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GAME-BASED LEARNING AS AN INSTRUCTIONAL STRATEGY FOR ENHANCING JAVANESE LANGUAGE SKILLS IN JEPARA ELEMENTARY SCHOOLS

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ABSTRACT

Objective: This study aims to develop and implement a game-based learning (GBL) model to improve elementary school students' proficiency in formal Javanese (Krama), by integrating local cultural contexts through the system of linguistic politeness.

Research Design & Methods: This study employed a quantitative pre-experimental approach with a one-group pretest–posttest design involving elementary school students in Jepara. Research instruments included tests of Krama vocabulary mastery, understanding of speech levels, and speaking skills, as well as an observation sheet for student engagement. The intervention was conducted through collaborative and rapid-response games, accompanied by sentence translation activities and individual oral evaluations. Data were analyzed using descriptive statistics and a paired-sample t-test.

Findings: The results showed consistent improvement across all aspects of Krama Javanese language proficiency, with average scores increasing from 59.2–61.8 (pretest) to 79.6–82.5 (posttest). The paired t-test confirmed a significant difference ($t=8.022$; $df=11$; $p<0.001$), thus proving that GBL is effective in improving vocabulary mastery, discourse comprehension, and speaking skills.

Contributions: This study offers pedagogical and practical contributions to the development of an interactive, contextual, and student-centered regional language learning model, while also strengthening the integration of local cultural values into learning practices.

Novelty: The novelty of this study lies in the integration of collaborative game elements with the cultural context of formal Javanese language usage within a quantitative pretest–posttest design that also considers student engagement as a factor contributing to the improvement of language proficiency.

Keywords: Game-Based Learning; Formal Javanese; Language Skills

JEL codes: I21; I29; Z10
Article type: research paper

INTRODUCTION

Technological advancements and changes in modern educational practices have driven a shift in the learning paradigm from traditional methods toward more interactive and contextual approaches. In the context of language learning, particularly regional languages with strong cultural elements such as Javanese, traditional teaching methods often fail to meet the needs and interests of today's students, who are more familiar with digital media and games. This can lead to low student motivation toward learning the language as well as a decline in language proficiency within social and cultural contexts relevant to students' daily lives. This situation can diminish students' motivation to learn and affect their ability to use the language appropriately in everyday social and cultural contexts. Monotonous and non-contextual learning tends to disengage students, thereby negatively impacting their learning outcomes (Hwang et al., 2023).

The learning of regional languages does not focus solely on mastering vocabulary and language structures, but also encompasses the process of internalizing cultural values and understanding patterns of social interaction that reflect norms and hierarchies within society (Hennebry-Leung & Lamb, 2024). In Javanese, for example, there is a complex system of speech levels that serves as an expression of respect and politeness in interpersonal communication. Mastering this aspect requires learning strategies that not only emphasize linguistic forms but also fully integrate cultural context. Students are expected to understand not only how language is used, but also when and in what situations it is used appropriately. An approach that links language to students' cultural identities and social experiences can also enhance engagement and motivation, making the learning process more meaningful and relevant to their daily lives.

Innovative and contextual approaches are needed to address the various challenges in regional language learning, one of which is Game-Based Learning (GBL) (Moxigul, 2026). This approach frames learning activities as purposefully designed games with clear learning objectives, thereby creating a more engaging, interactive, and enjoyable learning environment for students. Through GBL, students do not merely act as recipients of information but are actively engaged in the learning process through hands-on experiences that encourage participation and exploration. Additionally, the use of game elements such as challenges, rules, and feedback can enhance learning motivation and help students understand the material more deeply. In the context of language learning, this approach also allows students to practice language use in more realistic and meaningful situations, thereby supporting the optimal development of language skills.

