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The Influence of Traditional Engklek Games on Improving Interrogative Sentence Writing Skills in Elementary School Students: An Experimental Study

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ABSTRACT

Purpose of the Study: Elementary education in Indonesia continues to face significant challenges in developing students' writing skills, particularly in constructing correct interrogative sentences. To address this issue, this study explores the use of traditional games, specifically the engklek game, as an innovative pedagogical tool to enhance interrogative writing abilities among elementary school students.

Methodology: This research employed a quasi-experimental design with a quantitative approach, involving 60 fifth-grade students divided into an experimental group (using the engklek game) and a control group (using conventional instructional methods). Data were gathered through pre-test and post-test assessments consisting of 20 multiple-choice questions targeting interrogative writing skills. Statistical analysis was conducted to measure learning gains and treatment effects.

Main Findings: The results demonstrated that students in the experimental group achieved a significantly higher post-test average score (19.33) compared to the control group (11.45). The N-Gain score analysis revealed a moderate improvement (0.72) for the experimental group, while the control group exhibited only low improvement (0.35). These findings affirm that integrating the engklek game can meaningfully boost students' ability to construct interrogative sentences.

Novelty/Originality of this Study: This study introduces a novel intersection between traditional cultural practices and modern pedagogical needs by demonstrating how the engklek game typically associated with physical activity can be repurposed as an effective literacy development tool. It offers new insights into culturally responsive teaching strategies, advocating for the systematic integration of indigenous games into formal curricula to enhance engagement, contextualize learning, and improve academic outcomes in foundational language skills.

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1. INTRODUCTION

Traditional games are an inseparable part of the cultural heritage of Indonesian society. In various regions, these games are not just a form of entertainment but also a means to instill social, cultural, and even educational values [1]. One well-known traditional game in Indonesia is "engklek". This simple game utilizes the ground or floor as a playing medium and is usually played by children using small stones as the playing

tools. As a game that has been passed down through generations, engklek carries a deeper meaning than mere entertainment; it can serve as a tool to support the development of various fundamental skills, including motor skills, social skills, and even cognitive skills. One of the core skills in elementary education is writing [2]. Good writing skills depend on technical abilities in constructing words and sentences and the ability to express ideas and information clearly and effectively. Writing skills are crucial for developing children's critical thinking and expressive abilities at the elementary school level. One component often taught in writing skills is constructing accurate question sentences. Question sentences are one of the most essential forms of sentences in the learning process, as they help to probe more profound knowledge and facilitate interaction between teachers and students [3]. However, teaching writing skills, especially question sentences often faces several challenges in terms of the teaching methods used and the student's interest in the material.

As an essential part of the education system, writing skills are a foundation that supports the development of students' critical and analytical thinking abilities from an early age [4]. In Indonesia, writing instruction in elementary schools is typically limited to basic writing techniques, such as forming letters and constructing grammatically correct sentences. However, proper writing skills go beyond technique. This involves communicating ideas, information, and even questions effectively and clearly [5]. In this context, writing question sentences plays a significant role. Question sentences serve not only as a tool for gathering information but also as a means to develop curiosity, analytical skills, and understanding of the studied topics. However, despite the importance of writing question sentences, many students struggle to master them. One of the main challenges is the lack of appeal in the teaching methods used. Monotonous methods, such as lectures or rigid written exercises, often fail to engage students in learning [6]. This results in low motivation and poor student outcomes in writing skills. The limitations of these conventional methods highlight the urgent need for more innovative and enjoyable approaches. One way to address this challenge is by integrating traditional games, which have long been known to society, into elementary school learning. Traditional games like engklek, which have been part of Indonesian culture for centuries, provide entertainment and can also be an effective tool to support learning [7], [8].

The game of engklek itself, usually played by children with small stones as aids, involves elements that require gross motor skills, concentration, and teamwork [9], [10]. Moreover, engklek also encourages participants to use imagination, creativity, and strategy during play. These elements are highly relevant to teaching writing skills, particularly in writing question sentences. Using games as a learning medium makes students more active in their learning and helps them enhance their creativity in constructing more complex and meaningful sentences [11]. However, despite the growing awareness of the importance of games in learning, there is still very little research examining the impact of traditional games, such as engklek, on writing question sentences. Most existing studies focus on using games to improve math or English skills [12]. Meanwhile, teaching writing question sentences in the context of traditional games is still rarely researched, even though question sentences play a crucial role in developing communication and critical thinking skills. Therefore, this study aims to fill this gap by exploring the impact of playing engklek in improving elementary school students' ability to write question sentences [13], [14].

This study will address several relevant aspects, including how the game of engklek can develop students' ability to write question sentences. As part of language instruction, writing question sentences is often seen as one of the more difficult skills for students, especially at the elementary school level. In Indonesian language teaching at elementary schools, question sentences are taught in terms of grammatical structure and in developing an understanding of the topics being studied. To achieve this, students need to be trained to write grammatically correct question sentences and understand how those sentences can be used to gather further information, question assumptions, and foster deeper discussions.

