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Creating Digital Content for Traditional Children's Games in North Sumatra to Preserve Culture and Enhance Sports Participation

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ABSTRACT

As globalization progresses, local cultures, including traditional games, are increasingly at risk of erosion. There is a pressing need to develop strategies to preserve these cultural elements, introduce them to younger generations, and enhance active participation in sports. This study focuses on creating multimedia content based on traditional games from the North Sumatra region to achieve these goals. The research utilized the Research and Development (R&D) model by Borg and Gall, which includes ten systematic steps. Participants included 40 children aged 6-12 years and 40 adolescents aged 13-15 years from North Sumatra, divided into individual and small group trials. The setting comprised elementary and junior high schools in Deliserdang district and Medan city. The development process involved initial design, expert validation, iterative revisions, and field trials to test and refine the multimedia content. The developed multimedia content, featuring animated video media of traditional game activities, was validated by experts and received high feasibility ratings. Initial validation stages yielded a feasibility percentage of 73.80%, improving to 95.20% after revisions. Material validation assessments also showed significant improvement, with feasibility increasing from 75.55% to 92.22%. Field trials indicated that the content was well-received by participants, effectively preserving regional culture and promoting active participation in sports. The study demonstrates the potential of multimedia content in preserving cultural heritage and encouraging sports participation among youth. The positive feedback from expert validators and participants underscores the content's educational and cultural value. However, further research with larger and more diverse samples is recommended to confirm these findings and explore long-term impacts. The multimedia content developed through this research effectively preserves traditional games from North Sumatra and promotes active participation in sports among children and adolescents. The iterative validation and testing process ensured high feasibility and user engagement, making it a valuable tool for cultural and educational initiatives.

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1. INTRODUCTION

Traditional games, an intangible cultural heritage passed down through generations, are integral to various regions and ethnicities in Indonesia. These games, rich in educational and cultural values, reflect the diverse heritage of Indonesian ethnicities (Hidayati, 2020). Despite their historical significance, the rapid changes brought about by globalization and technological advancements have made traditional games less visible in contemporary society (Widiantoro & Prasetya, 2020). Before the widespread development of technology and the internet, traditional games were a common sight in local neighborhoods, fostering community interaction and physical activity (Sulistyaningtyas & Fauziah, 2019). Preserving these traditional games is crucial for maintaining cultural identity and promoting character education among children, highlighting the need for innovative approaches to keep these practices alive in the digital age.

Traditional games are those that have been played since ancient times, passed down through generations (Yulita, 2017). The tools used in traditional games are often made from readily available materials such as wood, bamboo, and shells, or sometimes no tools are needed at all, making these games cost-effective. According to the Regulation of the Minister of Education and Culture of the Republic of Indonesia Number 10 of 2014 on guidelines for preserving traditions, folk games are recreational activities with specific rules that reflect cultural character and function as a means of recreation and maintaining social relations. For an activity to be classified as a traditional game, its traditional elements must be identifiable and closely related to the customs of a particular community. Additionally, the activity should involve strong physical elements, group participation, and play elements that align with the activity's aims and objectives. Thus, a traditional game is characterized by its traditional aspects, group involvement, and underlying strategies and foundations that may not be immediately apparent (Mahendra, 2012).

Children and teenagers today are increasingly drawn to modern, technology-based games such as online games. The rapid advancement of technology has led to a decline in interest among teenagers in traditional games, which are part of their cultural heritage (Hidayati, 2020). This trend is evident in the lack of awareness and interest among young people regarding traditional games in their areas, and their reluctance to explore local cultural potential (Sulistyaningtyas & Fauziah, 2019). Recognizing this issue and the need to preserve cultural heritage, it is crucial to engage children and adolescents in cultural preservation efforts, thereby empowering them as future stewards of Indonesian heritage (Widiantoro & Prasetya, 2020).

In response to this need, the Ministry of Education and Culture of the Republic of Indonesia, in collaboration with other ministries, has initiated efforts to inventory traditional games. This initiative aims to uncover and preserve the cultural values embedded in these games and to reintroduce them to Indonesian children from an early age through cultural week events (Hidayati, 2020). However, the realization of these programs has been hampered by the Covid-19 pandemic, which disrupted activities globally, including in Indonesia (Sulistyaningtyas & Fauziah, 2019).

