



Cultural Sustainability through Digital Learning: Integrating Technology in Lulo Dance Education

Pahenra A. Nongko^{1*}, Sitti Salma², Hasmira Said³, Usman⁴, Rohmiati⁵

^{1,2,3,4,5}University Muhammadiyah of Kendari, Indonesia

Corresponding email: pahenra@umkendari.ac.id

Copyright©2025 Pahenra A. Nongko, Sitti Salma, Hasmira Said, Usman, Rohmiati, all rights reserved.

Authors agree that this article remains permanently open access under the terms of the CC Attribution-NonCommercial-ShareAlike 4.0

History of manuscript: submitted: 01/09/2025 | reviewed: 01/10/2025 | accepted: 06/10/2025

ABSTRACT: The rapid development of technology offers new possibilities for preserving and promoting local cultural wisdom in the modern education system. This research explores the integration of technology into the learning of Lulo, a traditional dance from Southeast Sulawesi, as a means to improve education and cultural preservation. The aim is to examine how digital devices such as virtual reality, mobile apps, and online platforms can effectively engage students in learning traditional cultural practices. This study used 67 respondents, data was collected by qualitative analysis through interviews, observations, and surveys involving educators and students in schools that incorporate technology in the teaching of Lulo dance. Thematic analysis is used to identify key patterns in the use of technology for cultural education and their impact on student engagement and cultural understanding. The results of the study were in the aspects of technology integration (63.18%), learning experience (65.17%), cultural preservation (58.21%), and quality of education (61.69%) were very effective. shows that technology significantly improves student engagement and learning outcomes. However, challenges such as the digital divide and the need to maintain cultural authenticity are also identified. The study concludes that integrating technology in cultural education presents an effective strategy for cultural preservation, with implications for education policy, curriculum development, and the creation of culturally sensitive digital learning tools.

Keywords: Cultural preservation; local wisdom; Technology; traditional dance.

ABSTRAK: Perkembangan teknologi yang pesat menawarkan kemungkinan baru untuk melestarikan dan mempromosikan kearifan budaya lokal dalam sistem pendidikan modern. Penelitian ini mengeksplorasi integrasi teknologi dalam pembelajaran tari Lulo, tarian

tradisional dari Sulawesi Tenggara, sebagai sarana untuk meningkatkan pendidikan dan pelestarian budaya. Tujuannya adalah untuk mengkaji bagaimana perangkat digital seperti realitas virtual, aplikasi seluler, dan platform daring dapat secara efektif melibatkan siswa dalam mempelajari praktik budaya tradisional. Penelitian ini melibatkan 67 responden, dengan data dikumpulkan melalui analisis kualitatif berupa wawancara, observasi, dan survei yang melibatkan pendidik serta siswa di sekolah yang mengintegrasikan teknologi dalam pengajaran tari Lulo. Analisis tematik digunakan untuk mengidentifikasi pola-pola utama dalam penggunaan teknologi untuk pendidikan budaya dan dampaknya terhadap keterlibatan serta pemahaman budaya siswa. Hasil penelitian pada aspek integrasi teknologi (63,18%), pengalaman belajar (65,17%), pelestarian budaya (58,21%), dan kualitas pendidikan (61,69%) menunjukkan bahwa integrasi tersebut sangat efektif. Temuan ini menunjukkan bahwa teknologi secara signifikan meningkatkan keterlibatan siswa dan hasil belajar. Namun, tantangan seperti kesenjangan digital dan kebutuhan untuk menjaga keaslian budaya juga teridentifikasi. Penelitian ini menyimpulkan bahwa integrasi teknologi dalam pendidikan budaya merupakan strategi efektif untuk pelestarian budaya, dengan implikasi terhadap kebijakan pendidikan, pengembangan kurikulum, dan penciptaan alat pembelajaran digital yang sensitif terhadap budaya.

Kata Kunci: kearifan lokal; tari tradisional; pelestarian budaya; teknologi.

INTRODUCTION

In the era of globalization marked by rapid cultural exchange and rapid technological developments, the need to preserve local wisdom is becoming increasingly urgent. Local wisdom refers to knowledge, values, practices, and traditions that are inherited from generation to generation in a certain community (Chae, 2020; Hanafie Das et al., 2022; Fajriati & Na'imah, 2020; Typhoon, 2023). It not only represents a collective identity, but also contains moral, spiritual, and social values that play an important role in shaping the character of society (Barros et al., 2023). In the context of Indonesia, which is known for its cultural diversity, the preservation of local wisdom is not only limited to respect for the past, but also an important strategy to build a sense of identity, sustainability, and social solidarity for future generations. Education has a strategic position in transmitting the values of local wisdom. UNESCO (2013) emphasizes that education, both formal and informal, is the main vehicle for transferring cultural knowledge to the younger generation (Jenkins & Placencia, 2024; Sinaga et al., 2021). By integrating cultural heritage into the curriculum, students are encouraged to understand their historical and cultural roots while strengthening identity capital when interacting with the global world. However, the challenge that arises is how to keep the tradition relevant, interesting, and meaningful for learners who currently live in a digital ecosystem loaded with global media (Wagner & de Clippele, 2023; Wiley & Hilton, 2018).

One form of local wisdom that has cultural significance in Southeast Sulawesi is the traditional Lulo dance. This dance originated from the Tolaki ethnic group and is usually performed at important social events such as weddings, harvest festivals, and community

celebrations (Jumarli, 2021; Narwasty et al., 2021). More than just entertainment, Lulo serves as a symbol of unity, cooperation, and respect in society (Majid et al., 2019; Melamba et al., 2015). Lulo's simple and repetitive movements make it an inclusive dance, allowing for participation across ages, genders, and social status (Ahmad, 2019; Sahnir, 2022). This fosters a sense of togetherness and solidarity, values that are increasingly relevant in the midst of the challenges of modern individualism (Subair, 2017; Asriansyah, 2018; Sihartin et al., 2018). However, the continuity of Lulo's dance faces serious threats. Lifestyle changes and the dominance of digital entertainment have caused the younger generation to be less and less involved in this practice. If this trend continues, then the traditions that serve as the backbone of the cultural identity of local communities can be eroded and lost.

