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Needs Analysis for Developing Interactive Educational Games Based on Local Palembang Language Culture for Lower Elementary School Grades

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ABSTRACT

This study addresses the limited availability of technology-based interactive learning media for the Palembang language subject and the low level of student engagement in learning local cultural content at the elementary school level. Therefore, the study aims to analyze the need for developing an interactive educational game based on Palembang local culture for lower-grade elementary school students. The research employed a quantitative descriptive approach as the analysis phase of the ADDIE (Analysis, Design, Development, Implementation, and Evaluation) development model. Data were collected using a needs analysis questionnaire consisting of 12 Likert-scale (1–5) items covering learning needs, learning media needs, and material understanding needs. The questionnaire was administered to 19 lower-grade students from public elementary schools in Palembang City, and the data were analyzed descriptively. The findings revealed that although teachers were perceived as providing adequate motivation (47.4% strongly agreed), most students indicated that Palembang language learning materials and media were not adequately prepared (63.2% disagreed). Furthermore, 57.9% of students agreed that interactive learning media are highly suitable for Palembang language learning, while 63.2% reported that the learning materials cannot currently be accessed anytime and anywhere. These findings demonstrate a clear need to develop an interactive educational game that supports flexible learning, increases student engagement, and enhances the achievement of Palembang language learning objectives in lower-grade elementary school students.

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1. INTRODUCTION

Regional languages are an integral part of Indonesia's cultural heritage and play an important role in preserving national identity [1], [2], [3], [4], [5]. As one of the regional

turnitin Page 7 of 14 - Integrity Submission Submission ID trn:oid:::8227:292402748

languages spoken in South Sumatra, the Palembang language functions not only as a means of daily communication but also as a medium for transmitting cultural values, social norms, and local wisdom across generations [6]. Nevertheless, rapid globalization, technological advancement, and the dominance of Indonesian and foreign languages in education and digital media have gradually reduced the use of regional languages among younger generations [7] emphasized that the declining use of regional languages among elementary school students poses a serious challenge to cultural preservation and requires innovative educational strategies to maintain students' interest in learning their local language.

In elementary schools, Palembang language is taught as a compulsory local content subject. However, its implementation still faces several challenges. Based on preliminary observations conducted at State Elementary School 148 Palembang, learning activities continue to rely primarily on textbooks and conventional teaching methods, while technology-based interactive learning media are rarely utilized. Consequently, students tend to be less actively involved in classroom learning and have limited opportunities to study independently outside school hours. This finding is consistent with previous studies reporting that the limited availability of engaging learning media has negatively affected students' motivation and participation in regional language learning [8].

The rapid development of educational technology offers opportunities to address these challenges through interactive educational games. Educational games have been widely recognized as effective learning media because they promote active participation, improve learning motivation, and enhance students' knowledge retention by providing enjoyable and meaningful learning experiences [9]. Furthermore, integrating local cultural elements into educational games allows students to learn language while simultaneously strengthening their appreciation of local cultural heritage [10]. Therefore, interactive educational games represent a promising alternative for improving the quality of Palembang language learning in elementary schools [11], [12], [13], [14], [15].

Several previous studies have investigated the development of interactive learning media based on local culture. Oktavian et al. [16] found that elementary school students showed a high demand for interactive learning media integrating local cultural content through Augmented Reality technology. Likewise, Paulina et al. [17] reported that local wisdom-based educational games significantly improved students' engagement and learning motivation in elementary education. Rosa et al. [18] also demonstrated that interactive digital media based on traditional games effectively enhanced children's literacy and cultural understanding. Although these studies confirmed the effectiveness of interactive media in supporting elementary education, they primarily focused on general cultural learning or different subject areas. In addition, previous studies have emphasized media development without conducting a comprehensive needs analysis specifically for the development of interactive educational games based on Palembang local culture for lower-grade elementary school students. Consequently, there remains limited empirical evidence regarding students' actual needs as the foundation for designing such learning media. This gap forms the basis for the present study.

