



Improving Vocabulary Comprehension Lower Grade Elementary Students: Lawang Sewu Semarang Game Mobile Based on the Teams Games Tournament

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ABSTRACT

Purpose of the study: The lack of innovation in Indonesian language learning media lowers students' cognitive ability in interpreting vocabulary Indonesian language. This study aims to: 1) analyze learning needs; 2) describe the design of the Lawang Sewu mobile game; 3) describe its feasibility; and 4) describe its effectiveness.

Methodology: This study used a research and development (R&D) method based on the Borg and Gall model. Participants were divided into small- and large-scale trial groups. One media expert and one subject expert validated the product. Data were collected through observation, interviews, and questionnaires. Effectiveness was measured using t-tests and N-Gain analysis.

Main Findings: The study results revealed that needs analysis through questionnaires, interviews, and observations indicated that current learning does not utilize effective media and requires media development. The media was developed as a digital application with interactive content and visual illustrations. Validation results showed the media was highly feasible, receiving scores of 95% from media experts and 94% from material experts. The effectiveness test confirmed the alternative hypothesis (Ha), with N-Gain scores of 0.71 and 0.77, categorized as high.

Novelty/Originality of this study: This research introduces the Lawang Sewu mobile game, an innovative learning media based on the Teams Games Tournament (TGT) model. Its novelty lies in using interactive digital media, rarely applied before, combined with Semarang local stories to enhance low-grade students' vocabulary interpretation in a fun, contextual, and competitive way.

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1. INTRODUCTION

Language has a central role in education because it is the main tool in the process of thinking, communicating, and expressing ideas, feelings, and knowledge. Good and correct language skills are needed to support the success of learning in various fields of study. Indonesian as the national language as well as the language of education must be taught at every level of education, including at the primary school level. According to Ali, primary schools should be able to equip students with basic skills that include language skills as a learning strategy process, such as reading, writing, listening, and speaking [1].

In learning the Indonesian language in primary school, one of the important aspects that must be considered is vocabulary mastery. Vocabulary is a major component in language skills because the ability to understand and produce language is highly dependent on the extent to which vocabulary is mastered by students. The more vocabulary students know, the greater their ability to understand text content, convey ideas, and interact effectively with the surrounding environment. Therefore, improving vocabulary mastery is one of the important goals in Indonesian language learning.

Understanding the meaning of vocabulary is fundamental, especially in reading narrative texts. Reading as a receptive skill requires the ability to recognize words, understand their meaning in context, and associate the information received with existing knowledge. Vocabulary not only functions as a communication tool but also as a bridge for students to understand the world through the text they read. Therefore, it is very important to develop learning strategies that can help students make meaning of vocabulary contextually. However, the reality in the field shows that many elementary school students still experience difficulties in mastering and understanding vocabulary, especially in learning narrative text. Based on the results of observations and interviews with grade II students at SDN Bringin 02 Semarang, it is known that out of 23 students, 11 students (47.82%) with an average of 51.83 have not reached the Minimum Completion Criteria (KKM) for Indonesian language learning. This shows that almost half of the students experience obstacles in understanding and interpreting vocabulary in reading texts.

These problems are caused by various factors, both internal and external. Internally, students show a lack of interest in learning and active involvement in the learning process. They tend to be passive and unenthusiastic about the subject matter presented. Meanwhile, from external factors, learning is still dominated by conventional and monotonous approaches, as well as the lack of use of innovative and interesting learning media. Teachers still use textbooks as the only source of learning, without involving visual or interactive media that are relevant to the needs and characteristics of students [2], [3]. Efforts to use technology in teaching, some teachers are reluctant to use technology [4]. In fact, learning media has an important role as a supporting tool for educators in delivering material, with the aim of helping the smooth teaching and learning process so that students can more easily understand the learning content [5]-[7].