The urgency of this research lies in finding more effective and engaging teaching methods for students. The game of engklek has the potential to stimulate students' creativity and curiosity, which are essential in learning writing skills. Through this game, students can be trained to understand the concept of question sentences in a more enjoyable and interactive environment. The game of engklek also involves physical and social aspects that allow students to collaborate, share ideas, and learn cooperatively [15]. By integrating traditional games into the teaching of writing question sentences, a more dynamic and enjoyable learning environment can be created, improving student learning outcomes. One challenge educators face is keeping students' attention and interest throughout the learning process [16]. Generally, elementary school students tend to have short attention spans and prefer to learn through fun and interactive activities. The use of traditional games such as engklek can be a solution to this challenge. Furthermore, this game can stimulate students' social skills, such as collaborating in groups, expressing opinions, and solving problems creatively. Therefore, it is essential to explore the potential of the game of engklek further in teaching how to write question sentences [17].

The research problem of this study is to explore how the traditional game engklek influences the improvement of writing question sentences in elementary school students. This study aims to identify whether the application of engklek can improve students' understanding of the structure of question sentences and enhance their ability to construct accurate and meaningful question sentences. This study will also investigate

whether the game of engklek can help students become more active and creative in the learning process and how this game affects social interaction and cooperation among students. The main objective of this study is to explore the impact of the traditional game engklek on improving elementary school students' ability to write question sentences. This research aims to test whether this game can effectively enhance students' writing skills and identify the factors that influence the success of applying the game in learning. Furthermore, this study also aims to provide educators with recommendations on utilizing traditional games in the classroom to improve students' writing skills.

Previous studies on using games in education show that games can increase student motivation, engagement, and learning outcomes. Several studies have also shown that traditional games can help students develop social and cognitive skills. However, little research still examines the impact of conventional games on teaching writing skills, particularly question sentences. Therefore, this study will fill this gap by examining how the game of engklek can improve elementary school students' ability to write question sentences. The gap in the existing literature is the lack of studies examining the application of traditional games in teaching writing question sentences in elementary schools. Most research has focused more on the impact of games in teaching mathematics, English, or other skills, while teaching writing skills, especially question sentences, has received limited attention. By examining the use of traditional games in writing instruction, this study can significantly contribute to the education literature, especially in Indonesia's education context. The novelty of this study lies in the use of engklek, which is part of Indonesia's cultural heritage, in the context of teaching writing question sentences. This study also provides a new perspective on how traditional games can be integrated into the curriculum in elementary schools to improve writing skills. Thus, this study is expected to significantly contribute to developing more innovative and effective teaching methods at the elementary school level and introduce a new approach to teaching writing skills that can enhance student motivation and learning outcomes.

2. RESEARCH METHOD

This study uses a quasi-experimental design combined with a quantitative approach [18]. The quasi-experimental design was chosen because it is highly suitable for situations where randomization or participant random assignment cannot be performed, as in this study, which was conducted in a natural school environment. The quantitative approach was selected because it provides the ability to generate objective data that can be statistically analyzed, which is crucial for evaluating the cause-and-effect relationship between the applied intervention and students' literacy outcomes. Although the quasi-experimental design does not involve random assignment of participants, it still allows for a valid evaluation of the effectiveness of the intervention by comparing the results between the group receiving the intervention and the control group not receiving the intervention. This study can provide a clear picture of the impact of the traditional game engklek on improving students' ability to write question sentences. One advantage of this design is its applicability in real-world contexts where complete randomization is not always possible, such as in elementary school classrooms. The population in this study consists of 325 elementary school students located in Manding Timur II, Sumenep Regency, including 155 female students and 170 male students. The sampling technique used was purposive sampling, which allows the researcher to select samples that are considered relevant and meet the research criteria. Sixty fifth-grade students were selected as the study sample, with 30 students from class 5A (experimental group) and 30 from class 5B (control group). This sample represents the two groups that will be analyzed to assess the effect of the game engklek on improving students' ability to write question sentences in elementary school.

Data collection was done using a test instrument consisting of 20 multiple-choice items designed to measure students' understanding of question sentence structure. This test was administered at two different times: before the intervention (pre-test) and after the intervention (post-test), allowing for a more precise assessment of changes in students' question sentence writing skills. A pilot test of the instrument was conducted to ensure its validity and reliability, using appropriate statistical software to provide accurate and reliable results. The first procedure conducted in this study was a validity test using Pearson's product-moment correlation formula. The instrument was considered valid for further use in the study if the calculated correlation coefficient (r value) exceeded the critical value (r table). This validity test aimed to ensure that the instrument used in this study truly measures what it is intended to measure, namely, the ability to write question sentences. The validity test was performed using Annates version four software, which facilitated the comparison of the calculated correlation coefficient with the critical value at a 5% significance level. The degrees of freedom for the validity test were calculated using the formula df = N-2, where N is the total number of items in the test.

In addition to validity, a reliability test was also conducted to ensure that the instrument consistently measured question sentence writing skills. The reliability test used the alpha coefficient formula to assess the instrument's internal consistency. A high-reliability coefficient indicates that the instrument provides consistent results, which is crucial in research to ensure that the data collected is trustworthy and reliable. Once the validity and reliability of the instrument were confirmed, the next step was the normality test to ensure that the data

followed a normal distribution. The normality test was conducted using the Shapiro-Wilk test, which was chosen due to its ability to handle small sample sizes, as in this study. The Shapiro-Wilk test was implemented using IBM SPSS 25 software, and the test results showed the p-values that would be used to determine whether the data followed a normal distribution. If the p-value was greater than 0.05, the null hypothesis (H0), which states that the data follows a normal distribution, was accepted. Conversely, if the p-value was less than or equal to 0.05, the null hypothesis was rejected, indicating that the data did not follow a normal distribution.