turnitin Page 7 of 14 - Integrity Submission Submission ID trn:oid:::8227:292402748

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From a theoretical perspective, needs analysis constitutes the initial and most fundamental stage of the ADDIE (Analysis, Design, Development, Implementation, and Evaluation) instructional design model proposed by Branch [19]. At this stage, researchers identify discrepancies between existing learning conditions and desired learning outcomes to determine appropriate instructional objectives and media specifications. Hertati [20] further explained that a systematic needs analysis enables developers to design educational media that accurately reflect learners' characteristics and learning requirements. Therefore, conducting a comprehensive needs analysis is essential before developing interactive educational games to ensure that the resulting product effectively addresses students' learning needs.

Based on these considerations, this study aims to analyze the need for developing interactive educational games based on local Palembang culture for lower-grade elementary school students. Specifically, the study identifies current learning conditions, examines the availability of existing learning media, analyzes students' needs for technology-based interactive learning media, and explores their understanding of Palembang language learning materials. The findings are expected to provide empirical evidence for designing interactive educational games that improve students' motivation, learning flexibility, and preservation of the Palembang language and culture while serving as the initial stage of the ADDIE development model.

2. METHOD

This study uses a quantitative descriptive research approach, which is an implementation of the Analysis stage in the ADDIE (Analysis, Design, Development, Implementation, Evaluation) development model. The quantitative descriptive approach was chosen because it aims to describe the actual conditions of Palembang's language-learning needs in a measurable manner, using numerical data obtained from a standardized questionnaire [21].

Research Subjects and Locations

The research was conducted at State Elementary School 148 Palembang, South Sumatra, during the even semester of the 2025/2026 academic year. The subjects were 19 lower-grade students (grade III) selected through purposive sampling based on their representative characteristics. This number of subjects aligns with the context of the preliminary study, which aims to obtain a representative initial picture of needs before product development is carried out on a larger scale.

Research Instruments

The instrument used was a student needs analysis questionnaire developed specifically for this study. The questionnaire consisted of 12 statements arranged based on three main aspects, namely: (1) learning needs with 3 indicators (initial learning conditions and teacher attitudes), (2) learning media needs with 2 indicators (use of media and learning process), and (3) material understanding needs with 2 indicators (suitability of material to

turnitin Page 9 of 14 - Integrity Submission Submission ID trn:oid:::8227:292402748

objectives and evaluation). Each statement item was answered using a 5-point Likert scale (1 = Strongly Disagree, 2 = Disagree, 3 = Less Agree, 4 = Agree, 5 = Strongly Agree).

Table 1. Grid of Student Needs Analysis Questionnaire on Using Interactive Media for Palembang Language Subjects

No	Aspect	Indicator	Item
1	Learning Needs	Initial learning conditions	1, 2
		The teacher's attitude in the learning process	3
2	Learning Media Needs	Use of Mulok learning media	4, 5, 6, 7
		Learning process	8
3	Need for Understanding Material	Suitability of material to learning objectives	9, 10
		Evaluation	11, 12
	Number of Grains		12

Source: Adapted from research instrument, 2026

Data Collection and Analysis Techniques

The researcher distributed the questionnaire directly to students, accompanied by the class teacher, to ensure students understood each statement. The collected data were then analyzed using descriptive statistics in the form of frequency distributions and percentages. The results were interpreted based on the dominant percentage response category for each statement, which was then linked to pedagogical implications for the development of learning media. Instrument validation was conducted through expert judgment by two experts in the fields of educational technology and regional language education.

3. RESULTS AND DISCUSSION

3.1 Results of Learning Needs Analysis

The learning needs aspect in this study includes two main indicators: initial learning conditions (items 1 and 2) and teacher attitudes during the learning process (item 3). Based on the results of distributing questionnaires to 19 students, quite informative findings were obtained regarding the dynamics of Palembang language learning in lower grades.