Advances in information technology open up new opportunities for the revitalization of local wisdom. The use of digital platforms, virtual reality, video tutorials, and interactive apps allows students to learn traditional dance in a more immersive and engaging way. Technology can be a bridge between ancient customs and the learning style of the digital generation. Through digital archives, for example, recordings of dance, music, and oral history can be systematically documented to ensure the sustainability of cultural traditions (Almerico, 2014; Burton, 2020; Buckingham, 2005; Narwasty et al., 2021; Eka et al., 2020). In addition, social media and online communities can be a forum for cultural exchange between regions. Students from different regions can not only learn about their own traditions, but also appreciate the cultural heritage of other communities. Thus, technology is not only a documentation tool, but also a space for cross-cultural collaboration. However, this opportunity is not separated from the challenge. 1) , the cultural relevance of traditional games and dances such as Lulo often loses competition with the appeal of video games, social media, and other digital entertainment. 2), the pace of technological change is often faster than the ability of the education system to adapt. As a result, the integration of local wisdom in education is still often marginalized, considered less relevant to the demands of global competence (Narwasty et al., 2021; Da Silva, 2021; Freire, 2020). While there is research on cultural preservation and technological integration, there are still important gaps. 1) , most studies emphasize cultural documentation more than integration into formal education contexts. 2), there has not been much research that focuses on local performing arts forms such as Lulo dance in relation to digital education policies in Indonesia. 3), there are limitations in examining how technology can be used strategically to make local wisdom part of the modern curriculum without losing its cultural essence. This gap is what makes this research important. Instead of just highlighting cultural preservation efforts in general, this study emphasizes concrete strategies for integrating Lulo dance into modern education through the use of technology. Thus, this research can contribute to the theory of cultural integration in education, while offering practical solutions for curriculum development.

This research aims to answer two main questions: (1) how information technology

can be used to integrate the traditional Lulo dance into the modern educational environment, and (2) what are the benefits of this transformation for cultural preservation and learning reinforcement. This is in line with the direction of the national education policy which emphasizes the importance of digital literacy as well as the preservation of local wisdom as part of the Pancasila Student Profile. By integrating Lulo through digital media, this research not only contributes to the revitalization of local traditions, but also supports a sustainable development agenda that prioritizes cultural diversity. More broadly, this research also has global relevance. UNESCO has emphasized the importance of protecting intangible cultural heritage as part of humanity's collective identity. Within this framework, the study of Lulo can serve as a model for how local communities use technology to preserve traditions, while negotiating their position in the modern, all-digital world.

This research has several important contributions. 1), theoretically, it offers a new framework on the integration of technology and local wisdom in education, which is still relatively underexplored. 2), practically, this study provides recommendations to educators and policymakers on how to design a curriculum that balances the demands of globalization and the preservation of local culture. 3), this study strengthens the argument that education is not only an instrument of academic knowledge transfer, but also an important vehicle for the sustainability of cultural identity. In an ever-changing global landscape, preserving local wisdom is both a challenge and an opportunity. The Lulo dance as a representation of Tolaki culture faces the risk of extinction amid the onslaught of modernity and digital technology. However, the same technology can also be used to document, revitalize, and integrate these traditions into education. This research closes a gap that has not been touched much in the past, namely how concrete strategies for integrating local culture into education through technology can be carried out. Thus, this research is not only useful for maintaining the continuity of Lulo, but also contributes to the formulation of more inclusive, contextual, and sustainable education policies.

METHOD

Research Design

This research uses a qualitative approach to explore the integration of technology into cultural education, specifically focusing on how traditional Lulo dance can be taught using digital tools. This approach was chosen to provide a comprehensive understanding of the qualitative aspects of this phenomenon (Weyant, 2022). The qualitative method will allow for an in-depth exploration of the experiences and perceptions of educators and students regarding the use of technology in cultural education. The qualitative aspect of this research will involve case studies in specific schools or educational platforms that have incorporated digital technology into the teaching of their traditional cultural practices. These schools will be selected based on their willingness to participate and the integration of technology into their curriculum. (Creswell, 2014). The respondents of this

study are 67 respondents as in this table.

Table 1. Respondent Characteristics

Characteristic	Category	Number	Percentage (%)
Profession	Primary School Students	58	86.6%
	Teachers	7	10.4%
	Educational Staff	2	3.0%
Gender	Female	35	52.2%
	Male	32	47.8%
Age	Lower Grade Students (1-3)	28	41.8%
	Upper Grade Students (4-6)	30	44.8%
	Teachers and Counselors	-	> 25 years old

Data Collection Methods

Semi-structured interviews will be conducted with educators and students to gather insights into their experiences with technology-based learning modules to teach traditional practices such as Lulo dance. Educators will be asked about their motivations for using digital tools, the challenges they face in integrating technology into cultural education, and the perceived effectiveness of these tools. Meanwhile, students will be asked about their engagement with digital learning materials, their understanding of the cultural significance of Lulo dance, and their overall experience with technology-based education.

Table 2. Student and teacher questionnaire instruments

No.	Teacher and student question instruments
	For students
1	You use the app/website provided to learn to dance Lulo
2	You find it easier to understand the movements of the Lulo dance after using technology
3	You feel motivated to learn Lulo dance after technology integration
	For Teachers
4	How effective do you think the use of technology is in teaching Lulo dance
5	The main obstacles you face in integrating technology into learning Lulo dance

This instrument evaluates the experience of students and teachers in technology-based Lulo dance learning. Students were assessed on application usage, movement comprehension, and learning motivation, while teachers assessed the effectiveness and constraints of technology integration, thus providing a comprehensive overview of the benefits and challenges of implementation. Observational studies will be conducted in classrooms or digital learning environments where Lulo dance is taught

using technology. This will involve observing how digital tools, such as instructional videos, mobile apps, or virtual reality platforms, are used by educators to teach dance movements and cultural significance to students. Observations will focus on how these tools are integrated into the teaching process, how students interact with digital content, and how effectively technology supports learning objectives related to cultural preservation. This method will provide a hands-on insight into the practical application of technology in cultural education. Additionally, it will offer the opportunity to document any challenge or success in real-time, adding depth to the research findings (Fryer, 2006).