In addition to normality, the study also conducted a homogeneity test to check whether the variances of the two groups the experimental and the control groups—were homogeneous. The homogeneity test was performed to ensure that the differences found between the experimental and control groups were not caused by significant differences in the initial variances between the two groups. The homogeneity test was also performed using IBM SPSS with Levene's test. The decision rule for the homogeneity test is similar to that of the normality test: if the p-value is greater than 0.05, the null hypothesis of homogeneity is accepted, meaning the variances between the groups are homogeneous. If the p-value is less than or equal to 0.05, the null hypothesis is rejected, indicating that the variances between the groups are heterogeneous. After the normality and homogeneity tests were completed, the next step was hypothesis testing using parametric or non-parametric statistics, depending on the results of the preliminary tests. If the data was normally distributed and the variances were homogeneous, the analysis continued with a t-test to compare the differences between the experimental and control groups. The t-test is used to test whether the means of the two groups differ significantly after the intervention. On the other hand, if the data was not normally distributed or the variances between the groups were not homogeneous, the Mann-Whitney U test was used as a non-parametric alternative. This test allows for comparisons between two groups without assuming normal distribution, which is essential to ensure that the analysis remains valid even if the data does not meet the parametric assumptions.

This study used the N-Gain test to measure the extent to which students' science literacy improved after the intervention. The N-Gain score provides a measurement of the change between the post-test and pre-test scores, allowing for the assessment of the effectiveness of the intervention in improving question sentence writing skills. The N-Gain score is calculated using a formula that accounts for the difference between pre-test and post-test values, adjusted for the difficulty level of the test, and provides an objective assessment of the extent to which students' understanding of the material has improved. Based on the calculated N-Gain scores, the improvement can be categorized into three levels: high, moderate, or low. According to Barone and Bresler, the N-Gain test is a valuable tool in educational evaluation because it provides a "value judgment" on the impact of an intervention on student learning outcomes [19]. Using the N-Gain test, this study can determine whether the game engklek significantly improves students' ability to write question sentences. The N-Gain test results are expected to provide essential contributions to evaluating the effectiveness of the applied intervention and help identify the most effective learning strategies for improving students' writing skills at the elementary school level.

3. RESULTS AND DICUSSION

This study used a quasi-experimental design to assess the effect of traditional hopscotch games on elementary school students' question-writing skills. This design allows for a comparison between groups receiving treatment (experimental group) and groups not receiving treatment (control group) in a controlled manner, even without complete randomization of participants. This design aims to evaluate the effects of interventions given in natural conditions without group randomization. Reliability testing is one of the critical stages in developing research instruments to ensure that the instrument can produce consistent and reliable data. In this study, reliability testing was conducted to assess the extent to which the test instrument, consisting of 20 multiple-choice items, provided consistent results when used repeatedly on the same population. This reliability test was conducted using Cronbach's Alpha, the most common method to measure the internal consistency of instruments involving Likert scales or test items.

Table 1. reliability test data results

Alpha Cronbach	N of Item
.655	20

Table 1 shows the results of the reliability test of this research instrument using a Cronbach's Alpha value of 0.655 for 20 items contained in the test. The calculated Cronbach's Alpha value provides information about the instrument's internal consistency level. In general, Cronbach's Alpha values ranging from 0.60 to 0.70 indicate an adequate level of reliability, although higher numbers (above 0.70) indicate stronger consistency. In this case, a value of 0.655 indicates that this test instrument is reliable enough to be used in this study. Although a Cronbach's Alpha value above 0.60 indicates an acceptable level of reliability, further research is still needed to ensure that the items in the instrument measure the intended concept, namely the skill of writing interrogative

sentences in elementary school students. This value also illustrates that this test instrument can be used for data collection in this study with acceptable consistency. The reliability test conducted in this study is critical because it ensures that the measurement results obtained are stable and reliable. This also provides a basis for further analysis without worrying that the fluctuations in the results are due to the inconsistency of the instrument itself. In other words, although there is variability in student performance, this test instrument can be trusted to measure changes that occur between the pre-test and post-test so that it can provide a valid picture of the impact of the traditional engklek game on students' interrogative sentence writing skills. Overall, the reliability test results indicate that the instrument used in this study, although not perfect, has an adequate level of internal consistency to evaluate the effect of treatment on students' writing skills.

