings in Toraja. This Toraja Carvings is crucial in strengthening cultural understanding based on their symbolic meaning embedded in curriculum context in Elementary Schools. In this research, a concept of application design is created to showcase the beauty of Toraja Toraja Carvings. Which can be implemented as a learning tool to support cultural understanding of elementary students. The method of this research is a literature review, by analyzing references from Art criticism, Geometry, and Illustration of Toraja Toraja Carvings. This research results shows that an educational application with the implementation of Passura Toraya can be applied to education by emphasizing three main points namely; (1) Geometry learning in Arts and Math, both can be applied as a great source of learning in schools; (2) Illustration of Passura Toraya consists of hundreds of Toraja Carvings that originally four Toraja Carvings which later developed as times goes by; (3) Symbolic meaning of Passura Toraya helps understand the meaning of Toraja Culture in Schools. In Designing an educational application, the main crucial aspect of design is creating the core of its application. Therefore, three main objectives are drawn to provide a more comprehensive learning experience in schools integrated with technology. This research does not specifically creating a website, rather designing a concept of a better application for learning in schools.

Keywords: Application; Passura Toraya; Toraja Carvings; Culture; Elementary Schools

1. Introduction

Indonesia is a country with an abundance of cultural wealth. However, in 2012, according to data from BPS (Statistics Indonesia) in the Socio-Cultural Statistics report, only 2.5% of the population visited cultural heritage sites within a year. Therefore, elementary school students must be provided with Arts and Culture education that supports the implementation of the Pancasila Student Profile (Arafah, 2024; Brigg, 2011; Ebbutt, 2002; Maslowski, 2001), which emphasizes global diversity. Pancasila Students are expected to recognize, identify, and describe their own culture, enabling them to become members of social groups at the local, regional, national, and global levels. This aligns with the regulation stated in Number 009/H/KR/2022 concerning the Dimensions, Elements, and Sub-elements of the Pancasila Student Profile in the Merdeka Curriculum.

To support this program, this study aims to promote the implementation of *Passura Toraya* learning media from the Toraja ethnic group. This is in line with the Ministry of Education, Culture, Research, and Technology Regulation Number 7 of 2022 on content standards, which states that the learning process must include local potential and uniqueness (Montero & Leite, 2022; Rahim Abdul Rahman et al., 2021; Syahputra et al., 2019; Wati et al., 2023; Zakiah et al., 2025). *Passura Toraya* is a distinctive cultural identity of the Toraja people, comprising more than 100 Toraja Carvingsal designs. However, comprehensive documentation and its teaching at the elementary school level have not been carried out to date.

Currently, knowledge about the symbolic meanings of *Passura Toraya* is experiencing significant degradation, as contemporary carvers prioritize technical and aesthetic aspects over symbolic meanings (Salam et al., 2022). Moreover, in schools, the Arts and Culture subject does not introduce *Passura Toraya*. Therefore, the use of learning media applications is highly suitable in the era of the Industrial Revolution 4.0. The use of Android-based

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applications for arts and culture learning in elementary schools is a very appropriate step and serves as a means of documenting cultural objects, especially since the current generation is very accustomed to using touchscreens (Amin et al., 2024; Feng & Qiaoqiao, 2020; Samala et al., 2024). Consequently, when learning is based on Android applications, students' interest in learning increases when the instruction is designed with touchscreen interaction (Ali et al., 2022; Alswailem & AlMeraj, 2024; Đurđević et al., 2022; Leong et al., 2024; Sudirman et al., 2020; Taher, 2023).

2. Literature Review

In order to enhance students understanding in schools, it is highly essential to design an educational application that integrates local culture. In South Sulawesi, especially in Toraja there are more than hundred of Toraja Carvings which contains symbolic meaning representing local culture of Toraja people. Integrating the Toraja Carvings into an educational application will provide learning opportunities for students. Previous research has been done related to cultural integration, technology, educational frameworks, and content development. All of which will have a significant impact on students learning if it can be implemented with rigorous research prior to the implementation.

2.1. Cultural Integration

Two important aspects of cultural integration once the design of application implemented successfully in schools. The first integration on local wisdom and the second integration is cross cultural studies. In local wisdom, it is essential to incorporate the cultural values and philosophies embedded in Passura Toraya, such as their spiritual messages and cultural identity (Muslimin, 2017; Sudianto & Simon, 2018). This can be achieved through interactive storytelling and visual representations. While, in cross cultural studies develops teaching materials that include cross-cultural studies to improve students' nationalism and cultural understanding (Usman et al., 2020). Therefore, these two approaches are fundamentally crucial in designing key concepts for cultural integration.