Along with the rapid development of life in the era of digital transformation and society 5.0, changes occur in almost all aspects, including education [8]. In this context, education is the main pillar in advancing society comprehensively [9]. Through education, a person can improve their critical thinking skills, and quality of life, and form a character that is adaptive to changing times [10]. Therefore, the application of technology in education is currently very relevant, especially in improving innovation, efficiency, and effectiveness of learning, including in teaching Indonesian [11].

With the development of information and communication technology, learning can be presented in a more interesting and interactive form through digital media, one of which is a mobile-based educational game. Game-based learning media has the advantage of creating a fun learning atmosphere, increasing motivation, and providing a meaningful learning experience. Priyatna & Wiguna state that educational games as visual media have the advantage of stimulating thinking and increasing the concentration of its users [12]. Moreover, children today are very familiar with mobile devices so their use in learning becomes very relevant. It is important to recognize that presenting material visually can capture students' attention and enhance their learning experience. This approach encourages greater student engagement in class and allows instructors to deliver content in a more engaging and dynamic way [13].

The use of mobile-based educational games in Indonesian language learning is a promising alternative solution to overcoming students' low ability to understand vocabulary. To strengthen the connection between learning and local culture, the game development will raise local stories as the main content. In this case, Lawang Sewu is chosen as the story setting because it is a famous historical and cultural icon in Semarang City, Central Java, where this research is conducted. Lawang Sewu not only holds historical values but also contains high educational potential that can be raised in the form of narrative text. The values of local wisdom formed through the process of adaptation to the environment over the centuries have great potential as a source of learning. Through the integration of elements such as customs, cultural habits, natural attractions, and regional culinary specialties into teaching materials, educators can create learning experiences that are more contextual, meaningful, and in accordance with the reality of student life [14]-[16].

Raising local stories such as Lawang Sewu in learning media not only enriches students' vocabulary but also fosters a sense of pride and love for the culture and history of the region. The story developed in the game will be organized into several sections (which present narration and vocabulary comprehension questions at the end of each segment). Thus, students will play while learning to understand the meaning of vocabulary in the context of the story presented. The game will be designed by utilizing 21st-century technologies such as Artificial Intelligence (AI), in order to provide a more adaptive and interactive learning experience according to students' needs. The use of media depends on the learning needs of the students themselves [17]-[18].

This educational game media will not stand alone, but will also be packaged in an appropriate learning model, namely Teams Games Tournament (TGT). The TGT model emphasizes teamwork and healthy

competition in answering questions that have been prepared in the form of games. The TGT model can increase students' enthusiasm for learning because the learning process takes place in a fun and competitive atmosphere [19]-[21]. This model involves five main steps, namely class presentation, team formation, games, tournaments, and team awards. The collaboration between game media and the TGT model is expected to increase students' involvement in the learning process and encourage them to be more active in understanding vocabulary.

With this background, this research aims to 1) analyze the results of needs through questionnaires, interviews, and direct observations at school. 2) describe the media development design. 3) describe the feasibility of media through validation tests. 4) describe the effectiveness of the media. Lawang Sewu mobile game media based on teams Games tournament is expected to be an innovative solution in improving students' understanding in interpreting Indonesian vocabulary in narrative text, as well as providing a fun, contextual, and meaningful learning experience.

2. RESEARCH METHOD

This study utilizes the Research and Development (R&D) methodology, which is designed to create and enhance educational products to improve their quality and effectiveness. According to Sugiyono, R&D is a structured process aimed at developing products with added functional value and assessing their effectiveness through empirical validation in practical contexts [22]. In this study, the developed product is an educational learning medium in the form of a mobile game, incorporating local folklore from Lawang Sewu and integrated with the Teams Games Tournament (TGT) instructional model. This media is specifically designed to enhance students' vocabulary comprehension within the context of Indonesian language learning. The use of mobile game-based media is aligned with the characteristics of the digital-native generation, who are accustomed to technological devices. Therefore, it is expected to promote learning interest, interactivity, and meaningful engagement in an enjoyable manner.