Table 3. Questionnaire Instruments to Understand Technology in Integrating Local Wisdom

Na	Instruments
Technology Integration	
1	How effectively information technology (e.g., digital platforms such as video tutorials, mobile apps, and virtual reality (VR)) is used to teach Lulo dance
2	Does technology make it easier for students to understand the movements and meanings of lulo dance?
3	Whether technology can provide constructive feedback for students
Student learning experience	
4	Are students more motivated to learn Lulo dance after technology integration
5	Can students easily access Lulo's learning materials through technology
6	Can students collaborate with other students in learning Lulo dance through technology
Cultural Preservation	
7	Can technology integration increase students' awareness of the importance of preserving Lulo dance
8	Can technology help expand the reach of Lulo dance to the younger generation?
9	Can technology help preserve the cultural values contained in Lulo dance
Quality of Education	
10	Does technology integration improve the quality of Lulo learning
11	Whether technology can provide a more engaging and interactive learning experience
12	Whether technology can support the development of students' skills relevant to Lulo dance (e.g., creativity, communication)

The instrument is designed to assess the effectiveness of technology integration in learning Lulo dance from four main dimensions. First, Technology Integration evaluates the extent to which digital media such as apps, videos, and VR facilitate understanding, provide feedback, and support teaching. Second, the Student Learning Experience measures motivation, material accessibility, and technology-facilitated collaboration opportunities. Third, Cultural Preservation highlights how technology raises awareness,

expands reach, and preserves the cultural values of Lulo dance. Finally, Education Quality assesses the improvement of learning quality, interactive appeal, and the contribution of technology to relevant student skills.

To complete the qualitative data, surveys or questionnaires will be distributed to students and educators. The survey will include closed-ended and open-ended questions, designed to assess the overall effectiveness of technology-based modules. For example, students will be asked to assess their engagement and understanding of the cultural aspects of Lulo dance before and after the use of digital tools. Educators will provide feedback on how well technology facilitates the teaching of cultural content, as well as any improvements or weaknesses they notice (Machado-da-Silva, 2003).

Data Analysis

For qualitative data collected from interviews and observations, thematic analysis will be used to identify recurring patterns and themes. Thematic analysis is a method used to analyze qualitative data by systematically coding and organizing responses into key themes. This means that themes can include student engagement with cultural content, technology integration, learning experiences, and cultural preservation, as well as teacher and student responses in using digital tools for cultural education, and the role of technology in enhancing cultural identity. This process will involve several rounds of coding and data review to ensure that the theme is well supported by attendee feedback. Thematic analysis will allow researchers to interpret the data in meaningful ways, highlighting areas where technology has successfully supported cultural education and areas where improvements are needed (Cohen et al., 2017)

Research Ethics

This research was carried out in accordance with the principles of research ethics, by obtaining the conscious consent of all participants and related parties. The confidentiality of personal data is strictly maintained, so that participation is voluntary, secure, and respects the dignity of respondents. Only aggregated data is used, without mentioning the identity of the individual, to guarantee the privacy of the participants.

FINDINGS AND DISCUSSION

Integration of technology in the teaching of Lulo Dance

The findings of this study reveal that the integration of technology in the teaching of traditional Lulo dance has been met with varying degrees of success, demonstrating the potential and challenges of using digital tools for cultural education. Educators have found that digital platforms such as video tutorials, mobile apps, and virtual reality (VR) have made it easier to deliver instructional content related to Lulo dance. These tools allow students to repeatedly practice dance moves at their own pace, ensuring that they can refine their skills outside of a traditional classroom setting. In particular, VR has

allowed students to immerse themselves in the cultural context of Lulo dance, offering a unique and interactive experience that simulates real-life participation in dance.

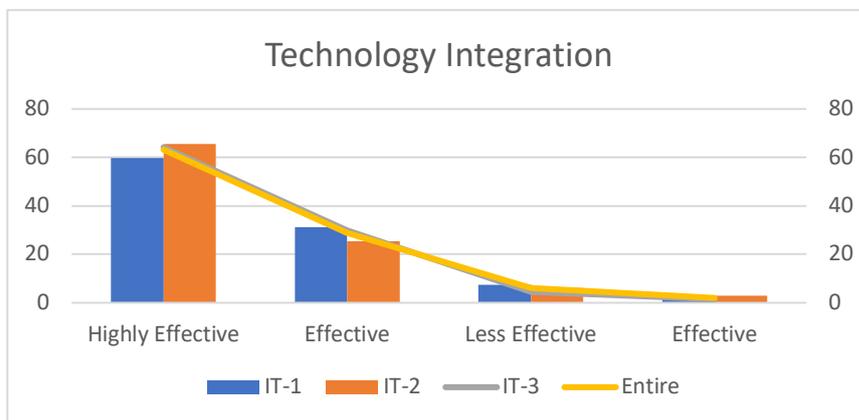


Figure 1. Data on the results of respondents in the technology integration component

The results of the figure show that the majority of respondents consider the integration of technology in learning to be very effective, with an average of 63.18%, while the effective category is 28.86%. Only a small percentage rated it as less effective (5.97%) or ineffective (1.99%). These findings confirm that the use of technology has great significance in improving the quality of learning, expanding access to information, and supporting more interactive and innovative teaching methods. The dominance of positive assessments shows good acceptance of the use of technology, as well as proof that technology is an important instrument in encouraging the effectiveness of education in the digital era.