2.2. Technological Features

In designing applications for learning in schools, it is paramount to implement recent technology such as Augmented Reality (AR) and Virtual encyclopedia. First, AR have the ability to create immersive experiences, students will be able to interact with 3D models of Toraja Toraja Carvings. This technology has been shown to enhance cultural learning and preservation (Bertaluci & da Silva, 2024; Innocente et al., 2023; Puspasari et al., 2021). Secondly, virtual encyclopedia will provide an incredible experience of database for the first time in learning. This will significantly help both teachers and students to access all information related to Toraja Crafting Art, which showcase includes detailed descriptions and classifications of various Toraja Carvings (Sudianto & Simon, 2018).

2.3. Educational Framework

Educational Framework is fundamental in designing a better and applicable prototype of application. Thus, the type of educational framework in this research will emphasise on the use of Project Based learning (PBL). This framework will elaborate on engaging students in creating projects of Toraja Toraja Carvings. There are more than a hundred Toraja Carvings that students can select as their project. This will provide students with more flexibility in selecting their Toraja Carvings. Students will then have to discuss in peers and followed by group projects. This process will take several activities to support their working memory. So, the students will memorize their experience. Thus, it will deepen their understanding and appreciation of Passura Toraya (Boakye-Yiadom et al., 2025).. This is an important aspect of learning that incorporates technology as their tools to learn culture.

2.4. Content Development

One of the key elements of the design is both illustrative and learning modules. In order to be successful, a design application must provide wider information to make sure contents are accessible and available. Thus, in it is important to create illustrated dictionaries from Passura Toraya, that will provide descriptions and images for students to understand and gain their cultural knowledge. Moreover, in terms of interactive learning modules, it is essential to develop the specific modules of Passura Toraya. This will help students to explore the symbolic meaning of Passura Toraya (Muslimin, 2017; Sudianto & Simon, 2018). Above all, in order to make sure the design of the application to be successful, it is important to provide illustrative data for students to learn.

3. Research Method and Materials

This research is a literature review methodology, utilizing analysis from many researchers to collect information and provide analysis of applicable design for applications related to Passura Toraya. This research is selected as a foundation for future research in designing applications related to culture as a learning material in schools. It is not limited to elementary, secondary, or even senior high school. The research will focus on Toraja Toraja Carvings called Passura Toraya that have more than one hundred Toraja Carvings. Although to this day, only more than 65 are well documented. Toraja is located in South Sulawesi, and Toraja is selected due to its rich of cultural artefacts and the people preserve their cultural heritage better in terms of implementation in their life, such as their Tongkonan house, rituals, and their uniforms.

In general, literature review will analyse many previous research related to the topic. Then, after selecting the right formula, researchers will draw research results as a foundation for future research. This is fundamental in creating a first step so that future research will have a guideline to start in this topic of research. There are previously studies on this topic, but most of the study focuses on symbolic meaning. However, lack of development to improve its design as a learning method that incorporates technology. In this era, application will be accessed by students, who have tendency to use their mobile devices.

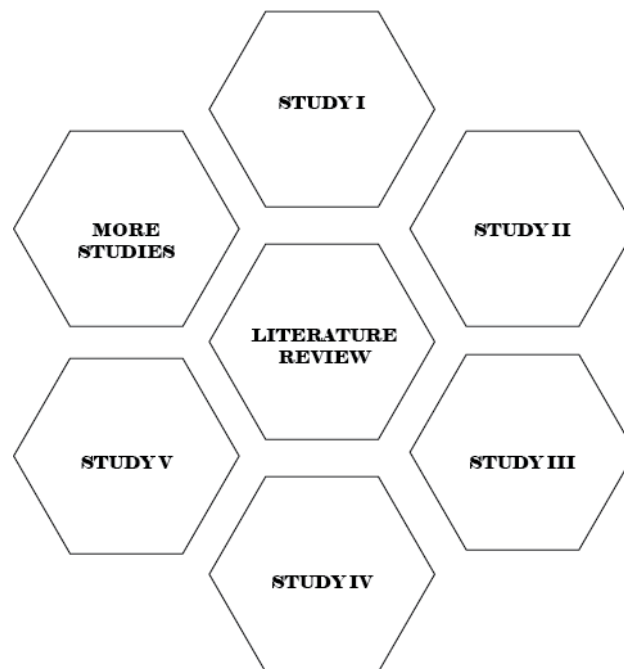


Figure 1. Literature Review Method Collected from Many Studies.