More generally, the game-based learning approach has proven effective across various subject areas and in the development of basic skills at the elementary school level. For example, in physical education, the use of game-based learning models can improve basic manipulative motor skills, indicating that this method can be effectively used to develop students' motor skills while increasing their participation and active engagement (Satria et al., 2024). The development of Android-based educational games has been shown to increase students' interest in mathematics, thereby positively impacting their learning activities (Sarifah et al., 2022). Similarly, a study on teaching computer science terminology to elementary school students confirms that game-based learning not only motivates but also improves academic achievement and material retention for children (Kaldarova et al., 2023).

Particularly in the field of language learning, gamification or the integration of game elements into language learning contexts has been shown to enhance student engagement, motivation, and academic performance. Gamification fosters key skills such as problem-solving, collaboration, and communication, which are essential for language learning. With higher levels of active engagement, students tend to be more motivated and are better able to retain language material (Thurairasu, 2022). Furthermore, language learning using computer games has shown significant results in improving English speaking skills among ESL students, indicating the potential of this method for regional language learning as well, such as Javanese (Al-Jamili et al., 2024).

Moxigul (2026) indicates that the use of games in language learning can help students overcome the motivational barriers that typically arise in conventional methods. According to a systematic review of the literature on game-based language learning, this approach not only enhances motivation but also fosters higher levels of communication competence and cognitive engagement compared to passive content delivery. This approach offers an interactive context, instant feedback, and a more meaningful learning environment, which collectively facilitate the language acquisition process.

This study focuses on the implementation of a game-based learning model to improve elementary school students' Javanese language proficiency. This approach not only emphasizes linguistic aspects but also aims to enhance student motivation and engagement through interactive and meaningful learning experiences. Through the integration of educational games, students can understand and practice cultural values, particularly "unggah-ungguh basa," in the context of daily life. This study aims to develop and implement an effective learning model while contributing to the development of interactive technology-based regional language learning media. The novelty of this study lies in its integration of game elements, local cultural context, and a pretest–posttest quantitative evaluation that also takes into account students' overall engagement.

LITERATURE REVIEW

Games-Based Learning

Game-based learning (GBL) is a learning approach that uses games as a means to effectively achieve educational goals. Lesser (2020) defines game-based learning as the process of adapting educational concepts into game structures to facilitate learning, often using digital media and video games. This approach has been extensively studied and proven effective in engaging students and motivating them to learn complex concepts and skills, such as musical concepts in elementary school settings. GBL is also described as a teaching approach that integrates game elements to enhance student motivation, engagement, and academic performance. For example, customized game-based teaching tools have been shown to improve vocabulary and grammar skills in second-language learners while fostering a positive attitude toward learning (Rajendran et al., 2024).

Game-based learning is recognized as a versatile pedagogical strategy that can be implemented through digital or non-digital games in various contexts, ranging from basic mathematics education to language acquisition. This strategy draws on various theoretical foundations such as situational learning and sociocultural theory, emphasizing contextual and meaningful language practices that foster skills such as collaboration, knowledge transfer, and higher-order thinking (Debrenti, 2024; Yang & Li, 2024). Games allow students to learn through direct experience, where they can test their understanding, receive instant feedback, and repeatedly correct mistakes in a non-pressured environment. This supports various learning styles—visual, auditory, and kinesthetic—making learning more inclusive and adaptable to students' needs (Strijbos et al., 2015). Thus, GBL not only enhances cognitive aspects but also simultaneously develops affective and psychomotor aspects.

The success of implementing games-based learning is largely determined by game design that aligns with learning objectives. Well-designed games can seamlessly integrate learning content with game mechanics, ensuring

that students not only play but also gain a deep understanding of the concepts being taught. Level of engagement, ease of use, and content relevance are key factors in ensuring the effectiveness of this approach. Additionally, through simulations and contextual representations, games can help make abstract concepts more concrete, making them easier for students to understand (Connolly et al., 2012).