The development of the product was conducted through systematic phases to ensure its feasibility and effectiveness as a learning medium. The feasibility validation process involved expert evaluations, including subject matter experts and media specialists, who provided constructive feedback for improving the game. Furthermore, to evaluate the effectiveness of the mobile game, this study analyzed students' learning outcomes using normality tests, t-tests, and N-gain analysis as indicators of improvement in vocabulary comprehension.

The development process in this research was guided by the Borg and Gall model, as outlined by Sugiyono, which comprises ten fundamental stages: (1) identifying potential and issues, (2) data collection, (3) product design, (4) design validation, (5) design refinement, (6) initial product testing, (7) further revision, (8) implementation testing, (9) final adjustments, and (10) large-scale dissemination. Due to constraints in time and available resources, this study applied only the first eight stages [22]. These phases were conducted in a structured manner to ensure that the resulting learning media meets the criteria of validity, practicality, and effectiveness. Through this methodological framework, the mobile game-based educational media developed in this study is anticipated to serve as an innovative tool that facilitates vocabulary acquisition in a more engaging and contextualized way, while also promoting the integration of local cultural values into the educational environment.

“The participants in this study were elementary school students drawn from two institutions with comparable characteristics: Elementary School Bringin 01 Semarang for the small-scale trial and Elementary School Bringin 02 Semarang for the large-scale implementation. The initial pilot test was conducted at Elementary School Bringin 02 with six students selected based on varying levels of academic performance. A purposive sampling technique, as outlined by Sugiyono [22], was employed to ensure the sample was representative and aligned with the research objectives. The participant group comprised two high-performing, two average-performing, and two low-performing students. This stratified selection was intended to evaluate the appropriateness and adaptability of the developed Lawang Sewu mobile game integrated with the Teams Games Tournament (TGT) model across different learner profiles, thereby assessing its accessibility and comprehensibility for a diverse range of students.

Additionally, the large-scale trial was implemented at Elementary School Bringin 02 with the participation of 21 students. This phase aimed to assess the broader effectiveness of the learning media within an authentic classroom environment. Employing a larger sample size enabled a more comprehensive evaluation of the impact of the Lawang Sewu mobile game, integrated with the Teams Games Tournament model, on students' vocabulary comprehension skills. The two-tiered evaluation approach, consisting of both small-scale and large-scale trials, was designed to yield precise data regarding the feasibility, engagement, and overall effectiveness of the developed educational media. The involvement of two elementary schools with similar learner profiles ensured consistency in participant characteristics.

This study employed three data collection methods: observation, interviews, and questionnaires. Observations were conducted during Indonesian language lessons in the second-grade classroom to directly monitor the learning environment and student engagement. Additionally, questionnaires were distributed to

gather quantitative data on the perceptions, experiences, and feedback from teachers regarding the developed learning media. Similar questionnaires were also administered to material and media experts to assess the feasibility of the Lawang Sewu mobile game learning media in terms of content quality and media design.

The media expert evaluation focused on three key aspects: alignment of the media with learning objectives, language accuracy, and usability. These aspects were operationalized into sixteen indicators serving as criteria for assessing media feasibility. Data collected from the media expert validation questionnaires were analyzed using a simple percentage formula as described by Arikunto [23]. Subsequently, the results were categorized into predefined feasibility levels.

Table 1. Media Expert Validation Assessment Criteria

Percentage	Criteria
81 – 100	Very Feasible
61 – 80	Worth
41 – 60	Decent Enough
21 – 40	Less feasible
0 – 20	Not Feasible

The validation process conducted by material experts encompassed three dimensions: content feasibility, presentation feasibility, and language feasibility. These dimensions were further broken down into thirteen specific indicators to guide the evaluation of the material content within the media feasibility assessment. Data collected from the material expert validation questionnaires were analyzed using a simple percentage calculation method. The resulting scores were then classified into categories, as presented in Table 2