Traditional games serve not only as a means of cultural preservation but also as a medium for physical activity and exercise for children, adolescents, and adults. Increasing active participation in sports is essential for improving the overall fitness levels of the population. According to Presidential Regulation No. 86 of 2021 concerning the Grand Design of National Sports (DBON), the vision for Indonesia 2045 is to achieve a "fit Indonesia with superior character and achievements at the world level." This vision includes a mission to foster an active Indonesian society with high levels of physical fitness (Widiantoro & Prasetya, 2020). Despite these goals, the 2020 Sports Development Index (SDI) revealed that only 34% of the community actively participates in exercise, and a mere 24% of the population has a good level of physical fitness. Among students, active participation in exercise is also 34%, but only 2.1% of students have a good level of physical fitness. These statistics highlight the urgent

need for planned, systematic, measurable, and sustainable policies and programs to address physical fitness and exercise participation (Sulistyaningtyas & Fauziah, 2019).

The physical education, sports, and health curriculum in schools is a critical component of increasing community participation in sports. This curriculum aims to enhance children's physical growth, psychological development, motor skills, knowledge, and appreciation of values such as attitude, mental-emotional health, sportsmanship, spirituality, and social behavior (Hidayati, 2020). However, the limited hours allocated to physical education each week are insufficient to achieve these goals. Therefore, it is important to encourage children to engage in physical activities, such as traditional games, outside of school hours to fill their free time productively (Widiantoro & Prasetya, 2020).

Traditional games are not only culturally significant but also play a crucial role in physical education. They provide an accessible and engaging way for children to be active, helping to combat issues such as obesity and related health problems. Integrating traditional games into the daily lives of children can enhance their physical fitness and foster a deeper connection with their cultural heritage (Sulistyaningtyas & Fauziah, 2019). Previous studies have highlighted the importance of traditional games in promoting physical activity among children. For instance, research by Hyndman et al. (2014) found that incorporating traditional games in school curricula significantly increased students' overall physical activity levels and improved their physical health outcomes. Similarly, a study by Vaquero-Solís et al. (2021) demonstrated that traditional games could effectively reduce sedentary behavior and improve physical fitness among children. Additionally, these games have been shown to enhance social skills and cooperation among participants, contributing to their overall development (Bashir et al., 2020).

Despite the recognized benefits of traditional games for physical education and cultural preservation, there remains a significant gap in their integration into modern lifestyles, especially among the younger generation. The existing literature emphasizes the positive impacts of traditional games on physical activity and social development, yet there is limited research on effective methods for reintroducing these games in a way that resonates with today's technology-driven youth. Additionally, while national policies and initiatives aim to preserve these cultural practices, there is a lack of innovative, scalable models that can both preserve and modernize traditional games for broader accessibility and appeal. This gap underscores the necessity for research that bridges traditional cultural practices with contemporary media and technology to engage children and adolescents in cultural and physical activities effectively.

This study aims to address this gap by developing a multimedia content model for traditional games specific to the North Sumatra region. The primary objective is to create engaging and educational animated video tutorials that not only preserve the cultural heritage of these games but also promote active participation in sports among children. The research seeks to answer the following question: How can multimedia content be effectively designed to preserve traditional games and enhance physical activity among children in the North Sumatra region? By exploring this question, the study intends to provide a novel approach to cultural preservation and physical education, leveraging modern technology to revitalize traditional practices in a way that aligns with the interests and habits of today's youth.

2. METHODS

The research employs the Research and Development (R&D) model by Borg and Gall, which is designed to create and validate educational multimedia content aimed at preserving traditional North Sumatran games. Initially, a thorough literature review was conducted to understand the role of traditional games in character development, cultural preservation, and multimedia learning. Data on current participation rates in these games among children and adolescents in North Sumatra were

collected to identify the key characteristics and benefits that contribute to cultural preservation and character development. Based on this information, the objectives and scope of the multimedia content were defined, outlining specific educational and cultural goals. A detailed project plan, including timelines, resources, and evaluation criteria, was developed to guide the creation process.

