

The Effectiveness of ZEP Quiz Game-Based Learning in Improving EFL Students' Descriptive Text Reading Comprehension

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ABSTRACT

EFL students often encounter difficulties in comprehending descriptive texts, highlighting the need for instructional approaches that actively engage learners in the reading process. Despite the growing adoption of game-based learning platforms in EFL education, empirical evidence regarding the effectiveness of ZEP Quiz in improving descriptive text reading comprehension remains limited. Drawing on constructivist theory, this study investigated whether the use of ZEP Quiz, a game-based learning platform, resulted in a significant difference in students' reading comprehension improvement compared with conventional instruction. A quantitative approach with a quasi-experimental, non-equivalent control group design was employed at SMAN 1 Mayong. The participants consisted of 67 tenth-grade students, including 33 students in the experimental group and 34 students in the control group. Data were collected using a validated 22-item reading comprehension test and analyzed through descriptive statistics, the Shapiro-Wilk normality test, Levene's test of homogeneity, and the Mann-Whitney U test on gain scores. The findings indicated that the control group obtained a higher mean gain score than the experimental group. However, the difference in students' reading comprehension improvement was not statistically significant ($Z = -1.209$, $p = .227$). These findings suggest that the implementation of ZEP Quiz did not result in significantly greater improvement in reading

comprehension than conventional instruction within the context of this study. Nevertheless, ZEP Quiz may still serve as a complementary instructional tool to promote student engagement when supported by appropriate instructional guidance.

1. Introduction

Reading comprehension is a fundamental component of English as a Foreign Language (EFL) learning, enabling students to construct meaning from written texts, acquire contextual vocabulary, and support the development of productive language skills such as writing and speaking (Lutvita & Zuhri, 2025; Salim et al., 2025). This ability becomes more crucial at the senior high school level since students must understand a variety of academic materials from various areas. Beyond the capacity to decipher written symbols, reading comprehension is a dynamic and interactive cognitive process in which readers actively create meaning by fusing textual material with linguistic proficiency, past knowledge, and continuous comprehension monitoring. Measurable reading subskills, such as recognizing key concepts, finding specific information, drawing conclusions, understanding terminology in context, and identifying grammatical allusions to maintain textual coherence, reflect this complicated process in educational situations (William, 2009). Despite its importance, many Indonesian EFL students continue to experience difficulties in mastering these essential reading skills, creating a gap between curriculum expectations and students' actual reading performance.

These persistent reading difficulties are influenced by multiple factors, including limited vocabulary knowledge, insufficient reading strategies, and instructional practices that provide limited opportunities for active learning. Students frequently encounter difficulties in identifying implicit information, making appropriate inferences, and understanding texts because of limited contextual knowledge, strategic awareness, and vocabulary mastery (Lorena et al., 2022; Monalisa et al., 2025). These challenges are often reinforced by teacher-centered instructional approaches that rely heavily on repetitive written exercises, reducing reading activities to passive learning experiences and limiting students' motivation and classroom engagement (Monalisa et al., 2025). These flaws become especially apparent when students encounter specific text genres required by the senior high school curriculum, such as descriptive writings. Such difficulties become particularly evident when students learn descriptive texts, one of the text genres required in the Indonesian senior high school English curriculum. Descriptive texts require students not only to understand the generic structure consisting of identification and description but also to interpret specific linguistic

features, including descriptive adjectives, relational verbs, simple present tense, and expanded noun phrases(Purnamasari et al., 2021). Consequently, students need instructional approaches that support active meaning construction while encouraging them to plan, monitor, and evaluate their own comprehension processes. Such metacognitive engagement is essential for helping learners comprehend increasingly complex texts and develop greater autonomy in reading(Ferdiyanto et al., 2024).

To address these challenges, English language instruction should move beyond teacher-centered practices toward learner-centered approaches grounded in Constructivism. Constructivist theory views learning as an active process in which students construct knowledge by integrating new information with their prior knowledge and experiences(Chand, 2023). Rather than passively receiving information, learners actively interpret, reorganize, and refine their understanding through meaningful interaction with learning tasks. Within this perspective, learning is facilitated through continuous reflection and instructional scaffolding, which provides temporary support to help students bridge the gap between their existing knowledge and potential development(Sudarman et al., 2024). The integration of digital technology further strengthens constructivist learning by creating interactive environments that encourage learner participation, immediate feedback, and collaborative knowledge construction (Olusegun, 2015 ;Setiawan, 2023). Consequently, the incorporation of instructional content into interactive game mechanics has contributed to the development of Game-Based Learning (GBL), an instructional approach that promotes experiential learning through challenges, immediate feedback, and meaningful engagement with learning activities(Nguyen et al., 2024;Shaheen et al., 2023). Previous studies have also shown that game-based learning can enhance students' engagement, collaboration, and long-term knowledge retention when implemented appropriately(Dewi et al., 2025 ; Fatimah, 2025; Mahaswary & Ngafif, 2025).