Table 2. distribution of pre-test data for experimental and control classes

Data	Group	
	Experiment	Control
Lowest Score	3	4
Highest Score	19	19
Mean	9.36	9.09
Median	9.03	9.01
Mode	8	8
Standard of Deviation	3.55	3.02

In the early stages of this study, pre-test data were collected to assess the level of students' question writing skills before being given treatment. This pre-test data is essential because it provides an overview of the initial conditions of students' skills in both groups: the experimental group that received intervention through traditional engklek games and the control group that did not receive the treatment. By comparing the pre-test results in both groups, we can evaluate whether there is a significant difference between the two before the treatment begins. Table 2 presents the distribution of pre-test scores for the two groups. Table 2 shows the distribution of pre-test scores for both groups, with the lowest and highest scores, mean, median, mode, and standard deviation. In the experimental group, the lowest score obtained by students was 3, while the highest score was 19. In the control group, the lowest score was four, and the highest was 19. This shows that, although the lowest score in the experimental group was lower, the highest score limit in both groups was the same, which was 19, indicating that there were students with high writing skills in each group. The mean (average) value for the experimental group was 9.36, while for the control group, it was slightly lower, namely 9.09. This minimal difference indicates that both groups had relatively the same level of question writing skills before the treatment was given. This average value provides a general idea that both groups were at a similar skill level, which is essential to ensure that the post-test results can reflect the impact of the treatment given, not significant initial differences.

Furthermore, the median for the experimental group was 9.03, while for the control group it was 9.01. The median is the middle value that separates the data into two equal parts. The very similar median values between the two groups indicate that the distribution of scores in the two groups did not show significant differences in the position of the middle value. This is important because it suggests that both had a relatively balanced data distribution at the beginning of the study. In addition, the mode, which shows the most frequently occurring score, was 8 for both groups. This indicates that a score of 8 was the most commonly obtained score by students in both groups, indicating the dominant level of writing skills among students before the treatment. This also means that most students in both groups had lower skills than the highest recorded score. To assess the variation or spread of the data, the standard deviation was calculated, which shows how far the scores spread from the mean. In the experimental group, the standard deviation was 3.55, while in the control group, it was slightly lower, at 3.02. This shows that in the experimental group, the variation in scores was more significant, which can be interpreted as meaning that there is a broader difference in the interrogative sentence writing skills among students. Meanwhile, the control group had a slightly smaller variation, indicating that their scores were more concentrated around the mean. Although these differences exist, both show quite significant variations, meaning that there is diversity in the level of interrogative sentence writing skills in both groups, both in the experimental and control groups. Overall, the distribution of pre-test data in Table 2 provides a clear picture of the initial conditions of interrogative sentence writing skills in both groups. Both groups have relatively similar mean scores, medians, modes, and data variation characteristics. This shows that there was no significant difference between the two groups before the intervention, allowing the researcher to test the effects of the hopscotch game fairly and validly since both groups started from an equal starting point. The difference in the variation of scores (standard deviation) also provides an essential indication that although the average skills of students in both groups were similar, there is the potential for more significant differences to emerge after the treatment is given, which will be further analyzed at the post-test stage.

Table 3. distribution of post-test data for experimental and control classes

Data	Group	
	Experiment	Control
Lowest Score	14	10
Highest Score	27	18
Mean	19.33	11.45
Median	20	12
Mode	20	10
Standard of Deviation	3.75	3.21

In Table 3, the post-test scores show significant changes in the experimental group that received the treatment. The lowest score in the experimental group was 14, while in the control group, it was 10, indicating that although both had students with lower writing skills, the experimental group experienced a more significant improvement. The highest score in the experimental group was 27, while in the control group, it was only 18. This shows a substantial difference between the two groups after the intervention, where the experimental group showed a higher range of scores, indicating a more significant improvement in interrogative sentence writing skills. The mean (average) score for the experimental group was 19.33, while for the control group it was only 11.45. This difference indicates that the experimental group experienced a more significant improvement in their question writing skills after treatment. The higher mean score in the experimental group reflects that most students in this group obtained a more substantial improvement in their question writing skills, which could be due to the applied hopscotch game intervention. In contrast, the control group that did not receive treatment showed a much smaller improvement, which was reflected in the relatively low mean score. In addition, the median for the experimental group was 20, while for the control group, it was 12. The median, the middle value in a data distribution, shows that most students in the experimental group scored higher than those in the control group after treatment. This indicates that the experimental group improved their question-writing skills more successfully, which was also reflected in the mode value. The mode value in the experimental group is 20, indicating that the most frequent score in the experimental group is 20. Meanwhile, the mode value in the control group is 10, suggesting that most students in the control group are still at a lower skill level.

The standard deviation in the experimental group is 3.75, while in the control group it is 3.21. Although the standard deviations of both groups are relatively high, indicating variations in scores between students, the experimental group has slightly more variation in their scores. This may suggest that although most students in the experimental group experienced significant improvement, some students were still lagging or experienced less improvement than others. Meanwhile, the control group has a lower standard deviation, indicating that although this group did not receive treatment, the variation in their results was more centered around a lower mean value. Overall, the distribution of post-test data in Table 3 shows that the traditional hopscotch game significantly improves students' question-writing skills compared to the conventional learning received by the control group. The experimental group, which received intervention through hopscotch games, showed more significant improvement in their question writing skills, as reflected in higher mean, median, and mode scores than the control group. In addition, the differences in standard deviations between the two groups also provide insight into the variation in students' responses to the treatment, with the experimental group showing more significant variation but still having a higher mean. These results support the hypothesis that hopscotch games can improve students' question-writing skills and suggest that a game-based approach can be an effective learning method in elementary education.

