

Research Article

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Integrating Traditional Games into Storybooks: Designing for Literacy and Cultural Preservation

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Abstract

Background/purpose. Basic education faces two major challenges: improving literacy while preserving traditional games, which are increasingly marginalized by digitization. This study aims to address gaps in integrated teaching materials, specifically the lack of children's storybooks that combine literacy development with traditional game content, through a comprehensive needs assessment to identify teacher literacy requirements and operational constraints, describe student interests, determine preferred book characteristics, and validate integrated traditional game storybooks as a dual intervention solution.

Materials/methods. This R&D study employed a purposive sampling method, involving nine teachers from four schools and 50 students from five schools. Data were collected through needs assessments and preference questionnaires, analyzed using descriptive statistics, Spearman's rho correlation, Chi-Square test, and non-parametric comparison tests.

Results. Research shows a perfect correlation between resource availability and difficulties in implementing traditional games, with an understanding of the cognitive load of interdisciplinary teaching materials emerging as the most critical factor among teachers' overall challenges. Reading frequency shows a strong relationship with knowledge of traditional games, but only half of the students have ever encountered a storybook about traditional games. Chi-square analysis shows that current storybooks about traditional games have elitist characteristics. Students tend to choose medium-sized picture books with bright colors, concise language, and adventure themes; such publications show the strongest relationship with picture book knowledge.

Conclusion. The feasibility of developing storybooks integrated with traditional games as a solution. The conceptual model integrates adventure-themed narratives in a light format with comprehensive teacher guides, including clear curriculum mapping and ready-to-use rubrics, to bridge students' interests with teachers' operational needs, effectively improving literacy, preserving culture, and reducing teachers' workload.



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1. Introduction

In the current era of globalization and digitalization, the world of education faces a complex double challenge, where the literacy skills of the younger generation are becoming stronger, but at the same time, local culture is in decline (Abdulloh et al., 2023). Literacy skills underpin children's intellectual, academic, and social development (Alvisari et al., 2024). These skills enable children to access knowledge, think critically, and actively participate in society (Hasibuan et al., 2020). On the other hand, the preservation of traditional culture has become urgent because traditional games are now threatened with extinction due to advances in digital technology and changes in people's lifestyles (Maudrie et al., 2024; Ratminingsih et al., 2020).

Regarding the challenges the younger generation faces, especially in the digital era, literacy remains a significant issue in Indonesia. The literacy rate continues to increase, but functional literacy skills, namely understanding, using, and reflecting on written texts in the context of their lives, remain a serious problem (Dewi & Haryani, 2022). Indonesian students are not equipped with the literacy skills and knowledge to work on high-level questions, perform complex analysis, and use language to facilitate learning (Falloon, 2020). This condition occurs due to several factors, including the unavailability of good reading materials (Saadillah et al., 2020) and the absence of a reading culture in families and schools (Ismartin et al., 2023).

This deficit of interesting and relevant reading materials, coupled with the decline in the preservation of local culture, which is also a challenge, requires special attention to the richness of cultural heritage. One element inseparable from Indonesia's cultural heritage is traditional games (Adisti & Rozikan, 2021). Traditional games such as congklak, gobak sodor, engklek, bentengan, and others, which were once part of the lives of Indonesian children (Syamsuddin et al., 2024), are increasingly being abandoned by the current generation (Adim & Mutiarani, 2022). This is not only the loss of a form of entertainment but also the disappearance of a medium that is essential for the transmission of cultural values (Hasan & Husein, 2024), local wisdom, as well as social skills and collective identity (Kusuma, 2024). Traditional games have many elements that contain educational values, such as cooperation, honesty, creativity, problem-solving, and teaching us to obey social norms and rules (Reva Apriana Sanga Dwi et al., 2022).

Although traditional games are rich in essential educational values, the shift from traditional to digital games has had a paradoxical impact. On the one hand, digital technology provides unlimited access to information and entertainment (Amzalag, 2021). On the other hand, digital games often reduce physical and motor socialization skills and their connection to local cultural contexts (McCauley et al., 2020). A bigger problem is that children are growing up without knowing or ever playing traditional games that have become a cultural characteristic (Peña et al., 2024). If this is allowed to continue by future generations, it could risk disconnecting them from their cultural roots (Nijdam, 2023). This will lead to an identity crisis and a weak culture-based sense of social coherence.