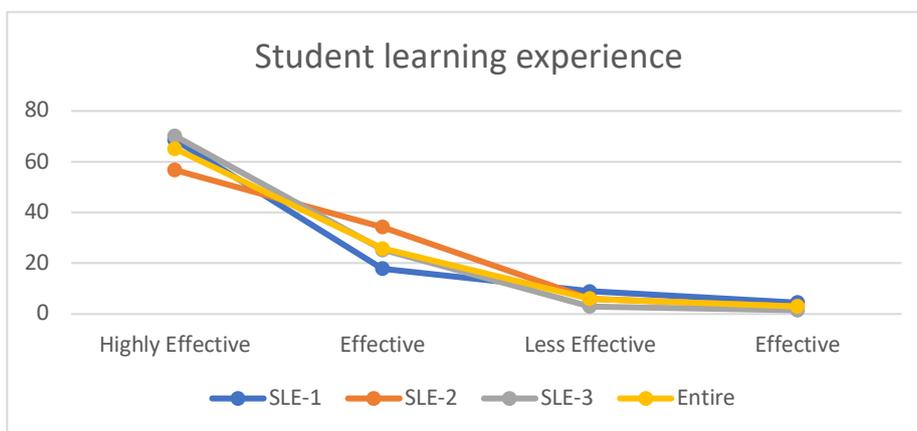


Figure 2. Respondent results data on the student learning experience component

The figure shows that students' learning experiences through technology integration are mostly rated as very effective, with an average of 65.17%. The effective category

obtained 25.87%, while the less effective assessment was only 5.97% and ineffective 2.99%. This indicates that technology is able to improve students' understanding, motivate them to be more active, and facilitate the learning process. The high percentage of the "highly effective" category in the SLE-1 and SLE-3 indicators shows the significant impact of technology in enriching the learning experience. Thus, technology has proven to be an important factor in creating interactive, fun, and meaningful learning for students.

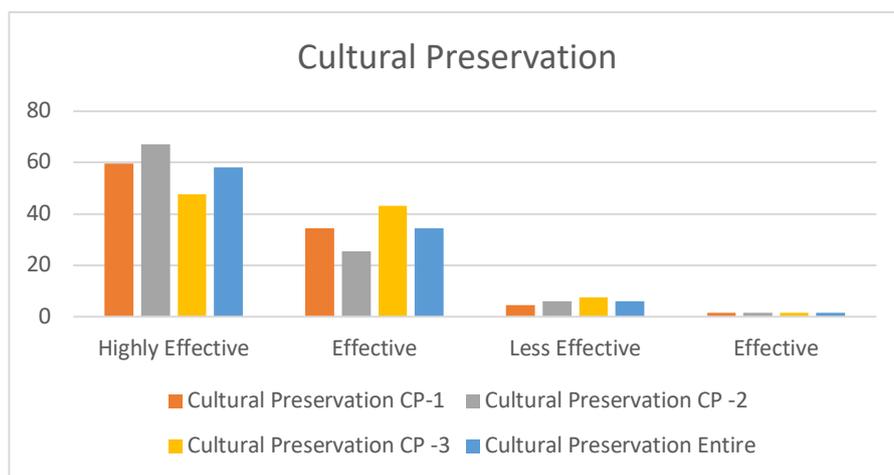


Figure 3. Data on the results of the cultural preservation component of respondents

The cultural preservation figure shows that the integration of technology has a significant contribution in increasing students' awareness of Lulo dance. The average "very effective" assessment of 58.21% and "effective" of 34.33% reflects that the majority of students assess that technology plays a role in expanding the reach and strengthening the understanding of cultural values. However, the percentage in CP-3 was lower (47.76% was very effective), indicating the need for additional strategies to make cultural values more internalized. The "less effective" levels of 5.97% and "ineffective" rates of 1.49% are relatively small, so technology integration remains relevant in supporting the preservation of local culture.

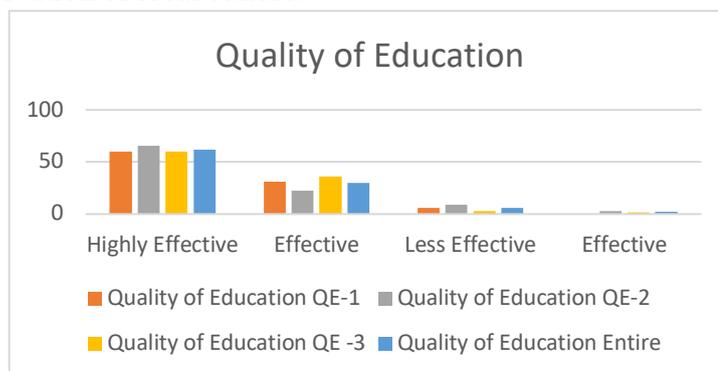


Figure 4. Respondent results data on the education quality component

The education quality figure shows that the integration of technology in Lulo dance learning is considered quite high in increasing effectiveness. Overall, 61.69% of respondents rated it "very effective" and 29.85% "effective", indicating that the majority felt a positive impact on the quality of learning. The QE -2 instrument obtained the highest percentage in the "highly effective" category (65.67%), demonstrating the role of technology in creating interactive and meaningful learning experiences. However, there were 5.97% of respondents who rated it "less effective" and 2.49% as "ineffective", indicating that there are still technical and pedagogical obstacles. These results underscore the importance of optimizing the use of technology to support the quality of education.

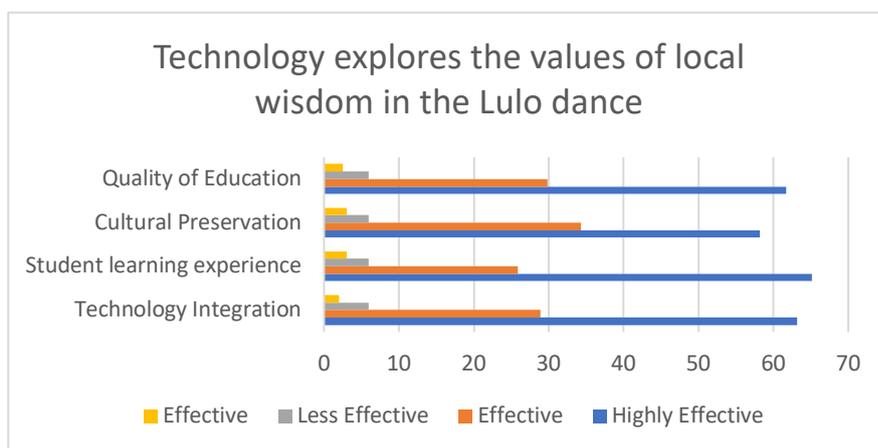


Figure 5. A graph of respondent results of the overall component results

The overall results of the four research instruments show that the integration of technology in Lulo dance learning has strong significance in supporting learning effectiveness, student learning experience, cultural preservation, and educational quality. In general, the majority of respondents rated the use of technology as very effective with the highest percentage on student learning experience (65.17%) and technology integration (63.18%). This shows that technology is able to increase motivation, understanding of movements, and direct student involvement. In terms of cultural preservation, 58.21% of respondents considered it very effective and 34.33% effective, indicating the important role of technology in preserving the Lulo dance while introducing it to the younger generation. Meanwhile, the quality of education obtained a significant score with 61.69% very effective, indicating that technology can strengthen interactive aspects, skill relevance, and students' creativity. However, there are still around 5-6% of respondents who consider it less effective, and 2-3% say it is ineffective, indicating limited access, technical constraints, and pedagogical readiness of teachers. Overall, these findings show that the integration of technology not only improves the learning of Lulo dance, but also contributes to the mission of cultural preservation and continuous improvement of the quality of education.