Table 2. Criteria for Material Expert Validation Assessment

Percentage	Criteria
81 – 100	Very Feasible
61 – 80	Worth
41 – 60	Decent Enough
21 – 40	Less feasible
0 – 20	Not Feasible

The data analysis in this study was conducted through three primary phases: product data analysis, preliminary data analysis, and final data analysis. The initial phase focused on assessing the feasibility of the developed learning media and analyzing teacher feedback. Material feasibility was evaluated through expert validation of the local wisdom-based mobile game learning media, considering both media validation criteria and content quality. Scores provided by validators were interpreted using established feasibility classifications to determine the appropriateness of the media for educational use. Additionally, teacher responses obtained via questionnaires were analyzed to gauge the media’s effectiveness and utility within the learning context.

The second phase, preliminary data analysis, aimed to establish a comparative baseline for measuring differences and improvements in student learning outcomes. This included conducting normality tests on pretest and posttest scores, using the Shapiro-Wilk method implemented through SPSS version 30. Data were considered normally distributed if the significance value exceeded 0.05; otherwise, data were regarded as non-normal. This step ensured the validity of data prior to further statistical testing.

The final phase encompassed inferential statistical analyses, including paired sample t-tests and N-gain calculations to assess learning improvements. The paired t-test evaluated whether the difference between pretest and posttest means was statistically significant, with a significance threshold of 0.05. Values below this threshold indicated a significant difference, whereas values above suggested no significant change. The N-gain analysis quantified the degree of improvement by comparing pretest and posttest scores relative to the ideal maximum score (SMI) for vocabulary mastery in Indonesian narrative text. This provided a standardized measure of the effectiveness of the Lawang Sewu mobile game as a learning tool.

3. RESULTS AND DISCUSSION

The results of the research on the development of Lawang Sewu mobile game media designed with an appropriate instructional approach to improve students' ability to understand vocabulary in the narrative text include three main aspects, namely: 1) The results of the needs analysis; 2) Results of Lawang Sewu mobile game media development; (3) Assessment of media feasibility; and 4) Effectiveness of Lawang Sewu mobile game media.

3.1. Needs Analysis Results

At this stage, researchers collected information about the conditions of students, teachers, and the school environment which became the subject of research, namely grade II students. Data collection was carried out through direct observation in the classroom as well as interviews with teachers and several students. In addition, documentation was also involved as supporting evidence to strengthen the validity of the data obtained. The potential and problems raised in this study are based on empirical data. The problem found in the Indonesian language learning process is that there are problems and needs for Indonesian language learning media, namely less interesting and fun in learning; learning media is still in printed form not yet digital; learning that is more centered on the teacher less active participation of students in learning, this mismatch has an impact on the low ability of students to interpret vocabulary appropriately.

This is reflected in students' learning outcomes on vocabulary material in narrative text, with an average score of 51.83. This value is still below the Learning Objective Completeness Criteria (KKTP) set, which is 70. This finding is an important basis for developing learning media that is more contextual and interesting, in order to improve the understanding of vocabulary of grade II students. Next, the author conducted data collection. This activity was carried out by analyzing the needs of teachers related to the media products to be developed. The results of the recapitulation of the teacher needs analysis are as follows.

Table 3. Recapitulation of Teacher Needs Analysis

No.	Teacher Needs
1.	Teachers need learning media that attracts students' attention so that students are active.
2.	Teachers agree to use mobile game application-based media.
3.	Teachers need a clear view of the mobile game.
4.	Teachers need materials with standardized language and attractive pictures.
5.	Teachers need media that can improve students' abilities.
6.	Teachers need content that is close to students' lives.

Through the results of the recapitulation of the teacher needs questionnaire, the author can find out that teachers support the development of learning media to interpret vocabulary in narrative text. Teachers agree with the packaging of narrative text material in media in the form of a *Mobile Game* application that can be accessed on each student's *smartphone* or by using computer facilities at school. Teachers also have criteria for learning media needed as a consideration for making media, namely the appearance of the media which must be clear and can increase students' interest in learning.