4. Results and Discussion

Findings of this research showcase three main results namely geometry can be used as a learning source for studying arts for cultural content and math. Following this, there are sixty-four (64) Passura Toraya are documented, this can be a main source of educational content. Finally, symbolic meaning of Passura Toraya is fundamental for learning. At this point, it is clear that this fundamental research can be starting point for designing an application for learning cultural content in schools. Drawing from this findings, visual Relationships Map for Application Design is drawn to provide more detail information related to this research results.

This visual relationship map for application design is a fundamental tools as a starting point for future research conducting similar research related to design of application. If this visual map are used it will provide a better context for students to learn. Not only it provides all necessary information, but it give more information with illustrations. Previous web design mostly contain one or two map. Therefore, this visual map provides the missing information.

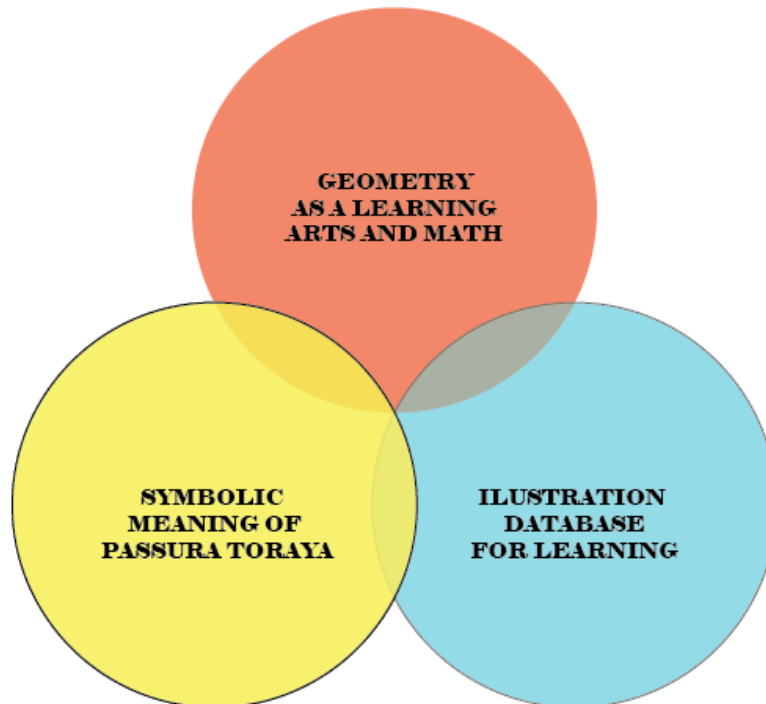


Figure 2. Visual Relationships Map for Application Design

4.1. Geometry as a learning arts and math

Passura toraya 'Pa Kapu' Baka' is one of examples of geometry applications. This finding is fundamentally crucial for education. This provides learning opportunities for students studying both arts and science especially math. It is clear that this type of Toraja Carvings contains mathematical side that showcase three-fold of pattern, for circle and rectangle. This is the first findings that shows in detail information related to Toraja Carvings. Therefore, it is highly recommended for future research to explore this geometrical pattern in Passura Toraya (Nugraha, 2019a; Salam, Husain, et al., 2017).

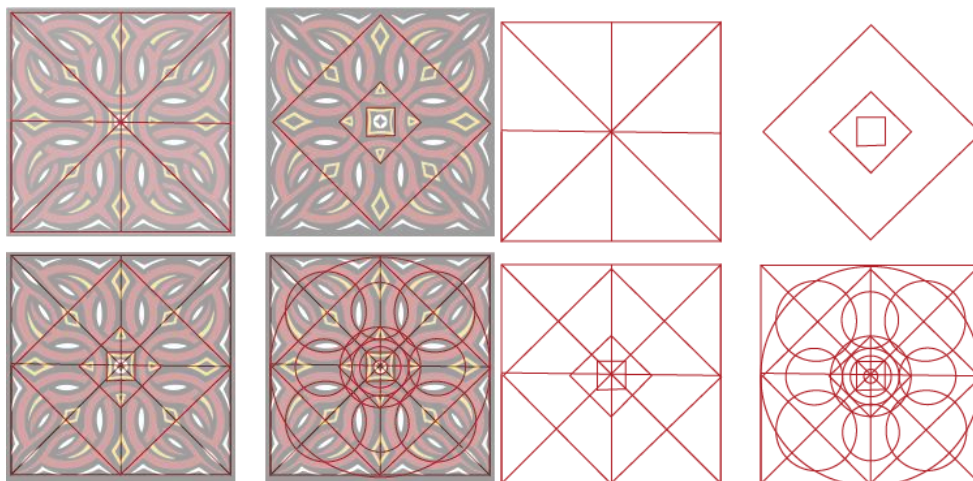


Figure 3. Illustration of Geometry as a learning arts and math.