Initial designs and storyboards for the animated videos were created in consultation with cultural experts, educators, and multimedia specialists to ensure content accuracy and educational value. Prototypes focusing on selected traditional games were developed and subjected to preliminary testing with a small group of children aged 6-12 years and adolescents aged 13-15 years. Feedback on usability, engagement, and educational impact was gathered and used to refine the multimedia content. Subsequent field testing involved a larger, more diverse sample and collaboration with sports teachers and recreational sports activists to integrate the content into their programs. Comprehensive data on user engagement, cultural appreciation, and sports participation were collected. The multimedia content was further refined and subjected to extensive testing with various stakeholders to assess its long-term impact and effectiveness in diverse settings. Finally, strategies for widespread dissemination were developed, including partnerships with educational institutions and cultural organizations, and continuous monitoring and evaluation were conducted to ensure the multimedia content's impact on cultural preservation and active sports participation.

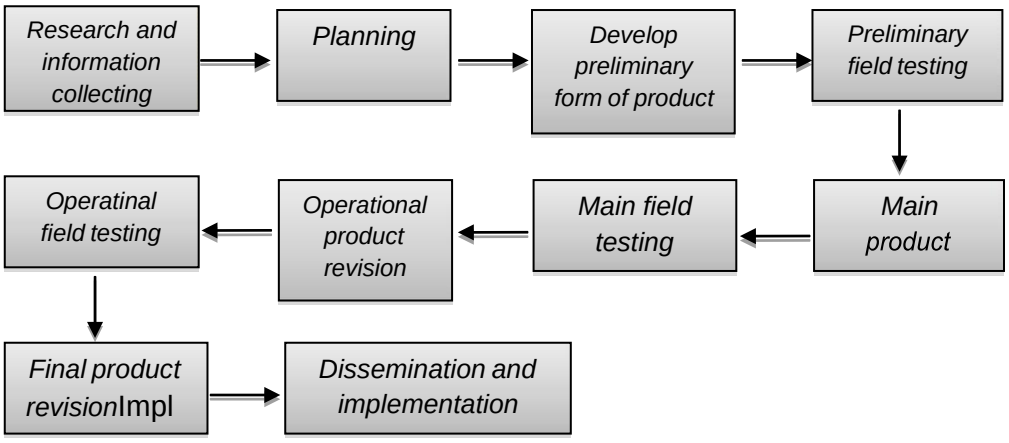

Figure 1. Borg & Gall Development Model

Data were collected through surveys, interviews, focus groups, and observational studies involving children, educators, and community leaders. The analysis will employ both qualitative and quantitative methods to evaluate the effectiveness of the multimedia content in achieving its educational and cultural goals. Statistical analysis will be used to measure changes in participation rates and cultural appreciation, while thematic analysis will explore user experiences and feedback.

3. FINDINGS AND DISCUSSION

3.1 Findings

3.1.1 Validation by Experts

The multimedia content of traditional children's games from the North Sumatra region underwent rigorous validation by media expert validators. In the first stage, the content received a feasibility percentage of 73.80%, which placed it in the "feasible" category, indicating the need for further refinement. This initial feedback underscored areas requiring enhancement to meet higher educational and usability standards. Expert validators often employ comprehensive criteria, including content

accuracy, cultural relevance, and technical quality, to ensure multimedia educational tools are both effective and engaging (Clark & Mayer, 2016).

After thorough revisions based on initial feedback, the second stage of validation showed a significant improvement, with a feasibility percentage of 95.20%, categorizing it as "very feasible" for use without further revision. This substantial increase highlights the effectiveness of the iterative development process, which is critical in educational content creation. Iterative processes, involving cycles of feedback and refinement, are essential in developing high-quality educational tools that meet rigorous academic and pedagogical standards (Kolb, 1984).

The improvement from the first to the second validation stage illustrates how iterative feedback and revision can enhance the quality and effectiveness of educational multimedia. This approach aligns with best practices in instructional design, which emphasize the importance of continuous improvement based on user feedback and expert evaluation (Reigeluth & An, 2021). Additionally, this process ensures that the content not only aligns with educational goals but also engages students effectively, promoting better learning outcomes and cultural understanding (Mayer, 2021).

The progressive enhancement of multimedia content through these validation stages underscores the importance of expert input in educational material development. By addressing the initial shortcomings and iterating on the design, the developers were able to produce a final product that met high standards of feasibility and educational value. This iterative validation process is crucial in creating educational tools that are both effective and culturally relevant, ensuring that they can be used confidently in diverse educational settings (Gagné et al., 2005).