3.2. Results of Lawang Sewu *Mobile Game* Media Development

The results of the needs questionnaire analysis on the teacher are used as the basis for the product design stage. At this stage, researchers began designing the Lawang Sewu *Mobile Game* media based on the *Teams Games Tournament* model in an effort to increase the meaning of low-grade vocabulary, especially in the learning outcomes (CP) of interpreting vocabulary in narrative text. This media is designed in the form of digital applications that can be accessed through laptop or computer devices, with interactive content that presents learning materials, visual illustrations, and evaluation features. The integration of the *Teams Games Tournament* model allows for a competitive, fun, and collaborative learning atmosphere so as to increase students' active participation in the learning process.

3.3. Media Feasibility Test Results

The feasibility evaluation of the Lawang Sewu mobile game learning media was conducted through validation by both material and media experts. This validation aimed to determine the appropriateness of the developed media for teaching Indonesian language, particularly focusing on vocabulary interpretation within narrative texts for second-grade students. The validation process utilized a tailored questionnaire designed to align with the media's characteristics and learning objectives. Material experts assessed critical dimensions including content quality, presentation, and language accuracy. Similarly, media experts evaluated the media based on its alignment with learning objectives, linguistic clarity, and practical usability. The outcomes of these validation assessments by material and media experts are summarized in Table 4

Table 4. Material Expert and Media Expert Validity Test Results

Validation	Percentage	Criteria
Material	94	Very Feasible
Media	95	Very Feasible

Table 4 presents the validity assessment results of the Lawang Sewu mobile game learning media based on the *Teams Games Tournament* model, showing a score of 94% from material experts and 95% from media

experts, both categorized as highly feasible. These validation outcomes indicate that the media is well-suited for use as an educational tool. Following the validation phase, revisions were undertaken to refine the design and material content based on expert feedback. These improvements aimed to optimize the media’s effectiveness in supporting the learning process.

Specifically, modifications focused on enhancing visual elements such as the cover page, incorporating usage instructions, and adding several pages featuring the author’s profile as recommended by media experts to improve readability, user experience, and the game’s visual appeal. Content adjustments based on material expert suggestions included refining the question texts and providing a complete narrative text at the beginning of the game to serve as an initial stimulus for students. Consequently, the final iteration of the Lawang Sewu mobile game media is expected to be both substantively valid and effective in enhancing vocabulary comprehension among second-grade students through an engaging and contextual learning approach. Upon receiving expert approval for its feasibility, the media will proceed to implementation trials within educational institutions to evaluate its effectiveness.

3.4. Media Effectiveness Test Results

The next step was to test the effectiveness of the product during the trial phase. This trial was done in two stages: a small group trial and a large group trial. The small group trial included six second-grade students selected based on their academic performance using purposive sampling, as described by Sugiyono (2022:133), to ensure the sample represented different ability levels. The group consisted of two high-achieving, two average-achieving, and two low-achieving students.

After the small group trial, a large group trial was conducted with 21 second-grade students using the Lawang Sewu Mobile Game based on the Teams Games Tournament model. The process was the same as in the small group trial, starting with an introduction of the game to the students. Pretest and posttest scores were analyzed to measure how effective the Lawang Sewu mobile game was in improving students’ ability to understand vocabulary in narrative texts. The goal was to see if the learning media could improve students’ learning outcomes. The pretest and posttest data were analyzed quantitatively to compare scores before and after using the media. A summary of these scores from both trials is shown in Table 5.