Among emerging game-based learning platforms, ZEP Quiz has attracted increasing attention because it enables teachers to design interactive learning activities within a virtual environment featuring customizable avatars, timed challenges, and real-time leaderboards(Santoso et al., 2025).These gamification features create immersive learning experiences that encourage active participation while reducing learning anxiety(Hwang et al., 2012;Kapp, 2012). Moreover, the platform provides immediate feedback that functions as digital scaffolding, allowing students to identify misconceptions, revise their understanding, and monitor their learning processes in real time(Kapp, 2012; Zainuddin et al., 2020).ZEP Quiz also supports multiple question formats, enabling teachers to assess students' understanding efficiently while maintaining manageable cognitive demands. Previous studies conducted in various educational contexts have

reported positive pedagogical outcomes associated with ZEP Quiz, including improvements in learning motivation, classroom engagement, and higher-order thinking skills (Widyaningrum et al., 2025; Yulianti et al., 2025; Ratnawati & Wahyuni, 2025). These findings suggest that ZEP Quiz has considerable instructional potential; however, further empirical investigation is required to determine whether its benefits are consistently reflected in students' reading comprehension improvement within EFL classrooms.

Recent empirical evidence generally supports the effectiveness of game-based learning in English language education. Studies employing Quizizz through pre-experimental designs have reported improvements in students' reading comprehension by promoting sustained engagement, immediate feedback, and repeated practice among junior high school and university students (Annisa & Susanti, 2024; Hamzah 2023). Likewise, research on ZEP Quiz has demonstrated positive effects across different learning outcomes. Wahid et al. (2025) using a quasi-experimental pre-test-post-test design, found that ZEP Quiz significantly improved students' vocabulary mastery, while Muslimin (2025) reported enhanced critical thinking skills among elementary school students following its implementation. Santoso et al. (2025) further reported improved narrative reading comprehension among students who learned through ZEP Quiz. Broader evidence also indicates that constructivist digital learning environments support reading development through scaffolded learning strategies, interactive assessment, and active student participation (Kharimah et al., 2025; Salim & Sukarno, 2025; Marsa, 2021). Collectively, these studies consistently report positive educational outcomes; however, they differ considerably in terms of participant characteristics, educational levels, learning objectives, instructional duration, and research design. Consequently, the extent to which these positive findings can be generalized across different EFL instructional contexts remains insufficiently understood. Moreover, previous studies have primarily emphasized successful learning outcomes while providing limited discussion of the contextual and pedagogical conditions that may influence the effectiveness of game-based learning.

This unresolved issue represents an important theoretical gap, as the effectiveness of game-based learning may depend not only on the technological features of the platform but also on how it is implemented within particular instructional settings. Therefore, the present study investigates whether the use of ZEP Quiz results in significantly greater improvement in descriptive text reading comprehension than conventional instruction among Indonesian senior high school EFL students. By addressing this issue, the study contributes additional empirical evidence regarding the consistency of game-based learning outcomes in EFL reading instruction.

Building upon this theoretical gap, the present study examines whether the use of ZEP Quiz results in significantly greater improvement in descriptive text reading comprehension than conventional instruction among tenth-grade Indonesian EFL students. Guided by a constructivist perspective, this study contributes to the growing body of research on digital game-based learning by extending existing evidence beyond the consistently positive findings reported in previous studies. Rather than assuming that game-based learning is universally effective, this study provides empirical evidence regarding the extent to which the effectiveness of ZEP Quiz can be observed within a different instructional context and text genre. The findings are expected to enrich the literature on technology-enhanced language learning while offering practical insights for EFL teachers in selecting and implementing digital game-based learning platforms to support reading comprehension instruction in secondary education.