To prevent the continuation of the risk of an identity crisis and cultural disintegration, the formal education system can help overcome these challenges. Schools, especially elementary schools, are institutions that can reach children during their important developmental years, when they can form literacy and cultural identity (Harpiyani et al., 2022). However, integrating cultural preservation into learning in cultural schools has many obstacles. Teachers often struggle to find or create teaching materials that organically cover literacy goals and cultural content. Existing reading materials are generally general and lack a basis in the students' culture, thus failing to spark relevance and emotional engagement. The dense curriculum and standardized tests do not allow for deeper cultural exploration.

Given the obstacles in providing relevant and integrative teaching materials, children's storybooks accompanied by traditional games are a promising solution for improving literacy and

cultural preservation (Cun, 2023). Storybooks are school teaching materials and can also be used for home reading. They are very interesting for children because they have stories and pictures to attract them. In addition, they can be designed in line with the literacy curriculum while introducing and preserving knowledge about traditional games (Şimşek et al., 2025). Through the integration of various traditional games with engaging storylines, children can simultaneously learn to read and expand their vocabulary while understanding cultural heritage in a fun way (Şimşek & Direkçi, 2023).

The expected positive impact of these storybooks emphasizes the importance of developing children's storybooks that include traditional games with a purpose (Pebriani & Vinayastri, 2022), with the development expected to serve as a dual intervention tool for literacy and cultural preservation (Isha et al., 2022). For the development of children's storybooks to function effectively, it must be based on a strong empirical understanding of the needs, constraints, and preferences of the main users, namely, teachers and students (Rahma Wanodya et al., 2020). As facilitators of learning in the classroom, teachers need not only useful curriculum materials but also practical ones to apply in the actual classroom, with all its limitations. Students, as the intended target readers, have specific preferences regarding the physical characteristics and content of books that can affect their motivation and reading ability (Curenton et al., 2022).

Empirical understanding of teachers' needs and students' preferences, as emphasized above, forms the basis that underscores the urgency of this research in several critical respects. Regarding literacy, we need strategies and teaching materials to improve technical literacy skills and intrinsic motivation to read. Contextual, interesting storybook narratives that integrate familiar cultural values and are grounded in everyday life will be more meaningful and motivating. Intervention is needed before knowledge of traditional games is lost from collective memory. This is important because time is running out from a cultural preservation perspective. There is concern that traditional games will become extinct if no action is taken through education.

Given the urgent need to improve literacy and the risk of traditional culture becoming extinct, this study aims to analyze needs and preferences as a preliminary step in developing traditional game storybooks. This study specifically answers four research questions: (1) What literacy needs and operational constraints do elementary school teachers face in integrating traditional games? (2) What are the literacy interest profiles and levels of student engagement in traditional games? (3) What are the physical and thematic characteristics of traditional game storybooks that students prioritize? (4) How can the conceptual model be verified as a solution to improve literacy and preserve culture?

2. Literature Review

2.1. Improvement and Development of Literacy in Students

Improvement and development of literacy among students is very important. The diverse nature of literacy includes digital literacy, information literacy, and critical skills. Digital literacy is important for students to continue their higher education and enter the world of work (Ussarn et al., 2022). The evolution of literacy education shows the need for students to engage with more complex literacy (Nuryati et al., 2021). The development of media literacy is increasingly important (Semenova & Sotnikova, 2021). Integrating literacy into the education curriculum to improve student skills (Ghodoosi et al., 2025). Digital literacy skills are important for effective communication, a comprehensive literacy approach, and integrating various domains, and they are essential for preparing students to face the complexities of the modern world (Alakrash & Abdul Razak, 2021).