In terms of the initial learning conditions indicator, the results show that most teachers communicated the learning objectives at the beginning of the meeting. However, reinforcement of the previous meeting's material through leading questions was still inconsistent. The most prominent finding in this aspect was that 47.4% of students strongly agreed (score 5) that the teacher provided good motivation and inspiration during the learning process. This means that students responded very positively to the teacher's attitude and motivation; there was no need for improvement in the teacher's attitude.

This finding aligns with the research of Suryani et al. [22], which states that teacher personality competency, including the ability to motivate and inspire students, is an

turnitin Page 9 of 14 - Integrity Submission Submission ID trn:oid:::8227:292402748

turnitin Page 10 of 14 - Integrity Submission Submission ID trn:oid:::8227:292402748

important protective factor that can moderate the negative impact of limited learning media. In other words, even though available learning media are still limited, teachers' enthusiasm and strong motivational skills maintain basic student engagement in learning Palembang language.

3.2 Results of Learning Media Needs Analysis

Learning media needs are the most critical and relevant to the research's development objectives. This aspect encompasses two indicators: the use of learning media (items 4, 5, 6, and 7) and the learning process (item 8).

The most significant finding in this aspect is that 63.2% of students disagreed (score 3) with the statement that Palembang language learning materials and media were well prepared by teachers, while only 10.5% agreed. This data clearly shows a significant gap between students' expectations regarding the quality of learning media preparation and the actual conditions they experience in class. This is a strong indication that teachers have not adequately prepared Palembang language learning media and materials.

Regarding the use of interactive learning media, the results were very encouraging: 57.9% of students agreed that they are very suitable for learning the Palembang language. This figure indicates positive acceptance and enthusiasm from students for the use of technology-based media in local content learning.

Table 2. Summary of Results of Student Needs Analysis for Palembang Language Learning Media (n=19)

No	Key Statement Points	Dominant Response	Percentage (%)
1	The teacher provides good motivation and inspiration	Strongly Agree (5)	47.4%
2	The materials and media are well prepared by the teacher	Disagree Less (3)	63.2%
3	Interactive learning media are suitable for the Palembang language	Agree (4)	57.9%
4	Palembang language material can be studied anywhere and anytime	Disagree (2)	63.2%
5	The teacher delivers Palembang language material clearly and interestingly.	Disagree Less (3)	52.6%
6	Overall satisfied with learning Palembang language	Disagree Less (3)	47.4%

Source: Primary research data, 2026

The data in Table 2 clearly demonstrate a consistent pattern: students were dissatisfied with the existing media and materials preparation, but were positively receptive to the idea of using interactive learning media. This pattern reflects a condition known as 'technology readiness'—users' readiness and openness to using technology in learning, even though the necessary facilities are not yet available [15]

turnitin Page 10 of 14 - Integrity Submission Submission ID trn:oid:::8227:292402748

turnitin Page 11 of 14 - Integrity Submission Submission ID trn:oid:::8227:292402748

3.3 Results of Analysis of Material Understanding Needs

The aspect of understanding the material includes two indicators: the suitability of the material to the learning objectives (items 9 and 10) and its evaluation (items 11 and 12). The most critical finding in this regard is that 63.2% of students disagreed with the statement that they can study Palembang language material anywhere and at any time to complete the tasks given by the teacher.

The high percentage of "disagree" respondents indicates that the currently available Palembang language-learning resources are very limited in accessibility—students can only study during school hours. They cannot study independently at home due to the lack of media or learning resources that can be accessed flexibly. This situation aligns closely with the need to develop digital-based learning media that are portable and accessible anytime and anywhere.

Furthermore, 47.4% of students expressed overall dissatisfaction with the Palembang language instruction they received. This dissatisfaction, if left unaddressed, has the potential to foster apathy and negativity toward the regional language in the long term. This situation reinforces the urgency of developing innovative, engaging, and relevant learning media for students.