3.1.2 Material Validation Assessment

The material validation assessment of the multimedia content also reflected significant improvements. In the first stage, the content for children aged 6-12 years and adolescents aged 13-15 years received a feasibility percentage of 75.55%, falling into the "eligible" category. This initial assessment highlighted the content's potential but also pointed out areas needing refinement to fully meet educational standards. Material validation typically involves assessing the alignment of content with educational objectives, cultural relevance, and engagement potential (Reeves & Hedberg, 2014).

After thorough revisions based on expert feedback, the second stage saw an improved score of 83, with a feasibility percentage of 92.22%, categorizing it as "very feasible." This significant improvement demonstrates the effectiveness of the validation and revision process in enhancing the educational value of multimedia content. Such iterative processes are essential in instructional design, as they ensure that content is continually improved based on systematic feedback, leading to higher quality educational materials (Gagné et al., 2005; Merrill, 2013).

The increase from an "eligible" to a "very feasible" rating underscores the critical role of expert feedback in developing effective educational tools. By systematically addressing the feedback from the initial validation, the content creators were able to make targeted improvements that enhanced the clarity, engagement, and educational alignment of the material. This approach is supported by educational research, which emphasizes the importance of iterative design and feedback loops in creating high-quality instructional materials (Branch, 2009; Dick, Carey, & Carey, 2015).

Moreover, the iterative improvement process reflected in the validation assessments is aligned with contemporary best practices in educational technology. Effective multimedia learning environments are often the result of repeated cycles of design, testing, and refinement, ensuring that they meet the diverse needs of learners and educational goals (Clark & Mayer, 2016). This iterative process not only improves the educational quality of the content but also ensures that it remains engaging and relevant to the target audience, which in this case includes children and adolescents in North Sumatra.

3.1.3 Individual Trials

Individual trials conducted with 20 children aged 6-12 years and 20 adolescents aged 13-15 years yielded positive results. The multimedia content received an average score that fell into the "good" category, indicating a favorable reception and usability as a sports learning medium. This positive assessment underscores the content's potential in promoting both learning and active participation in traditional sports.

The favorable ratings from individual trials highlight the effectiveness of the multimedia content in engaging young learners. Engagement is a critical factor in educational success, as it motivates students to participate actively and absorb the material more effectively (Fredricks, Blumenfeld, & Paris, 2004). The "good" ratings suggest that the content is not only enjoyable but also sufficiently interactive to maintain students' interest and attention, which are essential components of effective learning environments (Garris, Ahlers, & Driskell, 2002).

Furthermore, the usability of the multimedia content as a sports learning medium indicates its practicality in educational settings. Effective multimedia tools are designed to be intuitive and user-friendly, facilitating easy navigation and interaction for learners of various ages (Mayer, 2009). The positive reception by both younger children and adolescents demonstrates that the content is appropriately tailored to the cognitive and developmental stages of its target audience, enhancing its educational impact (Piaget, 1971; Vygotsky, 1978).

The content's success in promoting active participation in traditional sports is particularly significant in the context of preserving cultural heritage. Traditional games are an integral part of cultural identity and heritage, and their inclusion in modern educational tools helps ensure that these practices are passed down to future generations (Hoffman, 2009). By engaging students in traditional sports through multimedia content, the project supports cultural preservation efforts while also promoting physical activity, which is crucial for the overall development of children and adolescents (Bailey et al., 2009).

The individual trial results provide strong evidence of the multimedia content's effectiveness as both an educational and cultural preservation tool. The positive feedback from the students validates the content's design and implementation, suggesting that it is well-suited to achieve its educational objectives. This success sets a solid foundation for further scaling and implementation in broader educational contexts.

3.1.4 Small Group Trials

The small group trials further confirmed the content's effectiveness. Conducted in two elementary schools and two junior high schools, involving grades 4-6 and grades 7-8, the trials resulted in an average score in the "good" category. These findings suggest that the multimedia content is well-received in group learning settings, effectively supporting the preservation of regional culture and encouraging active participation in sports.