2.2. Traditional Games: Transmission of Values and Pedagogical Assets

Traditional games serve as a dynamic platform for integrating cultural values and enhancing pedagogy among students. Children adjust their mindset and develop social interactions through collaborative games (Adela et al., 2023). Furthermore, incorporating these games into the educational framework fosters cognitive development and instills critical thinking and social skills that are essential for holistic growth (Supiyati et al., 2024). Character building from traditional games embodies ethical values and promotes cooperation and empathy in children, thereby strengthening moral education (Suhra et al., 2020; Yurissa, 2022). Furthermore, traditional games connected to local wisdom provide a rich context for experiential learning, enhancing educational outcomes and cultural identity among learners (Gultom et al., 2022). Thus, integrating traditional games into the education system emerges as a viable strategy to promote holistic development, social cohesion, and resilience to globalization (Siregar et al., 2022). In Malaysia, curriculum reform aims to incorporate critical and innovative thinking as part of raising cultural awareness (Ismail et al., 2022). On the other hand, the Philippines emphasizes teacher training in improving competence to teach cultural literacy among students (Santos, 2024). The integration of cultural teaching in education promotes inclusion and diversity (Sali, 2020).

2.3. Children's Storybooks Containing Traditional Games

Including traditional games in children's storybooks can be a rich medium for character development, creativity, and cultural literacy. Traditional games are an important means of enhancing children's social interaction and can encourage their physical and emotional development (Haetami et al., 2024; Hasan & Husein, 2024). Furthermore, these games can improve cognitive abilities such as counting and creativity, demonstrating their educational potential (Pawartani et al., 2024; Wulansari & Dwiyantri, 2021). Children's storybooks combined with traditional games can be an excellent medium for learning. They can also be a medium for preserving culture. Through the illustrations in these games, children will become more sensitive to and aware of their cultural identity and the importance of cooperation and discipline in their games (Hidayati, 2020; Mardiyah, 2023). Educational storytelling also plays a role in maintaining and preserving traditional customs (Nugraha & Rachmawanti, 2024; Pasaka et al., 2022). The combination of narrative and games can foster a holistic learning environment. This is important for nurturing knowledgeable individuals in today's digital age.

3. Methodology

3.1. Study design

This study adopts a Research and Development (R&D) model. The initial phase of the study focuses on Needs Assessment and Preference Analysis activities. The objective is to collect valid empirical data on users' needs, constraints, and expectations (teachers and students) to formulate a conceptual model and prototype design for children's storybooks containing traditional games.

3.2. Participants

Research subjects were selected using purposive sampling to gather comprehensive data from target users and parties involved in the development process. The sample size of teachers was nine people, which was in line with the exploratory nature of this needs assessment phase, and the findings will be verified through the R&D phase.

Table 1. Research Subjects

Participant Groups	Total (N)	School Origin	Role in Research
teacher	9	4 School	Needs Analysis Respondents
Student	50	5 School	Profile and Preference Analysis Respondents
Validator	4	-	Material Feasibility Validation (2 Content Experts, 2 Layout Experts)
Teacher Facilitator	12	-	Product Trial Facilitator and Observer

3.3. Data collection tools

Data collection instruments include:

1. Teacher Needs Questionnaire: Measures operational constraints, resource availability, and readiness to integrate Traditional Games.
2. Student Profile and Interest Questionnaire: Measures reading interest, frequency, knowledge of traditional games, experience playing traditional games, and preferences regarding physical characteristics/book themes.
3. Expert validation sheet: Used by experts to assess the feasibility and suitability of content (children's story material and traditional games) and layout aspects (book layout and design).

3.4. Validity of data collection tools

The content validity of the research instrument was determined through expert judgment by a team of relevant experts. The data collection tools were designed to cover the key constructs measured in this study (teacher needs, student interests, implementation constraints, and the correlation between literacy and culture), ensuring an accurate representation of the domains measured.

3.5. Data analysis procedure

Quantitative data were analyzed using the following statistical methods:

Table 2. Quantitative analysis of procedures

Types of Analysis	Statistical Procedure	Function
Statistics Description Traditional Games	Descriptive	Presenting the mean, standard deviation, and percentage for teacher profiles, student profiles, constraints, and book preferences.
Normality Test	One-Sample Kolmogorov-Smirnov	Testing the distribution of student preference composite scores.
Correlation Test	Spearman's rho (Correlate → Bivariate)	Testing the strength and significance of the relationship between variables (e.g., teacher constraints, or Reading Frequency vs. number of traditional games)
Relationship Test	Chi-Square (Crosstabs) Test	Testing significant relationships between categorical variables (e.g., experience with traditional games and viewing traditional game books).