Student Engagement and Outcomes of Technology-Based Learning

These findings show a significant increase in student engagement when IT-based tools are used in the teaching of Lulo dance. The survey shows that students find digital learning materials engaging and interactive, which increases their interest in learning to dance. Digital tools allow students to visualize and practice dance movements repeatedly, leading to improved learning outcomes. Compared to traditional methods of teaching Lulo dance, the use of technology has reportedly increased student motivation and participation.

Table 4. Teacher results data and statements

No.	Teacher and student question instruments	Answer
For students		
1	You use the app/website provided to learn to dance Lulo	Yes, I use the app/website to learn Lulo's movements. Yes, I often use the app to see tutorials on Lulo dance moves.
2	You find it easier to understand the movements of the Lulo dance after using technology	Yes, technology helped me understand the movements of the Lulo dance more easily. Yes, with the app, I can repeat the movements at any time so that it is easier to understand.
3	You feel motivated to learn Lulo dance after technology integration	Yes, the integration of technology has made me more motivated to learn Lulo dance. Yes, technology makes learning more interesting and I am more enthusiastic about learning it.
For Teachers		
4	How effective do you think the use of technology is in teaching Lulo dance	1. Technology is very effective because it helps students understand movement with clearer visuals. 2. Quite effectively, technology provides flexibility for students to practice outside of class hours. 3. Effective, but still needs to be combined with hands-on learning for optimal results.
5	The main obstacles you face in integrating technology into learning Lulo dance	1. Limited devices and internet access for some students are major obstacles. 2. Not all students are proficient in using technology, so it takes more time to guide

- them.
3. Limited to existing apps, some apps are less interactive and difficult to use to teach dance moves.
-

Based on the results of the instruments given to students and teachers, it can be seen that the integration of technology in Lulo dance learning has a strong significance, both in terms of effectiveness and motivation. On the student side, the majority of responses stated that they use apps or websites to learn Lulo's movements and repeat them at any time. This shows that technology provides flexibility, accessibility, and opportunities for independent learning. In addition, students find it easier to understand movements because they can see clear visualizations, and are more motivated because learning becomes interesting and fun. From the teacher's side, most consider technology to be effective in supporting learning, especially because it provides visual media that clarifies instruction and the flexibility of exercises outside of the classroom. However, teachers also emphasized that technology needs to be combined with hands-on learning for optimal results. The main obstacles that arise are the limitations of devices and internet access, the gap in students' digital skills, and the limitations of available application features. Thus, it can be concluded that technology plays an important role in improving the Lulo dance learning experience, although efforts are still needed to improve access, digital literacy, and the development of more interactive applications so that learning outcomes are maximized.

DISCUSSION

The integration of technology in cultural education, especially through Lulo dance learning, shows a close relationship between the results of research and the theories that have been put forward previously. The findings of this study confirm that students find it easier to understand movement, more motivated, and more active when technology is used. This supports the theories of De Vito & Smith (2017) and Nguyen & Hall (2019) who assert that digital technology can increase student interactivity and engagement in the context of cultural learning. Furthermore, the role of technology as a bridge between modernity and the preservation of cultural traditions is reflected in the teacher's view that the use of digital applications and media clarifies instruction, although it still requires a combination with hands-on learning. This is in line with Galloway & Strand (2018) and Kang & Lee (2019), who emphasize that technology enables modernization without eliminating traditional values. In fact, Tosun & Fidan (2020) highlight that the use of technology in cultural education helps overcome the challenge of engaging the younger generation who tend to be more interested in digital media than traditional cultural practices. Therefore, the results of this study reinforce the theory that technology can be a strategic means to maintain cultural sustainability, improve the quality of learning, while

balancing the needs of modern education with the preservation of local identity. These findings also open up opportunities for the development of technology-based learning models that are more interactive, collaborative, and contextual to maintain cultural relevance in the digital era.

These results explain that the integration of technology in Lulo dance learning shows that this model is not only relevant in the local context, but also has the potential to be replicated in other regions or cultures that face the risk of losing traditional heritage. This is in line with the views of Anderson & Carter (2020), Li & Zhao (2021), and Patel & Ramesh (2019) who emphasize that technology-based learning can be a strategic means in promoting local culture while integrating communities in the educational process. The findings that students are easier to understand, more motivated, and more engaged when using technology show that digital innovation can revive the younger generation's interest in traditional practices. Furthermore, the results of this study support the theories of Johnson & Wang (2020) and Santos & Oliveira (2021), which found that social media and digital platforms are able to expand the reach of traditional culture to global audiences. This provides a great opportunity to make local culture more inclusive and relevant in the midst of the era of globalization. However, the technical challenges and limitations of digital literacy still need to be considered so that the adoption of technology does not obscure the authentic values of the tradition itself. Thus, the integration of technology in cultural education not only serves as a tool for modernization, but also as an important mechanism to maintain the sustainability of cultural identity at the local and global levels.

One of the most significant challenges in integrating technology into cultural education is the still wide digital divide between communities that have access to modern technology and those that do not. In many rural areas, especially in developing countries, schools often lack basic infrastructure such as a stable internet network, computer devices, and adequate digital facilities. These limitations hinder educators and students from fully utilizing the potential of technology-based learning. This condition is ironic because these areas are precisely where traditional cultural practices are most vulnerable to extinction. Therefore, the development of digital infrastructure is an important prerequisite for technology to function as an effective means of preserving local wisdom.