Table 4. Average Results of N-gain

Group	N-Gain	Note
Experiment	0.72	Moderate
Control	0.35	Low

One of the methods used to measure the improvement of students' skills after the intervention in this study is using N-Gain. The N-Gain test is a valuable tool for assessing how much progress students achieve after being given a specific treatment by comparing the pre-test and post-test scores. The N-Gain score provides a clear picture of the effectiveness of the intervention in improving students' understanding or mastery of concepts. This study used the N-Gain score to evaluate how much the traditional engklek game can enhance elementary school students' question-writing skills. Table 4 presents the average N-Gain results for the two groups involved in this study: the experimental group that received the treatment (engklek game) and the control group that did not. The average N-Gain for the experimental group was 0.72, which is categorized as a moderate increase, while the average N-Gain for the control group was 0.35, which is classified as a low increase. These results indicate a clear difference in the level of improvement between the two groups. The moderate N-Gain

value in the experimental group reflects that most students in this group experienced a significant increase in their question writing skills after being given the hopscotch game treatment. This increase proves that the traditional hopscotch game has enormous potential to improve student writing skills, especially in constructing appropriate and meaningful question sentences. The use of hopscotch as a learning tool in this context has succeeded in stimulating students' interest and creativity, directly impacting their learning outcomes.

In contrast, the lower N-Gain value in the control group, which is 0.35, indicates that although students in this group also experienced a slight increase, the increased level is relatively low. This reflects that the conventional learning method applied to the control group did not significantly impact their question-writing skills. The limited increase in the control group may be due to the lack of innovation in the learning methods, which were not interesting enough to encourage significant involvement and improvement in students' skills. These results provide important insights into the effectiveness of using traditional games in education, especially in the context of writing skills in elementary schools. The higher N-Gain value in the experimental group indicates that game-based interventions, such as hopscotch, can significantly improve writing skills compared to conventional learning. This also suggests that traditional games can be an effective and enjoyable alternative to enhance student learning outcomes, which is essential to consider in developing teaching methods in elementary schools. Overall, the results obtained from this N-Gain support the research hypothesis that hopscotch games can improve interrogative sentence writing skills in elementary school students. The significant difference between the experimental and control groups indicates that this game provides a fun learning experience and effectively improves students' understanding of interrogative sentence structures. Therefore, this study strengthens the argument that integrating traditional games into the learning curriculum can provide significant benefits for developing students' writing skills, especially at the elementary school level.

In this study, to ensure the accuracy of the statistical analysis conducted, the first important step is to check the normality and homogeneity of the data obtained from the pre-test and post-test in both groups, experimental and control. Normality and homogeneity tests are crucial in determining the correct type of statistical test to use in further data analysis. The results of the Shapiro-Wilk test show the pre-test and post-test data in both groups. The Shapiro-Wilk test evaluates whether the data follows a normal distribution, which is the basic assumption for many parametric statistical procedures. Based on the results of the normality test recorded in the Shapiro-Wilk Table, the significance value (Sig.) for the pre-test in the experimental group is 0.077, which is greater than the significance limit set, which is 0.05. This means that the pre-test data in the experimental group is usually distributed. However, for the control group in the pre-test, the Sig. The value is 0.0355, which is smaller than 0.05, indicating that the pre-test data of the control group is not normally distributed. In the post-test, the results of the Shapiro-Wilk test showed that the data for the experimental group had a Sig. The value was 0.143, which was greater than 0.05, so the post-test data of the experimental group could be considered normally distributed. For the control group in the post-test, the Sig. The value was 0.244, also greater than 0.05, indicating that the post-test data in the control group were also normally distributed. Overall, although the experimental group showed a normal distribution at both measurement times (pre-test and post-test), the data in the control group for the pre-test showed a deviation from the normal distribution. However, because the post-test data of the control group showed a normal distribution, this allowed for further analysis.

After ensuring the data's normality, the next step is to conduct a homogeneity test to check whether the variance between the two groups (experimental and control) in the pre-test and post-test is homogeneous. The homogeneity test determines whether the data from the two groups have similar variability, which is a basic assumption for the use of parametric statistical tests, such as the t-test. Levene Statistic results show the homogeneity test results for the pre-test and post-test in both groups. For the pre-test, the significance value of Sig. is 0.338, which is greater than the significance limit of 0.05. This indicates that the variance between the experimental and control groups in the pre-test is homogeneous; there is no significant difference in the data variability between the two groups. Likewise, for the post-test, the Sig. The value is 0.671, also greater than 0.05, indicating that the variance between the experimental and control groups in the post-test is also homogeneous.

The results of these normality and homogeneity tests provide a strong basis for continuing the analysis using parametric statistical techniques, such as the t-test, to compare the differences in scores between the experimental and control groups. The normality test, which shows that most of the data is usually distributed, and the homogeneity test, which shows that the variances between groups are similar, ensure that the comparisons between the two groups are valid and reliable. Although there were slight deviations in the distribution of the pre-test data of the control group, the overall results indicate that the data can be analyzed using a parametric approach, providing confidence that the conclusions drawn from the statistical analysis are reliable and not affected by significant violations of the assumptions of normality and homogeneity. Thus, the results of these normality and homogeneity tests strengthen the validity of further analysis in this study, allowing researchers to proceed with confidence that the method used is appropriate to the characteristics of the available data.