Types of Analysis	Statistical Procedure	Function
Average Difference Test	One-way ANOVA, Mann-Whitney U Test, Kruskal-Wallis Test (Compare Means / N Par Test)	Comparing the mean or median scores between groups (e.g., differences in constraints between fourth- and fifth-grade teachers or interest scores based on book size preferences).

3.6. Ethical considerations

This study ensures compliance with research ethics standards. The ethical procedures applied include: (1) Obtaining informed consent from all participants (including permission from parents/guardians of students), (2) Ensuring anonymity and confidentiality of the data collected, (3) Ensuring voluntary participation, and (4) Avoiding potential harm or physical and psychological risks to all research subjects.

4. Results

4.1. Analysis of Primary School Teachers' Needs and Constraints (N=9)

This analysis aims to identify the literacy needs and constraints primary school teachers face concerning integrating children's storybooks containing traditional games.

A. Descriptive Statistics of Teachers' Main Needs and Constraints

The following table summarizes teachers' readiness and main constraints.

Table 3. Descriptive Data on Teachers' Needs and Constraints

Key Variables	N	Mean	Std. Deviation	Pedagogical Interpretation
School	9	2,67	1,000	-
Class	9	4,56	,527	-
Likes to Read	9	,89	,333	89% of teachers have a high interest in children's storybooks.
Traditional game support	9	1,00	,000	100% of teachers give full support to the integration of traditional games.
Constraints (availability of resources)	9	,78	,441	78% of teachers have difficulty getting the right books/facilities.
Traditional game constraints (traditional game implementation)	9	,78	,441	78% of teachers face operational difficulties in implementing traditional games in the classroom.
Difficulty in Appreciation (Difficulty in Material Appreciation)	9	,33	,500	33% of teachers find assessing the quality of interdisciplinary material difficult.
Constraint Score (Total)	9	5,78	2,108	The burden of teacher constraints is moderate to high.

Interpretation of traditional games: teachers' readiness is very high (100% support traditional games), but is hampered by dominant material and operational problems (availability and traditional game constraints, 78% each).

B. Spearman Correlation of Teacher Constraints

The following table presents the significant relationships between the constraint variables that teachers face.

Table 4. Results of the Correlation Test for Constraint Variables faced by Teachers

Variable Relationships	Correlation Coefficients (r)	Significance (p)	Implications for Teacher Performance
Obstacles ready → for traditional games	1,000**	.	The lack of books/facilities is synonymous with difficulty carrying out traditional games.
Difficult to appreciate → obstacle score	,786*	,012	Cognitive difficulty in appreciating material is the largest predictor of the total burden of constraints.
Constraints → constraints score	,734*	,024	Physical availability constraints are the second significant contributor to teacher workload.
Traditional game constraints → obstacle scores	,734*	,024	Operational constraints in implementation are significant contributors to teachers' workload.

Correlation Interpretation: The perfect correlation ($r=1.000$) between resource and traditional game constraints confirms the constraint cycle: lacking specific resources increases implementation difficulties in the field. The most important finding is that appreciation difficulties (difficult appreciation, $r=0.786$) correlate with the total Constraint Score, indicating that teachers' cognitive load is the most crucial focus of intervention.

C. Testing Mean Differences Between Schools and Classes (Kruskal-Wallis / Mann-Whitney U Test)

Non-parametric tests show that most constraint variables do not have significant differences between schools (Kruskal-Wallis $p>0.05$) or between grades IV and V (Mann-Whitney U $p>0.05$).

Table 5. Results of the Kruskal-Wallis / Mann-Whitney U Test

variable	Mann-Whitney U	Asymp. Sig. (p)	Practical Implications
Ready constraints (class IV vs v)	5,000	,091	This is not significant, but the mean rank of Class V is higher.
Traditional game constraints (class IV vs V)	5,000	,091	This is not significant, but the mean rank of Class V is higher.
Traditional game constraints (class IV vs V)	4,000	,074	This is not significant, but the Class V Mean Rank tends to be higher.