In addition to technical challenges, there are also cultural dilemmas that need to be considered. The digitization of traditional practices, such as dance, games, or rituals, has the potential to reduce the depth of meaning contained in them. Cultural practitioners worry that spiritual essence, philosophical value, or symbolic meaning can be reduced when presented in a simpler, more instantaneous digital form. This risk of "cultural dilution" underscores the importance of local community involvement in the digitalization process. In that way, technology can function as a medium for preservation and dissemination, not just cultural commodification. A sensitive approach to traditional

values will ensure that technology truly becomes a bridge, not a barrier, in maintaining the sustainability of cultural identity.

These challenges show that while technology can be a powerful tool in cultural education, it must be used with caution and in conjunction with traditional teaching methods. Digital tools should complement, not replace, face-to-face interactions with cultural practitioners and educators who bring with them life experience and knowledge of these practices. Educators must find a balance between leveraging technology for engagement and ensuring that the authenticity and integrity of cultural traditions are preserved. Despite the challenges, there are many opportunities for further research and development in the field of technology-based cultural education. One potential avenue for further exploration is the development of blended learning models that combine the strengths of traditional and digital teaching methods. These models can integrate technology tools, such as video tutorials and interactive simulations, with live performances, storytelling sessions, and hands-on interaction with cultural practitioners. Research on the effectiveness of such hybrid approaches can provide valuable insights into how best to preserve cultural traditions while embracing modern educational tools.

In addition, longitudinal studies are needed that assess the long-term impact of technology-based cultural education on student engagement and cultural preservation. Although the short-term results of the use of technology in the teaching of Lulo dance are positive, it is important to understand how this educational model affects students' cultural identities and relationships with their heritage over time. Long-term studies can provide valuable data on whether digital tools are effectively contributing to the preservation of sustainable cultural practices or if there is a risk of diminishing interest as technology evolves. Finally, policy development is an important area to consider. Education policymakers need to recognize the potential of technology-based cultural education and create a framework that supports its integration into the national curriculum. This includes providing funding for digital infrastructure in rural areas, training educators to use technology tools effectively, and developing culturally relevant digital content. Further research on the implications of technology policy in cultural education can help guide the development of comprehensive strategies for integrating technology into cultural preservation efforts

CONCLUSION

The study highlights how technology can significantly improve the preservation of cultural practices, such as the Lulo dance, in educational settings. By integrating digital tools such as virtual reality, mobile apps, and online platforms, educators can make traditional cultural content more accessible and engaging for modern students. The study found that technology not only increases student engagement and improves learning outcomes, but also plays an important role in bridging the gap between cultural heritage and contemporary education. The educational transformation brought about by

technology has had a positive impact on local culture by making traditional practices more relevant and ensuring their continued transmission to the younger generation. However, challenges such as the digital divide and maintaining cultural authenticity must be managed carefully. For policymakers: Invest in digital infrastructure, teacher training, and the integration of local cultures in the national curriculum. Schools and educators: Use technology in a balanced manner with traditional methods, and ensure that cultural values remain authentic. Technology developers: Designing digital learning tools that are contextual and sensitive to local cultural aspects. Future research is suggested to explore the long-term impact of the use of technology on the cultural identity of younger generations, test the integration of augmented reality (AR) and artificial intelligence (AI) in cultural education and develop traditional game-based learning models combined with digital technologies to strengthen cultural heritage

ACKNOWLEDGEMENTS

I would like to express my deepest gratitude to Allah SWT for His blessings and guidance in completing the study entitled "Optimizing Technology-Based Traditional Lulo Dance Learning to Explore the Values of Local Wisdom in Southeast Sulawesi." My sincere appreciation goes out to my supervisors, colleagues, and students who contributed valuable insights and support. Special thanks are extended to the local community for preserving the Lulo dance as a source of wisdom and cultural inspiration.

REFERENCES

- Ahmad Aldin, B. A. B. (2019). *History of lulo dance in the Tolaki tribe, Alangga Village, Andoolo District, South Konawe Regency (1800–1996)*. *Journal of History Education Research UHO*, 4(1). <https://doi.org/10.36709/jpps.v4i1.7338>
- Almerico, G. M. (2014). Building character through literacy with children's literature. *Research in Higher Education Journal*, 26, 1–13.
- Anderson, R., & Carter, L. (2020). Engaging local communities in cultural education. *Journal of Community-Based Education*, 18(3), 143–159.
- Anderson, T. R. (2011). Bridging the educational research-teaching practice gap: Curriculum development, Part 1: Components of the curriculum and influences on the process of curriculum design. *Biochemistry and Molecular Biology Education*, 39(1), 68–76. <https://doi.org/10.1002/bmb.20470>
- Anyichie, A. C., Butler, D. L., & Nashon, S. M. (2023). Exploring teachers' practices for enhancing student engagement in culturally diverse classrooms. *Journal of Pedagogical Research*. <https://doi.org/10.33902/jpr.202322739>
- Asal, V., & Kratoville, J. (2013). Constructing international relations simulations: Examining IR simulation through a constructivist learning theory lens. *Journal of Political Science Education*, 9(2), 132–143. <https://doi.org/10.1080/15512169.2013.770982>