4.2. Illustration database for learning

Previous research do not provide Passura Toraya in their research, this is due to copyright or lack of information on specific Toraja Carvings (Amirullah, n.d.; Nugraha, 2019a, 2019b; Salam et al., 2022; Salam, Saleh Husain, et al., 2017). Thus, it is fundamentally vital for research to ask for permission if it is going to be implemented in schools. Even the purpose of this research is to preserve cultural heritage of Toraja. It is also vital for any researchers to make sure the copyright maintains and passed the ethical approval process from Toraja people.



Figure 4. Illustration of Passura Toraya design by Abdul Haq Rezki Amnur

4.3. Symbolic meaning of Passura Toraya

One of the most crucial aspects of learning and preserving cultural heritage of Toraja is through providing information of symbolic meaning of Passura Toraya with illustrations. This will not only provide more visual images that access the memory of students so that they can restore them in their working memory, but also students will be engage with this method of learning. Moreover, drawing from previous research, that many Toraja people have limited understanding of Passura Toraya symbolic meaning (Salam et al., 2022). Making this approach to be more relevant and needed to be studied in schools.

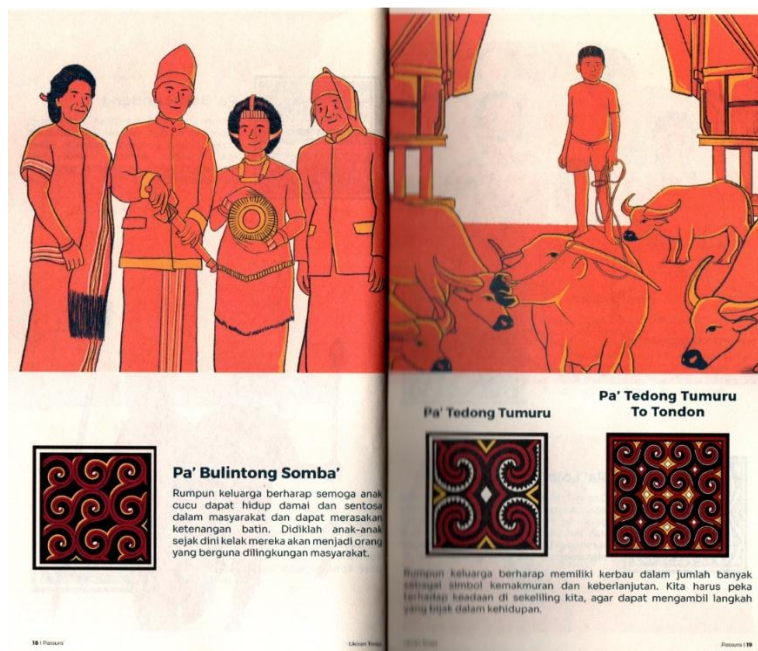


Figure 5. Symbolic meaning of Passura Toraya design by Abdul Haq Rezki Amnur



Figure 6. Modul of Passura Toraya design by Abdul Haq Rezki Amnur

4.4. Benefit of the Design

There three main benefits can be acquired from this method for students. First, students will enhance their cultural awareness, students will be engaged in learning experiences, and it will certainly preserve cultural heritage. First and foremost, this research shows that the design of application for learning can enhanced cultural awareness. students will gain a deeper understanding of their local culture, which can improve their cultural identity and readiness for a globalized world (Anwar & Sukirman, 2024). Secondly, this will engage learning experience. The use of AR and interactive modules will make learning more engaging and enjoyable, leading to better retention and understanding (Innocente et al., 2023; Puspasari et al., 2021). And finally, this approach will preserve cultural heritage. Integrating Passura Toraya into the curriculum, the application will contribute to the preservation and appreciation of Toraja culture (Sudianto & Simon, 2018) (Zakiah et al., 2025).

5. Conclusion

Three main findings in this research were drawn in detail namely geometry in Passura Toraja as a learning opportunity to explore using application. Then, database of Passura Toraya illustration now is sixty four in total. This number can be higher considering the total number of Passura Toraya are more than one hundred. But recent findings can only showcase sixty-four Toraja carvings. Although these findings are essential for fundamental research. Finally, symbolic meaning must be taken into account, thus this research makes it as one of the three main objectives in this research. symbolic meaning of Passura Toraya is now degrading as times goes by. Therefore, this design of application should include symbolic meaning of Passura Toraya. So that the meaning of each carvings remains the same over time.

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