Interpretation of Difference Test: The existing constraints are systemic and are not significantly influenced by school management or grade level. However, the tendency for p-values to be close to the significance threshold ($p = 0.074$ to $p = 0.091$) suggests that fifth-grade teachers may face slightly higher demands, which require differentiated material support.

4.2. Analysis of Student Profiles and Interests (N=50)

A. Descriptive Statistics of Student Interest Profiles

Table 6. Descriptive Data on Student Profiles and Interests

variable	N	Mean	Std. Deviation	Main Interpretation
Likes to Read	50	,88	,328	88% of students have a high interest in reading.
Like to Listen	50	1,00	,000	100% of students liked listening to stories.
Read Frequency (Average)	50	1,72	,730	Moderate students' reading frequency.
Know the traditional game	50	,92	,274	92% of students know traditional games.
Play traditional games (play experience)	50	,84	,370	84% of students have played traditional games.
Number of traditional games (known types of traditional games)	50	1,68	,713	Traditional game knowledge is limited to 1–2 types of games.
See traditional game books (have you ever seen a traditional game book?)	50	,50	,505	Only 50% of students are exposed to traditional game storybooks.

Students have excellent basic oral literacy skills and extensive knowledge of traditional games. However, there is a significant gap in the availability of specific materials on traditional games (only 50% have seen books on traditional games) and a limited variety of traditional games known (mean 1.68).

B. Spearman Correlation of Student Interest

The following table presents a significant relationship between literacy interest and involvement in Traditional Games.

Table 7. Correlation Test Results of Literacy Interest and Traditional Game Involvement

Variable Relationships	Correlation Coefficients (r)	Significance (p)	Implication
Frek read ↔ the number of traditional games	,840**	,000	Very strong correlation: reading frequency expands the diversity of traditional game knowledge.
Likes to read ↔ and play traditional games	,510**	,000	Strong correlation: Reading interest is related to the active experience of playing traditional games.
Play traditional ↔ games.	,676**	,000	The practical experience of playing traditional games greatly enhances the knowledge of traditional games.
Reading frek ↔ see traditional playbooks	,485**	,000	Students who are diligent in reading are more often exposed to traditional playbooks.

Interpretation of correlation: literacy (likes reading and reads frequently) and experience playing traditional games (plays traditional games) are mutually reinforcing factors. The correlation $r=0.840$ confirms that increasing reading frequency is important for broadening students' knowledge of local cultural diversity.

C. Chi-square test (relationship between playing traditional games and viewing traditional game books)

Table 8. Chi-Square Test Results

Variable Relationships	Pearson χ^2	Asymp. Sig. (p)	Significance Interpretation
Play traditional games * see traditional game books	9,524	,002	significant ($p<0,01$)

A significant relationship exists between experience playing traditional games and seeing traditional game books. Further analysis shows that 100% of students who have never played traditional games ($n=8$) have never seen traditional game story books. Conversely, 59.5% of students who have played traditional games ($n=42$) have seen such books. This implies that traditional game storybooks currently fail to reach students who have not been exposed to traditional games in practice, functioning only as a reinforcement for those who are already interested.

4.3. Analysis of Student Book Characteristic Preferences (N=50)

A. Descriptive Statistics of Physical and Thematic Preferences for Books

Table 9. Descriptive Data on Characteristics of Student Books

Variable	N	Mean	Std. Deviation	The Majority of Students
Shape	50	1,62	,490	Rectangle
Size	50	1,94	,240	Keep
Thickness	50	1,18	,388	Less than 50 pages (Thin)
Color	50	1,16	,548	Brightly Colored
Language	50	1,08	,274	Straightforward/Simple
Casting Theme	50	,66	,479	Most Liked (66%)
Hero Theme	50	,60	,495	Preferred (60%)
Game Theme	50	,58	,499	Preferred (58%)

Students prioritized books with physical characteristics that were light and attractive (thin, medium-sized, brightly colored) and narratives oriented toward adventure as the most dominant theme for conveying traditional games.