- Asriansyah, A. (2018). The development of traditional games to preserve the nation's culture through elementary school physical education learning. *Journal of Physical Education and Sports*. <https://ejournal.upi.edu/index.php/penjas/article/view/10597>
- Barros, M., Alcadipani, R., Coupland, C., & Brown, A. D. (2023). Online identities in and around organizations: Critical explorations and future directions. *Organization*, 30(1), 3–22. <https://doi.org/10.1177/13505084221137987>
- Buckingham, D. (2005). *Media education: Literacy, learning and contemporary culture*. *Studies in Art Education*, 47(1), 69–71.
- Burton, C. (2020). Gender trouble during story time: Critical literacy in early childhood. *Journal of Childhood Studies*. <https://doi.org/10.18357/jcs00018978>
- Caingcoy, M. (2024). Culturally responsive pedagogy: A systematic review. *SSRN Electronic Journal*. <https://doi.org/10.2139/ssrn.4842773>
- Chae, S. H. (2020). Development and clinical evaluation of a web-based upper limb home rehabilitation system using smartwatch and machine learning models for chronic stroke survivors: Prospective comparative study. *JMIR mHealth and uHealth*, 8(7), e17216. <https://doi.org/10.2196/17216>
- Chang, S. (2019). A hybrid deep learning model for recognizing users' emotional responses to architectural design alternatives. *Journal of Asian Architecture and Building Engineering*, 18(5), 381–391. <https://doi.org/10.1080/13467581.2019.1660663>
- Chang, W. C., & Viesca, K. M. (2022). Preparing teachers for culturally relevant pedagogy (CRP): A critical review of research. *The College Record*, 124(2), 197–224. <https://doi.org/10.1177/01614681221086676>
- Cohen, L., Manion, L., & Morrison, K. (2017). Observation. In *Research methods in education* (pp. 542–562). Routledge. <https://doi.org/10.4324/9781315456539-26>
- Creswell, J. W. (2014). *Research design: Qualitative, quantitative, and mixed methods approaches* (4th ed.). Sage Publications.
- Da Silva, O. H. F. (2021). *Early childhood pedagogy of the oppressed: Decolonizing early childhood education with Paulo Freire*. *Praxis Educativa*, 16, e16588. <https://doi.org/10.5212/PraxEduc.v.16.16588.040>
- De Vito, J., & Smith, R. J. (2017). Cultural preservation through digital education. *Journal of Educational Technology*, 35(2), 122–135.
- Druker-Ibáñez, S., & Cáceres-Jensen, L. (2022). Integrating indigenous and local knowledge into sustainability education: A systematic literature review. *Environmental Education Research*, 28(8), 1209–1236. <https://doi.org/10.1080/13504622.2022.2083081>

- Eka, E. P., Dhieni, N., & Supena, A. (2020). Early discipline behavior: Reading stories aloud with big book media. *Journal of Early Childhood Education*, 14(2), 271–283. <https://doi.org/10.21009/jpud.142.10>
- Fajriati, R., & Na'imah. (2020). Local wisdom-based learning model for early childhood. *Jurnal Pelita PAUD*, 4(2), 156–166. <https://doi.org/10.33222/pelitapaud.v4i2.956>
- Febrian, A., Wilujeng, I., & Prasetyo, Z. K. (2024). Literature review: Development of local wisdom and indigenous knowledge-based science learning for ESD. *KnE Social Sciences*, 9(13), 178–192. <https://doi.org/10.18502/kss.v9i13.15989>
- Fitri, A. R. (2020). Early childhood education management at TK Terpadu Mutiara Bunda: Management learning to develop early childhood potential. In *Proceedings of the International Conference on Early Childhood Education (ICECE 2019)* (pp. 130–137). Atlantis Press. <https://doi.org/10.2991/assehr.k.200715.025>
- Frauenberger, C. (2016). Designing smart objects with autistic children: Four design exposés. In *Proceedings of the CHI Conference on Human Factors in Computing Systems* (pp. 130–139). ACM. <https://doi.org/10.1145/2858036.2858050>
- Freire, P. (2020). *Pedagogy of the oppressed*. In Community Performance Reader. Routledge. <https://doi.org/10.4324/9781003060635-5>
- Fry, D. (2006). Handbook of qualitative research. *Qualitative Research in Organizations and Management: An International Journal*, 1(1), 70–85. <https://doi.org/10.1108/17465640610666642>
- Galloway, P., & Strand, K. (2018). Challenges in maintaining authenticity through technology. *Journal of European Cultural Heritage Studies*, 42(1), 48–65.
- Gay, G. (2020). *Culturally responsive teaching: Theory, research, and practice* (3rd ed.). Teachers College Press.
- Giglitto, D., Ciolfi, L., Claisse, C., & Lockley, E. (2019). Bridging cultural heritage and communities through digital technologies. In *Proceedings of the 9th International Conference on Communities & Technologies* (pp. 81–91). ACM. <https://doi.org/10.1145/3328320.3328386>
- Halstead, J. M., & Taylor, M. J. (2000). Learning and teaching about values: A review of recent research. *Cambridge Journal of Education*, 30(2), 169–202. <https://doi.org/10.1080/713657146>
- Hanafie Das, S. W., Halik, A., Ahdar, & Iman, B. (2022). Prenatal education processes based on local wisdom in Indonesia. *Education Research International*, 2022, 6500362. <https://doi.org/10.1155/2022/6500362>
- Heradio, R., de la Torre, L., Rodríguez-Sedano, F. J., & Gómez-Martínez, E. (2016). Reviewing mobile learning trends in developing countries: Case studies from

- four Latin American nations. *Journal of Universal Computer Science*, 22(5), 708–729.
- Jenkins, H., & Placencia, A. (2024). *Convergence culture: Where old and new media collide*. MIT Press. <https://doi.org/10.7551/mitpress/10428.003.0018>
- Johnson, L., & Wang, T. (2020). Globalizing local culture through digital platforms. *Global Studies in Culture and Media*, 28(3), 72–94.
- Jumarli, J. (2021). Lulo Ngganda dance in the Tolaki community of Benua village, South Konawe district. *Journal of Arts & Cultural Studies*, 6(2), 112–120. <https://doi.org/10.33772/jpsb.v6i2.22065>
- Kang, H., & Lee, C. (2019). Addressing the digital divide in rural education. *Korean Journal of Educational Technology*, 21(4), 305–322.
- Khalifa, M. A., Gooden, M. A., & Davis, J. E. (2016). Culturally responsive school leadership: A synthesis of the literature. *Review of Educational Research*, 86(4), 1272–1311. <https://doi.org/10.3102/0034654316630383>
- Li, Y., & Zhao, X. (2021). Opportunities for digital cultural education. *Journal of Educational Technology*, 30(2), 201–217.
- Lin, Y. W. (2015). Meta-analytic review of child-centered play therapy approaches. *Journal of Counseling & Development*, 93(1), 45–58. <https://doi.org/10.1002/j.1556-6676.2015.00180.x>
- Machado-da-Silva, C. L. (2003). Qualitative research methods and evaluation. *Journal of Contemporary Administration*, 7(2), 147–164. <https://doi.org/10.1590/s1415-65552003000200018>
- Majid, M., Suardika, K., & Yazid. (2019). Makeup and fashion characteristics in Lulo dance at Anasepu Studio, Kendari City. *Journal of Arts & Culture*, 4(2), 211–220.
- Malik, R. S. (2018). Challenges of 21st-century education and sustainable development. *Journal of Sustainable Development Education and Research*, 2(1), 9–20. <https://doi.org/10.17509/jsder.v2i1.12266>
- Masenya, T. M. (2023). Revitalization and digital preservation of indigenous knowledge systems for sustainable community development in South Africa. *Serials Librarian*, 84(5–8), 86–102. <https://doi.org/10.1080/0361526X.2023.2277962>
- Melamba, B., Syukur, L., & Nggawu, L. (2015). Lulo dance from traditional notes to MURI: A cultural-historical analysis of Tolaki in Southeast Sulawesi, Indonesia. *Tawarikh*, 7(1), 55–70.
- Mezirow, J. (1991). *Transformative dimensions of adult learning*. Jossey-Bass.
- Moen, K. M., Westlie, K., Gerdin, G., Smith, W., Linnér, S., Philpot, R., Schenker, K., & Larsson, L. (2020). Caring teaching and the complexity of building good relationships as pedagogy for social justice in physical education. *Sport, Education and Society*, 25(9), 1009–1022. <https://doi.org/10.1080/13573322.2019.1683535>