Table 5. Recapitulation of Pretest and Results Small-Scale Trial and Large-Scale Trial

No.	Description	Small Group Product Trial		Large Group Product Trial	
		Pretest	Posttest	Pretest	Posttest
1.	Number of Students	6	6	21	21
2.	Average	52.08	86.75	51.22	86.6
3.	Highest Score	65	100	70	100
4.	Lowest Score	37.5	62.5	32.5	62
5.	Number of Students Completed	0	5	2	20
6.	Learning Completeness (%)	0	83.3	9.52	95.24

Based on the data presented in this table, the small group trial with six student respondents showed that the lowest pretest score was 37.5, and the highest was 65, with an average score of 52.08 and a learning completeness of 0%. The posttest results indicated that the lowest score was 62.5 and the highest was 100, with an average score of 86.75 and a learning completeness of 83.3%. In the large group trial involving 21 students, the lowest pretest score was 32.5, and the highest was 70, with an average score of 51.22 and a learning completeness of 9.52%. The posttest scores ranged from 62 to 100, with an average score of 86.6 and a learning completeness of 95.24%. Both small-scale and large-scale trials demonstrated a significant improvement in the ability of grade II students to comprehend vocabulary in narrative texts, as shown by the pretest and posttest scores following the use of the Lawang Sewu mobile game media and the post-lesson evaluation.

The pretest and posttest data were further analyzed using normality tests, paired t-tests, and N-Gain calculations to assess the effectiveness of the Lawang Sewu mobile game media in the learning process. The normality test ensured the data met the assumption of normal distribution before conducting further statistical analyses. The paired t-test was used to determine if there was a statistically significant difference between pretest and posttest scores, while the N-Gain test measured the average improvement in student learning outcomes after using the game media. These analyses provide a foundation for evaluating the effectiveness of the Lawang Sewu mobile game, based on the Teams Games Tournament model, in enhancing the vocabulary interpretation skills of grade II students in narrative texts.

The results of the small-scale and large-scale pretest and posttest were analyzed with a normality test with the aim of knowing whether the data was normally distributed or not. The normality test uses the Shapiro-Wilk test. The results of the small-scale and large-scale pretest-posttest normality tests are presented in Table 6.

Table 6. Pretest Posttest Normality Test Results Small Scale and Large Scale

Scale	Test	Shapiro Wilk		
		Statistic	df	Sig.
Small Scale	Pretest	.928	6	.561
	Posttest	.967	6	.872
Large Scale	Pretest	.887	21	.077
	Posttest	.957	21	.456

Based on the Normality Test results, the significance values for the small-scale trial were 0.561 for the pretest and 0.872 for the posttest. For the large-scale trial, the significance values were 0.077 for the pretest and 0.456 for the posttest. Since all significance values exceed the 0.05 threshold, it can be concluded that the data for both pretest and posttest in the small- and large-scale trials are normally distributed. Therefore, further statistical analyses, including the paired t-test and N-Gain test, were conducted to evaluate the effectiveness of the Lawang Sewu mobile game media, based on the Teams Games Tournament model, in improving the vocabulary interpretation skills of lower-grade students in narrative texts.

Subsequently, the authors analyzed the data from both small- and large-scale trials using the t-test and N-Gain formula, yielding the following results.

Table 8. Effectiveness Test Results

Scale	Test	Value
Small Scale	Sig. (2-tailed)	<,001
	N-Gain	0,77
Large Scale	Sig. (2-tailed)	<,001
	N-Gain	0,71

Based on the data presented in the table above, the t-test results indicate that the significance value (Sig. 2-tailed) for both small- and large-scale trials is less than 0.001. Since this value is below the 0.05 threshold, it can be concluded that there is a significant difference between the pretest and posttest scores. Therefore, the alternative hypothesis (H_a) is accepted, confirming that the use of the Lawang Sewu mobile game media is effective in improving students' vocabulary comprehension.

Furthermore, the N-Gain values obtained were 0.77 for the small-scale trial and 0.71 for the large-scale trial. Both values fall into the high category based on the gain classification, indicating a substantial improvement in students' ability to interpret vocabulary after using the developed learning media. Overall, these findings demonstrate that the Lawang Sewu mobile game media, based on the Teams Games Tournament model, is not only feasible but also effective in supporting Indonesian language learning for lower-grade students, particularly in enhancing vocabulary comprehension in narrative texts.