Javanese Language Learning

The Javanese language serves not only as a means of communication but also as a representation of cultural values that embody ethical norms and a strong social hierarchy. This is reflected in the system of speech levels—such as ngoko, krama madya, and krama inggil—which are used contextually based on social relationships, age, and the status of the conversation partner. Through the use of these speech levels, students indirectly learn about etiquette, respect, and sensitivity to their social environment from an early age. Thus, the teaching of Javanese in elementary school plays a strategic role not only in linguistic aspects but also in character development and the internalization of local cultural values. The integration of this learning is crucial to ensuring the sustainability of cultural heritage amidst the tide of globalization, while simultaneously fostering a generation with a strong cultural identity and polite social behavior. This aligns with the findings of Khuzaefi (2019) research, which indicates that regional languages play a significant role in the character development and cultural identity of students.

In practice, learning Javanese involves several linguistic components, including vocabulary, grammar, pronunciation, and, most importantly, an understanding of unggah-ungguh basa (speech levels). These components make Javanese relatively complex compared to other languages taught in schools. Students are required not only to understand the meaning of words but also to adapt their language use based on social context, such as age, status, and relationships. This complexity often poses a major challenge in the learning process, especially for young students who are still developing their linguistic competencies (Safitri & Suyitno, 2023).

Research by Utami and Rosyidi (2025) shows that students tend to prefer using ngoko (the informal register) over krama because of its simplicity and frequent use in everyday communication. Limited exposure to krama, both at school and at home, contributes to students' poor proficiency in the polite form of the language. Consequently, although students may recognize various speech levels in theory, they often struggle to apply them appropriately in real-life situations. This gap between knowledge and practice highlights the need for a more contextual and practice-oriented learning approach.

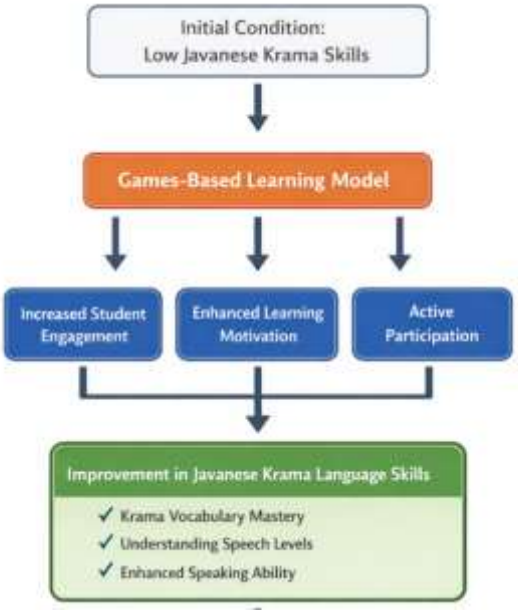
The effectiveness of Javanese language learning is greatly influenced by teaching methods and learning materials. Traditional teaching approaches that rely heavily on memorization are often considered unengaging, leading to low student motivation. The use of interactive and culturally relevant media, such as songs or games, can significantly improve students' understanding and retention of Javanese language concepts, particularly in distinguishing between *ngoko* and *krama* (Aisha & Wiranti, 2025). Therefore, innovative teaching strategies are crucial for addressing students' learning difficulties and creating more meaningful and engaging learning experiences in elementary school.

Conceptual Framewok

The flowchart framework in this study illustrates the systematic relationship between the implementation of a game-based learning model and improvements in students' Javanese Krama language proficiency. The framework begins with the identification of the initial conditions, in which students tend to have low proficiency in Javanese Krama. This is due to conventional teaching methods that are unengaging and provide limited opportunities for active language practice. The next stage is the implementation of the game-based learning model as the primary intervention. In this phase, learning activities were designed using interactive games that combined elements of vocabulary practice, understanding of speech levels (unggah-ungguh basa), and speaking practice in Krama. Once implemented, the model influenced several important mediating variables, including:

- Student engagement, as games create a fun and interactive learning environment
- Learning motivation, as students feel more engaged and challenged
- Active participation, as students are directly involved in learning activities

These mediating factors play a crucial role in facilitating the learning process and reinforcing students' understanding and use of Javanese Krama. Consequently, the final stage of the flowchart indicates an improvement in Javanese Krama language proficiency, which includes:



The flowchart framework emphasizes that the success of game-based learning models does not occur immediately, but rather through the enhancement of internal learning factors such as motivation and engagement. This indicates that effective language learning requires not only appropriate teaching methods but also active student engagement. Thus, this framework supports the assumption that interactive, student-centered learning models are crucial for improving linguistic competence and cultural understanding in Javanese language education.