B. Spearman's Correlation Test of Preferences toward Composite Scores

Table 10. Spearman Correlation Test Results

Variable Relationships	Correlation Coefficients (r)	Significance (p)	Implication
Thickness → Preference Score	-,460**	,001	Strong Negative: Thick books significantly reduce students' overall preference.
Color → Preference Score	-,455**	,001	Strong Negative: Non-colourful (black-and-white) books significantly reduce preference.
size → traditional game score	,409**	,003	Strong Positive: Medium size supports an increase in traditional game knowledge scores.
Adventure theme → traditional game score	,723**	,000	Very Strong: Adventure themes are the best vehicle for presenting traditional game knowledge.

Correlation Interpretation: These results dictate product design: to maximise student preference, books should be thin ($r=-0.460$), brightly colored ($r=-0.455$), and use adventure narratives ($r=0.723$) to integrate traditional game content.

C. One-Way ANOVA Test of Physical Characteristics on Theme Preferences

Table 11. Results of the Test of Physical Characteristics on Theme Preferences

Grouping Categories	Adventure Theme (F,p)	Game Theme (F,p)	Hero Theme (F,p)	Significance Implications (p<0,05)
Size (Small vs Medium)	F=6,789; 0,012	0,778; 0,382	0,925; 0,341	Significant size affects Adventure Theme preferences.
Thickness (<50 vs 50–100 pages)	2,286; 0,137	4,515; 0,039	0,087; 0,769	Thickness significantly affects Game Theme preferences.
Colour (Bright vs Black and White)	2,251; 0,140	1,941; 0,170	2,229; 0,142	Insignificant

It was found that Adventure Themes were significantly preferred in medium-sized books, while Game Themes were preferred in thin books (<50 pages). Both of these combinations should be the focus when designing traditional game storybooks.

5. Discussion

5.1. Teachers' Literacy Needs and Operational Constraints

Regarding literacy needs and operational constraints for teachers, the study's results indicate that elementary school teachers have a strong understanding of and commitment to incorporating traditional games into their teaching (Gultom et al., 2022). All respondents, consisting of teachers, were fully supportive, so it was not a matter of teacher resistance or a lack of understanding of pedagogy. However, the obstacles faced were more material and operational in nature (Syarifuddin et al., 2024). Most teachers experience significant difficulties obtaining appropriate learning resources (Wulandari et al., 2023), such as books or learning media that combine literacy with traditional games (Hidayati, 2020).

Even more worrying is the perfect correlation between resource availability constraints and the constraints on implementing traditional games in the classroom. These findings indicate a cycle of mutually reinforcing barriers in which the absence of integrated learning tools forces teachers to improvise (Ulkhag, 2024). This results in traditional game-based learning activities becoming increasingly complex and difficult to implement (Alvisari et al., 2024). This is further complicated by another cognitive burden that teachers must bear: the difficulty of assessing and appreciating interdisciplinary learning materials. This difficulty in appreciation is the strongest predictor of the total burden of constraints teachers feel. In addition to physical availability issues, teachers need explicit pedagogical guidance to integrate traditional game materials into the literacy curriculum.

5.2. Profile of Literacy Interest and Student Engagement in Traditional Games

Analysis of the second research question on literacy interest profiles and student engagement levels indicates that elementary school students have strong foundational capital for culture-based literacy intervention programs (Semenova & Sotnikova, 2021). Students' interest in reading is relatively high (Abdulloh et al., 2023), with most students expressing interest in reading activities. All students, without exception, showed interest in listening to stories (Muna et al., 2023), indicating that oral literacy can serve as an effective means of improving written literacy (Ranieri et al., 2017). Regarding knowledge of traditional games, almost all students reported knowing them, and the majority had direct experience playing them.