2. Methods

To carry out this investigation, a quasi-experimental framework specifically employing a non-equivalent control group design was explicitly implemented within a quantitative methodology. The researcher chose this specific approach due to the practical and administrative limitations typical of school environments because school authorities prevent the random assignment of individual students into new groups. Through the strategic utilization of this method the researcher successfully examined the actual impact of ZEP Quiz on students' reading comprehension of descriptive texts while fully preserving both the natural classroom structure and the overall teaching-learning atmosphere. The researcher administered a pre-test to both groups to evaluate their initial reading comprehension abilities as a fundamental step to implement this design. While the researcher gave the experimental group focused reading instruction using the ZEP Quiz platform the control group underwent traditional text-based teaching under identical conditions. At the conclusion of the instructional period the researcher conducted a post-test for both groups to assess the final differences and to gauge any notable enhancements in their reading comprehension abilities.

2.1. Research Design and Data Sources

The population of this research was explicitly constituted by all tenth-grade students at SMAN 1 Mayong in the academic year of 2025/2026 just as the selection of two classes to serve as the research sample was directly facilitated by a purposive sampling technique where the total intended sample size was successfully brought to 72 participants because each class initially contained 36 students. The researcher designated one class as the experimental group to be taught using the ZEP Quiz platform while the other class simultaneously served as the control group instructed through conventional methods. However, several

students were absent during the actual field execution of the pre-test and post-test due to illness or school-related obligations. To ensure strict data integrity and statistical validity, the researcher included only students who completed both testing phases in the final data computation, resulting in a final active sample size of 33 students in the experimental group and 34 students in the control group, for a total of 67 active participants for statistical analysis.

2.2. Research Instruments

This study utilized a reading comprehension test developed from normal EFL materials focusing primarily on descriptive texts as its major data collection tool. A pool of 50 multiple-choice problems initially formed the prototype to effectively assess key reading competencies including identifying primary concepts and locating specific details as well as interpreting language in context and drawing inferences. To guarantee the instrument's quality, the researcher tested the items with a non-participant tenth-grade class of 33 students before statistically analyzing the pilot data for item validity using the Pearson Product-Moment correlation formula where a correlation coefficient (r) higher than the critical table value of 0.344 deemed an item valid. Furthermore, the Cronbach's Alpha formula evaluated the internal consistency and reliability of the test so that the researcher retained only those items demonstrating a reliability coefficient of 0.60 or higher alongside meeting the validity criteria for the final pre-test and post-test instruments.

2.3. Data Collection Procedure

Data collection was conducted systematically using a standardized five-meeting experimental procedure corresponding to each class weekly schedule of three instructional periods (135 minutes). During the first meeting, both the experimental and control groups completed the pre-test to determine their initial reading comprehension levels. The following three meetings were devoted to the instructional treatment. The experimental group learned descriptive texts using ZEP Quiz, whereas the control group received conventional teacher-led instruction covering the same learning objectives and instructional materials. To ensure treatment fidelity, both groups followed comparable lesson plans, received the same instructional duration, and completed equivalent learning objectives. All instructional sessions were conducted by the researcher, who maintained detailed teaching logs and attendance records after each meeting to monitor the consistency of the intervention throughout the study. During the fifth meeting, both groups completed the post-test using the same validated instrument to measure students' reading comprehension after the intervention. Prior to data collection, formal permission to conduct the study was obtained through an official research permit issued by the university and approved by the school administration of SMAN 1 Mayong. The English teacher was also informed about

the study procedures and the implementation schedule. Before the intervention began, students were informed of the purpose and procedures of the study, and all classroom activities were conducted as part of their regular English lessons. Participation involved no additional academic risk beyond normal classroom instruction. All collected data were kept confidential, anonymized during analysis, and used solely for research purposes.

2.4. Data Analysis

Data generated from the pre-test and post-test administrations were processed utilizing IBM SPSS Statistics through both descriptive and inferential analytical methods. Initially, descriptive statistics specifically mean scores and standard deviations were calculated to provide an overview of student reading comprehension achievements across the control and experimental groups. To ensure the data fulfilled prerequisite conditions before conducting hypothesis testing, the Shapiro-Wilk procedure was executed to check for normality, and Levene's test was implemented to evaluate variance homogeneity. Based on the results of these assumption tests, the Mann-Whitney U test was employed to compare the pre-test and post-test scores between the two groups whenever the assumptions for parametric analysis were not fulfilled. To evaluate students' learning improvement, Gain scores from the corresponding post-test score (Gain = Post test - Pretest). The gain scores were first subjected to descriptive statistics and diagnostic testing using the Shapiro-Wilk and Levene's methods. Thereafter, the non-parametric Mann-Whitney U test was deployed to evaluate the difference in reading comprehension gains between the Zep Quiz intervention group and the conventional instruction group. For all conducted analyses, the significance threshold was fixed at $p < .05$.