Research Hypotheses

Based on the conceptual framework, the hypotheses of this study are formulated as follows:

- Main Hypothesis (H1):

  There is a significant effect of the implementation of a games-based learning model on improving Javanese language skills in elementary school students.

- Null Hypothesis (H0):

  There is no significant effect of the implementation of a games-based learning model on improving Javanese language skills in elementary school students.

- Partial Hypotheses:
  H1a: Games-based learning significantly improves students' vocabulary mastery.
  H1b: Games-based learning significantly improves students' understanding of speech levels *(unggah-ungguh basa)*.
  H1c: Games-based learning significantly improves students' speaking skills.

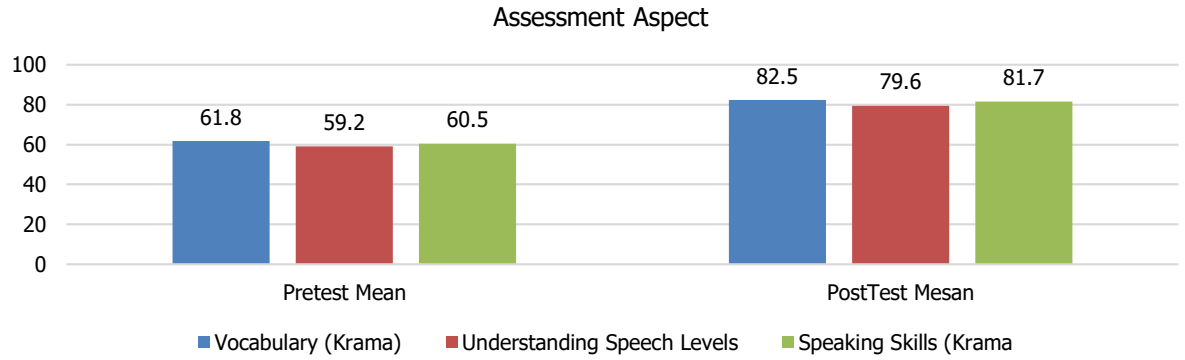
METHODS

This study employed a quantitative approach with a pre-experimental design, specifically a one-group pretest–posttest design. This design was chosen to allow the researcher to assess the students' initial conditions before the intervention and to evaluate the changes that occurred following the intervention. The research subjects were elementary school students in Jepara who were taking Javanese language classes. The study involved 30 students selected using a purposive sampling technique, namely by choosing students who met the criteria of actively participating in Javanese language learning and had comparable baseline abilities based on teacher recommendations. The instrument used was a Javanese language proficiency test covering three main aspects: vocabulary mastery, understanding of speech levels *(unggah-ungguh basa)*, and speaking skills. Additionally, an observation sheet was used to identify students' engagement levels during the learning process. The research procedure was carried out in three main stages: (1) administering a pretest to measure students' initial proficiency, (2) implementing a game-based learning model over several sessions, and (3) administering a posttest to measure proficiency gains following the intervention. The data obtained were analyzed using descriptive and inferential statistics, including a paired t-test to determine the significance of differences before and after the intervention. Furthermore, simple linear regression analysis was used to determine the magnitude of the independent variable's influence on the dependent variable. The entire data analysis process was conducted using the Statistical Package for the Social Sciences (SPSS) software.

RESULT

Descriptive Statistics

A comparison of pretest and posttest scores revealed a significant improvement in students' proficiency in formal Javanese following the implementation of a game-based learning model. Prior to the intervention, students' proficiency in the three assessed areas—formal vocabulary, understanding of speech registers, and speaking skills—remained in the moderate category, with relatively consistent average scores. However, after the intervention, all aspects showed a significant increase, as evidenced by a consistent rise in average scores. This indicates that the use of games in learning creates a more engaging, interactive, and contextual learning environment, thereby encouraging students to be more actively involved in the learning process. Furthermore, the largest improvement in speaking skills suggests that this approach is effective in training the direct use of language within real-world communication contexts. Thus, these results confirm that game-based learning models not only enhance students' conceptual understanding but also strengthen practical skills in using Javanese Krama with greater confidence and accuracy.