Correlational analysis showed a significant relationship between reading frequency and the diversity of knowledge about types of traditional games. These findings empirically validate the hypothesis that literacy is a major catalyst for cultural exploration and understanding (Kastorff & Stegmann, 2024). Children who read more diligently have broader insights into the variety of traditional games, indicating that reading improves technical literacy skills (Chen et al., 2022) and significantly expands cultural knowledge. Significant relationships were identified between reading interest and active experience in playing traditional games (Santoso et al., 2024), as well as between playing experiences (Mahfud et al., 2023) and the level of knowledge about traditional games (Galen et al., 2021). These findings confirm that literacy and cultural practices are mutually reinforcing domains (Zoeller, 2024).

Current storybooks about traditional games are elitist and fail to fulfil their role as cultural introductions. These books only reach students who already have access to and exposure to traditional games through other means, and serve to reinforce the interests of those who are already interested. Storybooks about traditional games should serve as a cultural introduction for all students, especially those who have never experienced traditional games firsthand.

5.3. Physical and Thematic Characteristics of Preferred Storybooks

Analysis of preferences related to the characteristics of storybooks students choose provides specific, evidence-based design guidelines. Physically, students consistently choose medium-sized, rectangular books that are not too thick (Cun, 2023)—ideally, fewer than fifty pages. The preference for thinner books is understandable, given the age and concentration span of elementary school students (Li et al., 2024). Excessively thick books can be intimidating and reduce motivation to finish reading. From a visual perspective, students emphasise the use of bright colours, highlighting the importance of visual appeal in attracting children's interest in reading. In terms of language, students tend to choose a clear, simple writing style that aligns with their language development level and facilitates understanding (Naresti & Suratmi, 2024).

Correlation analysis shows the significance of physical preferences on overall book acceptance. The analysis shows a significant negative relationship between book thickness and students' total preference scores, indicating that excessively thick books can substantially reduce student interest (Curenton et al., 2022). Using non-bright colours or black-and-white significantly reduces a book's attractiveness. Medium-sized books are positively correlated with traditional game knowledge scores, suggesting that the right size can support more effective learning.

Thematically, adventure themes were the most dominant and preferred by most students. This indicates that adventure narratives are not only a subjective preference but also an effective pedagogical scaffolding for conveying and expanding knowledge about traditional games (Saputra & Ekawati, 2021). Other popular themes include heroes and games, reflecting students' interest in narratives that focus on action, heroism, and gaming experiences. The adventure theme is significantly more preferred in medium-sized books, while the game theme is preferred in thin books. These findings provide practical design guidelines to maximise pedagogical effectiveness and appeal (Ye et al., 2021). Traditional game storybooks with adventure themes should be designed in a medium format, while books with game themes should be made relatively thin to maintain readability and avoid visual intimidation. Enhancing learning experiences through interactive narratives (Nijdam, 2023), cultural awareness (Meighan, 2021), and cultural exploration (Kurniati & Mwariko, 2025).

5.4. Validation of the Conceptual Model of Traditional Game-Based Storybooks

Answering the fourth research question regarding the validation of the conceptual model's feasibility, the findings from the analysis of teachers' needs and students' preferences collectively validate the feasibility and urgency of developing children's storybooks that integrate traditional games as a dual intervention solution for improving literacy and preserving culture (Adim & Mutiarani, 2022). From the teachers' perspective, the integrated traditional game storybook model meets the urgent need for learning resources that can overcome availability constraints and implementation difficulties (Pawartani et al., 2024). The conceptual model must include comprehensive teacher guidance components that explicitly map the relationship between traditional game content and literacy learning objectives in the curriculum (Gul, 2023) and provide ready-to-use assessment rubrics. This guide will directly reduce the cognitive load on teachers in appreciating and assessing interdisciplinary material and increase their confidence in implementing traditional game-based learning.

From the students' perspective, validation of the conceptual model rests on two main findings. The significant relationship between reading frequency and the diversity of knowledge of traditional games empirically shows that literacy interventions effectively transmit cultural knowledge (Loredana et al., 2024). Well-designed storybooks about traditional games can increase reading habits and broaden students' cultural horizons. Findings indicate that students who have never played traditional games are also not exposed to books about these games, emphasising the importance of books as a medium of introduction, not just as a reinforcement tool. This validated conceptual model

serves as a design bridge connecting students' innate interests with teachers' operational needs. From the students' perspective, the book offers engaging, accessible content that encourages them to read while indirectly expanding their cultural knowledge. From the teachers' perspective, the book and accompanying guide offer a self-contained solution that addresses resource availability issues and reduces the cognitive load associated with assessing interdisciplinary material.