3.4 Implications for the Development of Interactive Educational Games

Based on the synthesis of the needs analysis results from the three aspects studied, comprehensive implications can be formulated for the development of interactive educational games based on local Palembangnese culture. First, the game must be a flexible, accessible learning resource available to students anytime, anywhere, without relying on a teacher's physical presence in the classroom. This directly addresses the identified needs of the 63.2% of students who cannot learn Palembangnese independently.

Second, games must be designed with rich, structured, and progressively structured content to replace and complement the limitations of existing conventional media. Content design must consider three key components of the Palembang language curriculum in lower grades: basic vocabulary, everyday communication expressions, and understanding local culture.

Third, in-game motivational mechanisms (reward systems, point systems, leaderboards) need to be carefully designed to maintain and enhance students' learning enthusiasm, which has been shown to be responsive to teacher motivation. In-game motivational systems can serve as digital extensions of the teacher's already effective motivational role. This aligns with self-determination theory [14], which emphasizes the importance of autonomy and competence support in building intrinsic motivation to learn [15].

turnitin Page 11 of 14 - Integrity Submission Submission ID trn:oid:::8227:292402748

turnitin Page 12 of 14 - Integrity Submission Submission ID trn:oid:::8227:292402748

Table 3. Initial Specifications of Interactive Educational Games Based on Needs Analysis Findings

No	Design Components	Specifications Based on Findings
1	Accessibility	Web-based platform; accessible via computer, tablet, and smartphone; requires no additional installation.
2	Language Content	Everyday vocabulary, greetings, and expressions of the Palembang language; interactive folk tales; traditional games
3	Motivation Mechanism	Point system, Palembang cultural badges, class leaderboard, live feedback (audio-visual)
4	Interface Design	Colorful 2D visuals, typical Palembang mascot characters, Indonesian & Palembang audio instructions, intuitive buttons
5	Difficulty Level	Three progressive levels: easy (Class I), moderate (Class II), difficult (Class III)
6	Learning Evaluation	Picture quizzes, word guessing games, vocabulary puzzles; automatic progress reports for teachers

Source: Formulated from the results of needs analysis, 2026

4. CONCLUSION

This study concludes that lower-grade elementary school students require interactive learning media that integrates Palembang local culture to support the learning of the Palembang language. The needs analysis indicates that technology-based media have not adequately supported existing learning practices, while students demonstrate strong readiness to use interactive digital learning resources. These findings confirm that the development of interactive educational games is a relevant solution to improve students' engagement, learning flexibility, and accessibility to Palembang language learning materials.

The findings have important implications for educational practice and the development of learning media. For teachers, the results provide empirical evidence for integrating interactive educational games into local content instruction to create more engaging and student-centered learning experiences. For schools and curriculum developers, the findings can serve as a reference for designing digital learning resources that preserve regional languages while promoting the integration of local cultural values into elementary education. Furthermore, this study contributes to the implementation of the ADDIE development model by providing a systematic needs analysis as the foundation for developing culturally responsive educational games.

This study has several limitations. The research involved a relatively small number of participants from a single public elementary school in Palembang, which limits the generalizability of the findings. In addition, the study focused only on the analysis stage of the ADDIE model and did not proceed to the design, development, implementation, or evaluation of the proposed educational game.

turnitin Page 12 of 14 - Integrity Submission Submission ID trn:oid:::8227:292402748

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Therefore, future research should continue the subsequent stages of the ADDIE model by designing, developing, validating, and evaluating the effectiveness of interactive educational games based on Palembang local culture using larger and more diverse participant groups. Comparative studies involving different schools or regions are also recommended to examine the broader applicability of the learning media. It is expected that the development of such educational games will not only improve students' motivation and learning outcomes but also contribute to the preservation of the Palembang language and local cultural heritage in the digital era.

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