Based on the pretest and posttest results, there was a significant improvement in three assessment areas: Vocabulary (Krama), Understanding Speech Levels, and Speaking Skills (Krama). In the pretest phase, the average scores ranged from 59.2 to 61.8, with the lowest score in the Understanding Speech Levels category (59.2) and the highest in Vocabulary (61.8). After the instruction or intervention, posttest results improved consistently across all aspects, reaching 82.5 for Vocabulary, 79.6 for Understanding Speech Levels, and 81.7 for Speaking Skills. This increase of approximately 20 points in each aspect indicates that the implemented instruction was effective in improving participants' mastery of formal vocabulary, their comprehension of speech levels, and their speaking skills overall.

The data shows that all aspects of proficiency in Javanese Krama have improved significantly following the implementation of the game-based learning model. This improvement is evident not only in vocabulary comprehension and linguistic etiquette but also in the ability to construct sentences according to Krama rules, the appropriate use of speech registers in social contexts, and fluency in speaking during dialogue practice. The game-based model encourages active student engagement through a fun, competitive, and collaborative learning environment, thereby reducing the fear or awkwardness associated with using Javanese Krama, which has long been considered difficult. Additionally, the game's mechanics, which require quick responses and contextual problem-solving, help students internalize language structures more naturally. Consequently, learning is no longer passive and teacher-centered but transforms into an interactive process that strengthens students' understanding, skills, and confidence in using Javanese Krama appropriately and politely in daily life.

Inferential Statistics

Based on the learning process implemented, the activity began with the presentation of material to establish students' foundational understanding, followed by the "clap boom clath" game, in which students paired up and faced each other. Each game instruction involves a specific movement, and during the "clath" phase, students race to pick up a quiz card to be used in the activity of translating sentences from Indonesian into formal Javanese. This activity is repeated as practice. Afterward, an evaluation is conducted through individual oral tests to measure the extent of improvement in mastery of formal Javanese vocabulary.

The hypothesis was tested using a paired samples t-test to determine whether the improvement in students' proficiency in formal Javanese following the implementation of the game-based learning model was statistically significant. This test was chosen because the data analyzed came from the same subjects—specifically, pretest scores (before the intervention) and posttest scores (after the intervention)—allowing the researcher to measure changes more accurately for each individual. Conceptually, the paired t-test aims to test whether there is a significant difference in means between two related conditions. In this study, these conditions are the students' initial proficiency before the implementation of the game-based learning model and their final proficiency after the

model was implemented. Thus, this test not only examines whether there is a descriptive improvement but also confirms whether that improvement is statistically significant.

The hypotheses proposed in this study are: H0 (null hypothesis), which states that there is no significant difference between the pretest and posttest scores, and H1 (alternative hypothesis), which states that there is a significant difference between the two. The test was conducted at a significance level of α = 0.05, which means a tolerable error rate of 5%. If the significance value of the test result is less than 0.05 or the calculated t-value is greater than the critical t-value, then H0 will be rejected. The results of the paired t-test calculations, including the mean difference, standard deviation, standard error, t-value, degrees of freedom, and confidence interval, are presented in the following table. This table provides a more detailed overview of the magnitude of the difference between the pretest and posttest scores and their significance levels.