- Narwasty, M. A., Wiloso, P. G., & Sasongko, G. (2021). The symbolic meaning of Lulo dance: Tolaki culture as a medium of communication. *Society, Culture and Politics*, 34(2), 159–172. <https://doi.org/10.20473/mkp.v34i22021.159-172>
- Nasir, N., Mujiati, M., & Asrul, A. (2019). Samaturu: Stimulate the spirit of teacher collaboration to carry out lessons. *Journal of Edum*, 2(2), 120–132. <https://doi.org/10.31943/edumjournal.v2i2.49>
- Nasir, N., Rahmawati, R., & Adam, A. (2019). Identify the pedagogical value of Lulo dance to strengthen a sense of unity in early childhood. *Journal of Obsession: Journal of Early Childhood Education*, 4(1), 371–380. <https://doi.org/10.31004/obsesi.v4i1.336>
- Nguyen, T., & Hall, M. (2019). The role of virtual reality in cultural education. *International Journal of Digital Learning*, 27(4), 90–108.
- Parrish, M. (2016). Toward transformation: Digital tools for online dance pedagogy. *Arts Education Policy Review*, 117(3), 168–182. <https://doi.org/10.1080/10632913.2016.1187974>
- Patel, S., & Ramesh, G. (2019). ICT-based cultural education model in India. *Indian Journal of Educational Innovation*, 10(2), 67–85.
- Peled, Y., & Perzon, S. (2022). A systemic model for technology integration in teaching. *Education and Information Technologies*, 27(2), 1965–1981. <https://doi.org/10.1007/s10639-021-10694-x>
- Sahnir, N. (2022). The meaning of the circular formation of the Momolulo dance in the context of the local cultural values of the Tolaki tribe. *Paleontology*, 7(2), 123–135. <https://doi.org/10.26858/p.v7i2.35992>
- Santos, D., & Oliveira, M. (2021). Reviving forgotten traditions through technology. *Latin American Journal of Cultural Education*, 22(1), 88–101.
- Sihartin, I. K., Suardika, K., & Yazid. (2018). Training pattern of Lulo dance movements through extracurricular activities for grade VI students of SDN 37 Kendari. *Journal of Learning and Cultural Arts*, 3(1), 45–56.
- Sinaga, F. S. S., Winangsit, E., & Putra, A. D. (2021). Education, art, and culture: Local entities in today's human civilization. *Virtuoso: Journal of Music Studies and Creation*, 4(2), 104–110. <https://doi.org/10.26740/vt.v4n2.p104-110>
- Subair, M. (2017). Internalizing the value of Kalosara in the traditional dance 'Lulo' in Kendari City, Southeast Sulawesi. *Analysis: Journal of Social and Religious Sciences*, 2(2), 191–208. <https://doi.org/10.18784/analisa.v2i2.482>
- Sukadari, S., Komalasari, M. D., Widyaningsih, N., Kassymova, G. K., Yuqi, F., Mustafa, L. M., & Bamiro, N. B. (2023). Exploring the potential of integrating local wisdom into pocket book learning media development: A systematic literature review. *International Journal of Learning, Teaching and Educational Research*, 22(10), 130–151. <https://doi.org/10.26803/ijlter.22.10.8>

- Taufan, A. (2023). Indonesian local wisdom. *Journal of Educational Sciences*, 7(2), 45–60.
- Tembrevilla, G., Phillion, A., & Zeadin, M. (2024). Experiential learning in engineering education: A systematic literature review. *Journal of Engineering Education*, 113(1), 195–218. <https://doi.org/10.1002/jee.20575>
- Thampinathan, S. (2022). Applying constructivist learning theory for physician assistant students in primary care. *Education for Health*, 35(1), 26–33. https://doi.org/10.4103/efh.EfH_333_20
- Tosun, D., & Fidan, A. (2020). Bridging tradition and modernity through digital tools. *Cultural Studies in Education*, 15(3), 78–95.
- UNESCO. (2013). *The power of culture*. UNESCO.
- Wagner, A., & de Clippele, M. S. (2023). Preserving cultural heritage in the digital era: Critical challenges. *International Journal for the Semiotics of Law*, 36(5), 1123–1141. <https://doi.org/10.1007/s11196-023-10040-z>
- Weyant, E. (2022). Research design: Qualitative, quantitative, and mixed methods approaches (5th ed.). *Journal of Electronic Resources in Medical Libraries*, 19(1–2), 45–49. <https://doi.org/10.1080/15424065.2022.2046231>
- Wiley, D., & Hilton, J. L., III. (2018). An international review of research in open and distributed learning. *International Review of Research in Open and Distributed Learning*, 32(3), 1–15.
- Yilmaz, A. (2021). The effect of technology integration in education on pre-service teachers' critical and creative thinking, 21st-century multidimensional skills, and academic achievement. *Participatory Educational Research*, 8(2), 163–199. <https://doi.org/10.17275/per.21.35.8.2>
- Zidny, R., Sjöström, J., & Eilks, I. (2020). A multi-perspective reflection on how indigenous and related knowledge can improve science education for sustainability. *Science & Education*, 29(1), 145–185. <https://doi.org/10.1007/s11191-019-00100-x>