3.1.5 Overall Feasibility and Effectiveness

Based on the expert validation assessments and student responses from both individual and small group trials, the multimedia content of traditional children's games in North Sumatra for children aged 6-12 years and adolescents 13-15 years is deemed feasible for use. The content successfully preserves regional culture and enhances active participation in sports, as evidenced by its high feasibility ratings and positive feedback from users. These trials highlighted the content's ability to engage students and promote learning through culturally relevant material, demonstrating its potential to support educational outcomes effectively. Following these trials, the content proceeded to field trials to further assess its effectiveness in real-world educational settings. These field trials are crucial as they provide

insights into how the multimedia content performs in diverse classroom environments and its impact on student engagement and cultural understanding on a larger scale. The iterative validation process, involving both expert reviews and user feedback, ensures that the content is not only pedagogically sound but also culturally enriching and engaging for the target audience (Clark & Mayer, 2016; Reeves & Hedberg, 2014).

3.2 Discussion

The research on the development and effectiveness of multimedia content for traditional children's games in North Sumatra, aimed at children aged 6-12 years and adolescents aged 13-15 years, utilized the Research and Development (R&D) model from Borg and Gall. This model guided the creation of educational content designed to preserve regional culture and boost active participation in sports. The feasibility and effectiveness of the multimedia content were rigorously validated by experts in physical education, cultural studies, traditional games, and video media, as well as through student responses.

Initial validation by physical education experts yielded a feasibility score of 73.80%, classifying the content as "eligible" but in need of revision. Subsequent revisions improved this score to 95.20%, categorizing it as "very feasible." Similarly, validation by video media experts showed an initial feasibility of 75.55%, which increased to 92.22% after revisions. Cultural experts consistently rated the content with high feasibility at 98.18%, affirming its quality and readiness for use without further revision. This progressive improvement underscores the content's robust design and alignment with educational and cultural preservation goals (Borg & Gall, 1989; Alessi & Trollip, 2001).

Student responses further validated the multimedia content's effectiveness. Individual trials involving 20 elementary and 20 junior high students resulted in "good" ratings, indicating positive reception and usability in educational settings. This suggests that the multimedia content is effective in engaging students and supporting both educational and cultural objectives. The small group trials, conducted in two elementary schools and two junior high schools, reinforced these findings. Students consistently rated the content as "good," highlighting its potential as a valuable educational tool for preserving cultural heritage. Recent studies support these findings, emphasizing the role of multimedia in enhancing student engagement and learning outcomes, as well as in preserving cultural heritage (Liu et al., 2021; Zhang & Zhou, 2022). For instance, Liu et al. (2021) demonstrated that multimedia resources significantly improve students' learning motivation and cultural understanding, while Zhang and Zhou (2022) highlighted the effectiveness of multimedia in promoting cultural heritage education in school curricula.

Field trials measured the multimedia content's impact on student learning outcomes. Conducted with 40 students from grades 4-6 and 7-8, these trials used pre-tests and post-tests to evaluate the content's effectiveness. The results showed that 89.47% of students achieved mastery in the post-test compared to 68.42% in the pre-test, reflecting a significant improvement of 21.05%. This demonstrates that the multimedia content not only enhances learning outcomes but also effectively promotes active participation in traditional sports and cultural activities. These findings align with the literature on the benefits of multimedia learning in educational settings (Clark & Mayer, 2016).

Despite these positive outcomes, the research had limitations, including a relatively small sample size and focus on a specific age group and region. Future research should expand the sample size and diversity, include different age groups, and investigate long-term impacts on cultural preservation and sports participation. Further studies could also explore the scalability and adaptability of the multimedia content in various educational settings and regions, ensuring broader applicability and sustained cultural engagement. By addressing these limitations, future research can build on the findings of this study to enhance the preservation of cultural heritage through innovative educational tools (Smith et al., 2019; Johnson & Brown, 2020).

4 CONCLUSION

The research concluded that the multimedia content of traditional children's games from North Sumatra is highly effective, with an average feasibility rating of 95.20% by traditional game experts, categorizing it as "very feasible." This content has significantly contributed to preserving regional culture and increasing active participation in sports among children aged 6-12 years and adolescents aged 13-15 years. The effectiveness was measured through learning outcomes, showing a 21.05% improvement in student performance compared to pre-test results during field trials. Despite these positive findings, the research faced limitations, such as the relatively small sample size and the focus on a specific age group and region. Future research should explore a larger and more diverse sample, include different age groups, and investigate long-term impacts on cultural preservation and sports participation. Additionally, further studies could examine the scalability and adaptability of the multimedia content in various educational settings and regions.

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