Paired Samples Test

		Paired Differences					t	Df	Sig. (2-tailed)
		Mean	Std. Deviation	Std. Error Mean	95% Confidence Interval of the Difference Lower	Upper			
Pair 1	pretest – postest	-4.66667	2.01509	.58171	-5.94700	-3.38634	-8.022	11	.000

Based on the results of the paired t-test in the table above, the calculated t-value is 8.022 with degrees of freedom (df) = 11. This value is greater than the critical t-value of 1.796 at a significance level of α = 0.05. Additionally, the significance value (Sig. 2-tailed) is 0.000, which is less than 0.05. Therefore, the null hypothesis (H0) is rejected and the alternative hypothesis (H1) is accepted, leading to the conclusion that there is a significant difference between the pretest and posttest scores. The mean difference of -4.66667 indicates that the posttest scores are higher than the pretest scores. This is further supported by the 95% confidence interval ranging from -5.94700 to -3.38634, which does not include zero, thus indicating that the observed difference is consistent and significant. Overall, these results demonstrate that the game-based learning model has a significant impact on improving students' proficiency in Javanese Krama, in terms of vocabulary, comprehension of speech levels, and speaking skills.

DISCUSSION

The findings of this study indicate that the implementation of game-based learning has a significant positive impact on improving students' Javanese language proficiency, particularly in terms of vocabulary, speaking skills, and understanding of formal language usage. This improvement is reflected not only in test results but also in increased active participation and enthusiasm among students during the learning process. A fun and interactive learning environment makes students more willing to try and less afraid of making mistakes, allowing the language acquisition process to occur more naturally. This aligns with the research by Liu et al., (2025) which shows that game-based learning, particularly digital-based learning, has a significant influence on improving language learning outcomes through a more student-centered approach.

Game-based learning has proven effective in addressing the main challenges in Javanese language instruction in elementary schools, namely low student motivation and engagement resulting from conventional and monotonous teaching methods. Through games, students are not merely passive recipients of information but actively engage in language exploration and practice. Game-based activities provide opportunities for repetition in a fun context, which is a key principle in language acquisition. These findings are supported by Chowdhury et al., (2024) who state that digital game-based learning is effective in improving vocabulary mastery through a constructivist approach and active learning experiences. Ling & Aziz (2022) also confirm that game-based strategies can significantly improve motivation and vocabulary mastery among elementary school students.

Culturally speaking, the improved understanding of Javanese language etiquette is a key finding of this study, as it demonstrates that game-based learning impacts not only linguistic aspects but also the understanding of social and cultural values. Through contextual and collaborative games, students can practice language use in accordance with specific social situations, thereby deepening their understanding of Javanese language norms of politeness and hierarchy. This aligns with the principle of constructivism, which emphasizes that knowledge is constructed through direct experience. Alotaibi (2024) research also indicates that game-based learning significantly contributes to improvements in students' cognitive, social, and interactive skills. Additionally, Bouzaiane and Youzbashi (2024) note that the use of digital games can enhance long-term language retention and comprehension through meaningful interaction.

Based on the implementation aspect, this study offers practical contributions in the form of stages or roles that can serve as a guide for teaching. Teachers act as facilitators who design and manage games in accordance with learning objectives, while students act as active participants engaged in interaction and collaboration. The learning stages include: (1) planning games relevant to core competencies, (2) conducting interactive and communicative games, (3) reflection to reinforce understanding, and (4) performance-based evaluation. These

findings are supported by Esteban (2024) who emphasizes that game elements such as interaction, challenges, and rewards are key factors for success in game-based language learning.

CONCLUSION

Based on a series of empirical findings and analyses, this study concludes that the implementation of game-based learning (GBL) significantly improves elementary school students' proficiency in formal Javanese, both overall and in terms of vocabulary, understanding of formal language conventions, and speaking skills. Through a one-group pretest–posttest pre-experimental design, the results show a consistent and significant increase in scores following the intervention, supported by a paired t-test confirming the positive impact of GBL on learning outcomes. This approach is not only effective in enhancing linguistic competence but also reinforces understanding of the socio-cultural values inherent in the Javanese language's speech-level system. An interactive, enjoyable, and collaborative learning environment has been proven to enhance students' motivation, engagement, and confidence in using the Krama register appropriately. Thus, GBL holds pedagogical and practical significance as a contextual, meaningful, and student-centered innovation in regional language learning.

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