The results of this study clearly indicate that the Lawang Sewu mobile game media, developed using the Teams Games Tournament (TGT) learning model, effectively addresses students' challenges in understanding vocabulary within narrative texts. This aligns with the pressing need for innovative learning media that cater to the diverse abilities of elementary school students. As highlighted, many students struggle with vocabulary mastery due to the limited variety and monotonous nature of traditional learning media, which often leads to decreased engagement and participation during lessons [24], [25]. Conventional instructional approaches have shown limitations in bridging learning disparities, leaving some students behind [26], [27]. In contrast, the integration of interactive and student-centered learning tools like the Lawang Sewu mobile game encourages active involvement and motivation, which are critical for fostering vocabulary acquisition. This underscores the importance of employing appropriate learning strategies and media that align with students' developmental stages and learning preferences [28]-[30].

Moreover, the role of learning media as a communication bridge between teachers and students is crucial for achieving educational goals efficiently [31]. Effective learning media must not only deliver content but also stimulate interest and facilitate comprehension, which the developed mobile game successfully accomplishes by incorporating local cultural elements and gamified collaboration through the TGT model. These findings support the broader educational premise that quality learning media significantly influences the overall quality of education [32]-[34]. In summary, this study contributes to the growing body of evidence that innovative, culturally contextualized, and interactive learning media are vital for improving foundational literacy skills in elementary education, especially vocabulary comprehension. It also emphasizes the necessity for teachers to adopt creative and adaptive teaching tools to meet the evolving needs of their students.

This study introduces an innovative approach in developing interactive learning media through mobile games. One effective strategy for enhancing learning quality is the implementation of educational mobile games [35]. The concept of mobile game-based learning centers on a careful and deliberate game development process that integrates theoretical knowledge within engaging and interactive gameplay, thereby offering practical

solutions to real-world educational challenges [36], [37]. Such media provides an interactive and enjoyable learning experience that captures students' attention and fosters their active engagement throughout the learning process. Equally important is identifying optimal strategies to maximize the effectiveness of mobile games within educational settings [38]. Prior research has demonstrated that mobile game usage positively influences student motivation and academic performance [39], [40]. A key advantage of this medium is its flexibility and accessibility, allowing students to engage in learning anytime and anywhere using devices such as smartphones or tablets. This flexibility enables independent learning outside the traditional classroom environment, offering students the opportunity to explore subject matter at their own pace, particularly when faced with demanding schedules [41]. Nevertheless, the potential for overreliance on digital devices must be carefully managed. Therefore, the integration of educational mobile games should be complemented by direct instructional activities and social interactions to maintain a balanced and holistic educational experience [42].

Raising the local story of *Lawang Sewu* as the content of the material in the mobile game is a novelty that until now has rarely been integrated in the context of vocabulary learning at the elementary school level. Learning that is associated with the context of students' daily lives in the form of local wisdom will give students a good understanding of learning [43]-[45]. Integrating local wisdom into the learning process helps students recognize cultural identity, foster a sense of patriotism, and develop character that respects noble societal values. It also makes learning more contextual, relevant, and meaningful to students' lives [46], [47]. In addition to bringing elements of local wisdom as a contextual approach, this research also combines the Teams Games Tournament (TGT) cooperative learning model, which has not been widely used simultaneously in digital-based media for low-grade students (grade II SD). This combination of technology, local culture, and active learning strategies results in an innovative and applicable approach while providing a solution to the limitations of monotonous and less attractive media for students. Creating a varied and attractive learning atmosphere is very important [48]. With a focus on developing vocabulary understanding in narrative text, this media not only supports students' language skills but also instills cultural values early on. Various research shows that the use of technology, especially educational game-based applications, has great potential to support cultural preservation, moral education, and the development of technology-based learning [49].