Table 5. T Test Results

	Pre-test (T-test)	Post-test (T-test)
Sig. (2-tailed)	0.481	0.000
α	0.005 (5%)	
Description	H1 is rejected	H1 is accepted

Table 5 presents the t-test results for the pre-test and post-test of both groups, which provide a deep insight into the effectiveness of the intervention implemented. In the pre-test, the Sig. (2-tailed) The significance value recorded was 0.481, more significant than the set significance limit value of 0.005. With a Sig. A value greater than 0.005, H1 (alternative hypothesis), which states that there is a significant difference between the experimental and control groups, is rejected. This indicates that there was no significant difference between the two groups regarding question writing skills at the beginning of the study before the intervention was carried out. Both groups showed similar skills, which is essential to ensure that the difference found in the post-test can be attributed to the treatment received by the experimental group rather than the initial difference between the two groups.

However, in the post-test, the Sig. (2-tailed) the value recorded was 0.000, which is much smaller than 0.005. With this significance value, H1 is accepted, which means there is a very significant difference between the experimental and control groups after the treatment is given. This very low significance value indicates that the intervention given to the experimental group, namely the hopscotch game, significantly improved their question writing skills compared to the control group, which did not receive the treatment. This strengthens previous findings that the traditional hopscotch game has a significant positive impact on improving students' writing skills. These results prove that the traditional hopscotch game can be used as a practical learning method to improve question writing skills in elementary school students. The success of the influence of this intervention is reflected in the significant difference found between the experimental group and the control group in the post-test. This finding also confirms that although both groups had similar skills in the pre-test, the treatment received by the experimental group gave much better results, indicating that the use of games in learning can improve students' skills substantially. Overall, the t-test results on the pre-test and post-test provide a clear picture of the impact of the hopscotch game on students' question-writing skills. While there was no significant difference between the experimental and control groups in the pre-test stage, the substantial difference in the post-test showed that the traditional game of engklek successfully improved students' writing skills. Thus, these results support the hypothesis that game-based interventions can positively and significantly impact student learning outcomes, especially in the context of writing skills in elementary schools.

The results of this study show that the experimental group, which received the intervention of the engklek game, experienced a significant improvement in their ability to write question sentences, as seen from the comparison of pre-test and post-test scores. The average post-test score for the experimental group was 19.33, much higher than the control group, which only reached 11.45. This improvement is reflected in various statistical parameters, such as the median and mode, which indicate that most students in the experimental group made substantial improvements, while the control group remained at a lower level.

These results mean that the engklek game effectively stimulates students' interest to actively participate in the writing learning process, particularly in constructing question sentences. This interpretation aligns with the constructivist theory proposed by Piaget and Vygotsky, emphasizing the importance of active, social, and experience-based learning to develop students' cognitive skills. In this context, the engklek game serves as a tool for teaching writing skills and a medium for building social, collaborative, and creative skills [20]. By providing an interactive and enjoyable learning experience, the engklek game encourages students to engage more in learning, ultimately improving their ability to write question sentences. Moreover, these results support previous research findings that examined the use of traditional games in education. Several previous studies have shown that games, especially those based on local culture, can positively impact students' academic skills [21], [22]. The engklek match, with its physical and social elements, can create an enjoyable learning atmosphere and motivate students to be more active in constructing sentences that follow appropriate structure and communication goals. Therefore, the traditional Englek game functions as entertainment and an effective educational tool to improve students' writing skills [23].

The results of this study provide an essential contribution to the development of learning theories, especially those advocating for experience- and game-based learning. As explained, the constructivist approach emphasizes active and social knowledge and is highly relevant in using games in education. The engklek game allows students to learn through direct experience, collaborate in groups, and interact with their peers, all of which contribute to developing their writing skills [24]. On the other hand, this study also has significant implications for elementary school educational practice. One practical implication of this study is the introduction of traditional games as an engaging and effective teaching method. By adding game elements to learning, teachers can increase student engagement, motivate them to learn, and provide a more enjoyable

experience in mastering writing skills. The engklek game can also teach other skills, such as teamwork, communication, and problem-solving, which are all essential in elementary education [25].

This study also contributes to educational policy development, particularly in integrating traditional games into the curriculum. Educational policies that encourage the use of traditional games in learning will help preserve local culture and improve the quality of education more enjoyably and engagingly. Therefore, this study's findings could encourage positive changes in how elementary education is carried out, emphasizing experience-based learning and social interaction, which are more relevant to students' developmental needs in the modern era [26].

Although the results of this study show the positive impact of the engklek game on improving the ability to write question sentences, some limitations should be considered. One main limitation is the quasi-experimental design, where participants were not randomly assigned to the experimental and control groups. While this design still allows for assessing the effect of the intervention without randomization, there is a possibility that other factors, such as individual characteristics or student motivation, may influence the results obtained. Therefore, the findings of this study should be generalized with caution, especially when applied to different contexts. Another limitation is the small sample size. This study involved only 60 students, with 30 students in the experimental group and 30 in the control group. This small sample size limits the ability of the study to represent a more extensive and diverse population. Future research with a larger and more varied sample, involving students from various social and cultural backgrounds, will provide a more comprehensive understanding of the impact of the engklek game on writing skills [27]. Additionally, the limited duration of the intervention is another factor that limits the findings of this study. Although this study shows improved writing skills after applying the engklek game, it is uncertain whether this improvement will be sustained in the long term. Further research involving long-term interventions or follow-up measurements will provide more complete information about the sustainability of the improvements resulting from traditional games [28].