6. Limitations and future research

This study has several limitations. First, the purposively selected sample of teachers ($N = 9$) from four schools limits the generalizability of the findings on teachers' constraints nationwide; future studies should involve a larger, more geographically diverse sample of teachers. Second, regional representation is limited to schools in specific regions, which may not reflect the diversity in education across Indonesia. Third, this phase of the study was limited to needs assessment and preference analysis; therefore, the results are descriptive and predictive, and the actual effectiveness of the traditional game storybooks developed has not been empirically tested. Fourth, the student sample, although larger ($N = 50$), may not fully represent the diversity of elementary school students from various socioeconomic backgrounds and geographic regions.

7. Suggestions and practical implications

The results of this analysis have direct practical implications for teaching material developers, education policymakers, and teaching practitioners. Implementing the Integrated Book Design should be positioned as a self-contained solution to overcome Availability Constraints, in which the book combines an engaging Adventure Theme narrative, detailed Traditional Game instructions, and easy-to-use visual/physical support materials (e.g., game cards, simple tool lists). To mitigate the highest correlation with Teacher Cognitive Load, each book should be accompanied by a Comprehensive Teacher's Guide that provides an Explicit Curriculum Map (linking traditional games to literacy learning objectives) and a Ready-to-Use Assessment Rubric, eliminating the need for teachers to develop interdisciplinary assessments. Furthermore, an Effective Cultural Inclusion Strategy must be implemented, given the alarming Chi-Square Findings: books must be distributed widely and strategically to serve as a medium for introducing Traditional Games, especially to 100% of students who have not been exposed to traditional games. Finally, procurement policies by schools and education agencies must prioritize the massive procurement of traditional game storybooks with these validated characteristics to overcome Resource Availability Constraints.

8. Conclusion

This study demonstrates the feasibility of developing storybooks integrated with traditional games as a dual-intervention approach to improve literacy and preserve culture. The unique contribution of this study lies in providing a conceptual model grounded in empirical evidence and a dual perspective that bridges the operational needs of teachers and students' engagement preferences. This conceptual model must integrate adventure-themed narratives in a lightweight format (thin, medium-sized, brightly coloured) and provide comprehensive teacher guides, including clear curriculum mapping and ready-to-use rubrics. The biggest obstacle for teachers is the lack of specific integrated resources, which is exacerbated by cognitive difficulties in appreciating and assessing new material. High reading interest among students is strongly related to cultural knowledge diversity, confirming that strengthening literacy is a key factor in cultural preservation. Furthermore, product design must prioritise lightweight physical characteristics and adventure-themed narratives to optimise appeal and pedagogical effectiveness. Overall, an effective traditional game storybook should function as a complete package that connects engaging adventure narratives with structured traditional game guides, supported by teacher guides that reduce the burden of assessment.

9. Suggestion

Based on the overall analysis, the main recommendations are summarised as follows: Prioritise the development of a prototype children's storybook containing Traditional Games that uses the Adventure Theme and has a concise/thin design. Ensure that this book is accompanied by a Teacher's Guide that details the curriculum and provides ready-to-use assessment rubrics to eliminate the cognitive and operational burden teachers face.

Declarations

Author Contributions. M.F.A.U. (Mei Fita Asri Untari) Conceptualisation, methodology design, data collection, statistical analysis, and writing of the original draft. A.N. (Agus Nuryatin): Conceptualisation, research supervision. T.S. (Teguh Supriyanto): methodology validation and critical review. M.D. (Mukh Doyin): Editing the manuscript. All authors have read and approved the published version of the manuscript.

Conflicts of Interest. The authors declare no conflicts of interest.

Ethical Approval. The study involved human participants (teachers and students). All procedures were performed in accordance with the ethical standards of the institutional research committee. Written informed consent was obtained from all teacher participants, and parental consent was secured for all student participants prior to data collection.

Data Availability Statement. The data presented in this study can be obtained upon a reasonable request to the corresponding author.

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