The *Lawang Sewu mobile game* learning media developed for elementary school students is designed with a systematic and interesting structure to help students understand the meaning of vocabulary in narrative text. The game design includes elements such as an attractive visual appearance, clearly formulated learning objectives, contextualized storyline, vocabulary spelling embedded through games, evaluative questions, and easy-to-understand usage guidelines. These components are designed so that teachers and students can use the media optimally, thus supporting the smooth learning process. This is in line with the findings of Fabiola & Patintingan which show that interactive media such as *Game Mobile* can increase student participation through the presentation of material that combines text and illustrations, Students can read the vocabulary, listen to how the vocabulary is said, and see examples or pictures of new vocabulary so that students can understand the meaning of the vocabulary in the media [50].

One of the main advantages of the developed learning media is that it is based on the *Teams Games Tournament (TGT)* learning model that seeks to close the academic gap by providing appropriate support to students. The Teams Games Tournament (TGT) cooperative learning model is considered effective in supporting students' learning process because the game activities applied are able to increase the spirit of learning. In addition, this approach provides space for students to interact and exchange ideas actively in solving various problems during learning [51]. It also contributes to creating a supportive learning environment while encouraging students to continuously deepen their understanding [52].

The quality of the learning media, along with evaluation results from media experts, material experts, and feedback from teachers and students, demonstrates that the *Lawang Sewu mobile educational game* is highly effective in improving vocabulary comprehension in narrative texts. This media was systematically designed, combining a structured game flow with appealing visual illustrations to create a more interactive and enjoyable learning experience. The incorporation of the local story of *Lawang Sewu* provides students with a familiar context, making it easier for them to grasp the meanings of vocabulary encountered in reading. Expert validation confirmed that the media meets pedagogical criteria, receiving a high feasibility score. Teachers also reported an increase in students' interest and understanding during the learning process. These findings support the use of this mobile game as an innovative alternative learning tool in the classroom. This is further corroborated by the significant difference found between students' pretest and posttest vocabulary comprehension scores after using the media. The improvement is reinforced by N-Gain values of 0.71 and 0.77, which fall into the high category. This indicates that local story-based educational games can effectively enhance students' vocabulary comprehension skills in narrative texts.

The development of the *Lawang Sewu mobile game media* presents an innovative solution to address the lack of contextual and engaging learning media available to students. By combining elements of local storytelling with a structured educational game, this media not only improves students' vocabulary skills but also promotes inclusive learning. The game is designed to be accessible for students with varying levels of

comprehension, encouraging active and meaningful engagement. This research contributes significantly to the development of culturally relevant and learner-centered educational media and opens avenues for further advancements in digital language education.

4. CONCLUSION

The results of this research, based on a teacher needs analysis conducted through questionnaires, indicate that the development of the Lawang Sewu Mobile Game media using the Teams Games Tournament (TGT) learning model offers an innovative solution to improve the vocabulary interpretation skills of grade II students at SDN Bringin 02 Semarang in narrative texts. The Lawang Sewu mobile game media is designed by integrating visual and narrative elements into an engaging and structured game format. The media feasibility assessment, conducted through validation by media experts and material experts, shows that the Lawang Sewu Mobile Game media is highly suitable for use in learning, with media validation scoring 95% and material expert validation scoring 94%, both categorized as very feasible. Effectiveness tests of the learning media revealed a significant increase in students' average scores: a 34.67-point improvement in the small group trial and a 35.38-point improvement in the large group trial. The magnitude of this effect is further demonstrated by the average gain (N-Gain) scores of 0.77 (high category) for the small-scale trial and 0.71 (high category) for the large-scale trial. Based on these results, it can be concluded that the Lawang Sewu mobile game media, developed using the Teams Games Tournament model, is effective in enhancing vocabulary comprehension among lower-grade students (grade II). Furthermore, this media can serve as a model for the future development of interactive learning tools that combine modern pedagogical approaches with local cultural heritage. Overall, the Lawang Sewu mobile game media shows great potential to create inclusive, enjoyable, and meaningful learning experiences while contributing positively to the cognitive ability of elementary students to interpret vocabulary, especially in the lower grades.

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