Several suggestions for future research can be made based on the results and limitations found in this study. First, future studies should involve a more extensive and diverse sample, covering students from different regions and social backgrounds. This will allow researchers to obtain more representative results that can be generalized to a larger population. Additionally, using a stronger research design, such as experimental research with randomization, will help address the quasi-experimental design's limitations. Second, future research should consider using longer interventions to evaluate whether improving writing skills resulting from the engklek game can be sustained in the long term. Furthermore, longitudinal studies that track students' skill development over time will provide deeper insights into the effectiveness of the engklek game as a sustainable learning tool. Third, other variables that may affect research outcomes, such as student motivation, parental support, or socio-psychological factors, should be considered in future studies. By accounting for these variables, researchers can better understand the factors contributing to improving students' writing skills.

The findings of this study have significant social implications, particularly in the context of using traditional games in education. The engklek game not only serves as a tool to improve writing skills but also as a means to preserve local culture. Integrating conventional games into the elementary school curriculum will help students recognize and appreciate their cultural heritage while providing an enjoyable and interactive learning experience. Traditional games can serve as a medium to introduce local cultural values to the younger generation. On the ethical side, this study also suggests considering the impact of technology use in education. While digital technology can provide many benefits in education, such as access to a broader range of information and more flexible learning, technology must also be balanced with social interaction and physical activities, such as traditional games. Using traditional games in learning allows students to interact directly with their peers, which can enhance their social and emotional skills. Therefore, it is essential to maintain a balance between technology and physical activity to ensure students' holistic development. Overall, this study's results not only contribute to the development of game-based learning theory but also provide valuable insights into educational policy, elementary school teaching practices, and the social and ethical impacts of using traditional games in education.

4. CONCLUSION

Based on the research results, the traditional game of engklek significantly improves the skills of elementary school students writing interrogative sentences. This finding is seen through comparing pre-test and post-test scores, where the experimental group that received the engklek game treatment experienced a substantial increase in their writing skills compared to the control group that did not receive the intervention. The N-Gain value, which showed a moderate increase in the experimental group and low in the control group, further confirmed the effectiveness of the engklek game in improving students' interrogative writing skills. The engklek game functions as a tool that enhances writing skills and creates a more interactive and enjoyable learning experience, which can attract students' interest to be more involved in learning. This study only measures the short-term impact of the engklek game. To understand whether the improvement in writing skills can be

maintained in the long term, further research is needed with measurements carried out several months or years after the intervention. This will help assess the sustainability of the improvements achieved and the long-term impact of using the game in learning.

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REFERENCES

[1] V. Trajkovik, T. Malinovski, T. Vasileva-Stojanovska, and M. Vasileva, "Traditional games in elementary school: Relationships of student's personality traits, motivation and experience with learning outcomes," *PLoS One*, vol. 13, no. 8, pp. 1–15, 2018, doi: 10.1371/journal.pone.0202172.

[2] F. E. Rahmawati and E. Junining, "Revitalizing a traditional game 'dakon' to teach english for young learners," *Metathesis J. English Lang. Lit. Teach.*, vol. 2, no. 1, p. 58, 2018, doi: 10.31002/metathesis.v2i1.616.

[3] B. Arf, F. Festa, L. Ronconi, and G. Spicciarelli, *graders ' writing*. 2021.

[4] D. Kenanoğlu and M. Duran, "The Effect of Traditional Games on the Language Development of Pre-School Children in Pre-School Education," *Asian J. Educ. Train.*, vol. 7, no. 1, pp. 74–81, 2021, doi: 10.20448/journal.522.2021.71.74.81.

[5] C. Y. Chen, H. J. Huang, C. J. Lien, and Y. L. Lu, "Effects of Multi-Genre Digital Game-Based Instruction on Students' Conceptual Understanding, Argumentation Skills, and Learning Experiences," *IEEE Access*, vol. 8, pp. 110643–110655, 2020, doi: 10.1109/ACCESS.2020.3000659.

[6] M. Bal, "Use of digital games in writing education: An action research on gamification," *Contemp. Educ. Technol.*, vol. 10, no. 3, pp. 246–271, 2019, doi: 10.30935/cet.590005.

[7] T. Hanghøj, K. Kabel, and S. H. Jensen, "Digital Games, Literacy and Language Learning in L1 and L2," *L1 Educ. Stud. Lang. Lit.*, no. Speciall Issue, pp. 1–44, 2022, doi: 10.21248/l1esll.2022.22.2.363.

[8] C. Semeraro, G. Coppola, R. Cassibba, and D. Lucangeli, "Teaching of cursive writing in the first year of primary school: Effect on reading and writing skills," *PLoS One*, vol. 14, no. 2, pp. 1–17, 2019, doi: 10.1371/journal.pone.0209978.

[9] S. Rietdijk, T. Janssen, D. van Weijen, H. van den Bergh, and G. Rijlaarsdam, "Improving writing in primary schools through a comprehensive writing program," *J. Writ. Res.*, vol. 9, no. 2, pp. 173–225, 2017, doi: 10.17239/jowr-2017.09.02.04.

[10] D. Bulut, Y. Samur, and Z. Cömert, "The effect of educational game design process on students' creativity," *Smart Learn. Environ.*, vol. 9, no. 1, 2022, doi: 10.1186/s40561-022-00188-9.

[11] J. Irmansyah, R. Lumintuarso, F. X. Sugiyanto, and P. Sukoco, "Children's social skills through traditional sport games in primary schools," *Cakrawala Pendidik.*, vol. 39, no. 1, pp. 39–53, 2020, doi: 10.21831/cp.v39i1.28210.

[12] S. Kirginas, "Improving Students' Narrative Skills through Gameplay Activities: A Study of Primary School Students," *Contemp. Educ. Technol.*, vol. 14, no. 2, 2022, doi: 10.30935/CEDTECH/11526.

[13] M. Arrimada, M. Torrance, and R. Fidalgo, "Effects of teaching planning strategies to first-grade writers," *Br. J. Educ. Psychol.*, vol. 89, no. 4, pp. 670–688, 2019, doi: 10.1111/bjep.12251.

[14] R. R. Khanmurzina, E. I. Cherdymova, T. Y. Guryanova, R. A. Toriia, E. M. Sukhodolova, and L. I. Tararina, "Computer games influence on everyday social practices of students-gamers," *Contemp. Educ. Technol.*, vol. 11, no. 1, pp. 11–19, 2020, doi: 10.30935/cet.641753.

[15] E. Regiana, A. Dwiyoga, and F. H. Prasetya, "Preservation of Indonesian Culture through Traditional Games Application," *Sisforma*, vol. 7, no. 1, pp. 28–37, 2020, doi: 10.24167/sisforma.v7i1.1422.

[16] M. ÖNDER, "Contribution of Plays and Toys to Children's Value Education," *Asian J. Educ. Train.*, vol. 4, no. 3, pp. 146–149, 2018, doi: 10.20448/journal.522.2018.42.146.149.

[17] C. Farias, C. Valério, and I. Mesquita, "Sport education as a curriculum approach to student learning of invasion games: Effects on game performance and game involvement," *J. Sport. Sci. Med.*, vol. 17, no. 1, pp. 56–65, 2018.

[18] R. D. Hawkins, G. A. R. M. Ferreira, and J. M. Williams, "The development and evaluation of 'farm animal welfare': An educational computer game for children," *Animals*, vol. 9, no. 3, 2019, doi: 10.3390/ani9030091.

[19] T. Barone and L. Bresler, "International Journal of Education and the Arts," *Res. Stud. Music Educ.*, vol. 15, no. 1, p. 71, 2000, doi: 10.1177/1321103X0001500110.

[20] L. Ruiz Gurillo, "Idiomas inventados en las narraciones humorísticas de niños de 8 a 12 años," *Círculo lingüística Apl. a la Comun.*, no. 70, pp. 43–59, 2017.

[21] A. Andrade, W. Mayron da Cruz, C. K. Correia, A. L. Goya Santos, and G. G. Bevilacqua, "Effect of practice exergames on the mood states and self-esteem of elementary school boys and girls during physical education classes: A cluster-randomized controlled natural experiment," *PLoS One*, vol. 15, no. 6, pp. 1–18, 2020, doi: 10.1371/journal.pone.0232392.

[22] F. Hardiansyah, T. Sukitman, A. Wahdian, and H. Hodairiyah, "The Use of Differentiated Digital Learning Models to Enhance Science Problem-Solving in Elementary Schools," *AL-ISHLAH J. Pendidik.*, vol. 16, no. 2, pp. 1462–1474, 2024, doi: 10.35445/alishlah.v16i2.5087.

[23] G. B. Skar, S. Graham, and A. Huebner, "The Long-Term Effects of the COVID-19 Pandemic on Children's Writing: a Follow-up Replication Study," *Educ. Psychol. Rev.*, vol. 35, no. 1, 2023, doi: 10.1007/s10648-023-09729-1.

[24] C. Y. Hou *et al.*, "Children's mobile-gaming preferences, online risks, and mental health," *PLoS One*, vol. 17, no. 12 December, pp. 1–18, 2022, doi: 10.1371/journal.pone.0278290.

[25] A. Marie *et al.*, "Which Predict Writing Skills At School," *Read. Writ.*, vol. 34, no. 9, pp. 2203–2225, 2021, doi: 10.1007/s11145-021-10133-w

[26] L. H. Wang, B. Chen, G. J. Hwang, J. Q. Guan, and Y. Q. Wang, "Effects of digital game-based STEM education on students' learning achievement: a meta-analysis," *Int. J. STEM Educ.*, vol. 9, no. 1, 2022, doi: 10.1186/s40594-022-00344-0.

[27] B. Chaarani, J. Ortigara, D. K. Yuan, H. Loso, A. Potter, and H. P. Garavan, "Notice of Retraction and Replacement. Chaarani B, et al. Association of Video Gaming With Cognitive Performance Among Children," *JAMA Netw. open*, vol. 6, no. 4, p. e236895, 2023, doi: 10.1001/jamanetworkopen.2023.6895.

[28] D. Dotan and S. Zviran-Ginat, "Elementary math in elementary school: the effect of interference on learning the multiplication table," *Cogn. Res. Princ. Implic.*, vol. 7, no. 1, 2022, doi: 10.1186/s41235-022-00451-0.