3. Result

The data collected from the experimental and control groups during the study directly form the basis of the results presented in this section. The researcher conducted several analyses including instrument testing and descriptive statistical analysis as well as prerequisite testing and hypothesis testing to ensure the absolute accuracy and validity of the findings. Furthermore, a systematic arrangement structures these findings so that they provide a comprehensive overview regarding the specific effect of ZEP Quiz on students' reading comprehension achievement.

3.1 Results of the Research Instrument Trial

3.1.1 Validity Test

The validity analysis was conducted to evaluate the appropriateness of the reading comprehension test items before they were administered in the main study. The instrument initially consisted of 50 multiple choice items. Based on the

validity test results, 22 items met the validity criteria and were retained for the research instrument, while the remaining 28 items were excluded. The summary of the validity test results is presented in Table 1.

Table 1. Validity Test Results of the Research Instrument

Category	Item Numbers	Total
Valid	5, 7, 9, 12, 14, 17, 27, 28, 30, 31, 32, 33, 34, 35, 36, 37, 38, 39, 42, 43, 48, 49	22
Invalid (Dropped)	1, 2, 3, 4, 6, 8, 10, 11, 13, 15, 16, 18, 19, 20, 21, 22, 23, 24, 25, 26, 29, 40, 41, 44, 45, 46, 47, 50	28
Total		50

Following the validity test, the remaining 22 items were subjected to a reliability analysis using Cronbach's Alpha to examine the internal consistency of the instrument. The analysis produced a Cronbach's Alpha coefficient of .760, indicating good internal consistency. Therefore, the instrument was considered sufficiently reliable for measuring students' reading comprehension of descriptive texts.

3.1.2 Descriptive statistical analysis

Evaluating reading comprehension levels before and after the instruction involved computing descriptive statistics across both student groups. The resulting data encompassed pre- and post-test metrics for each group, specifically detailing the total sample count, lowest and highest obtained scores, mean performances, and standard deviations.

Table 2. Descriptive Statistic for Pre-Test and Post -Test Score

	Descriptive Statistics				
	N	Minimum	Maximum	Mean	Std. Deviation
Experimental Group Pretest	33	55	95	79.03	10.147
Experimental Group Posttest	33	36	100	78.48	13.570
Control Group Pretest	34	55	100	84.74	12.556
Control Group Posttest	34	73	100	91.12	5.902
Valid N (listwise)	33				

The descriptive statistics indicate different patterns of performance between the experimental and control groups. In the experimental group, the mean score

decreased slightly from 79.03 on the pretest to 78.48 on the post-test. The minimum score dropped from 55 to 36, while the maximum score rose from 95 to 100. Furthermore, the standard deviation increased from 10.147 to 13.570, indicating greater variability in students' post-test scores compared to their pre-test performance.

In contrast, overall performance among control group members improved significantly because their mean score rose from 84.74 on the pre-test to 91.12 on the post-test and their minimum score increased from 55 to 73 while the maximum score stayed at 100 in both tests, which ultimately led to a decrease in the standard deviation from 12.556 to 5.902 and thus resulted in far more consistent student outcomes overall.

Gain scores were determined after the intervention by subtracting each student's pre-test score from the post-test score (Gain = Post-test - Pre-test). The gain scores were then employed in inferential analyses to examine the increase in reading comprehension between the experimental and control groups.

To examine students' improvement after the intervention, gain scores were calculated by subtracting the pre-test score from the post-test score for each participant. Table 3 summarizes the descriptive statistics of the gain scores for both groups.

Table 3. Descriptive Statistics of Gain Scores

Descriptives

Class = Experimental

Descriptive Statistics ^a					
	N	Minimum	Maximum	Mean	Std. Deviation
Pretest Score	33	55	95	79.03	10.147
Posttest Score	33	36	100	78.48	13.570
Gain_Score	33	-55.00	14.00	-.5455	13.77745
Valid N (listwise)	33				

a. Class = Experimental

Class = Control

Descriptive Statistics ^a					
	N	Minimum	Maximum	Mean	Std. Deviation
Pretest Score	34	55	100	84.74	12.556
Posttest Score	34	73	100	91.12	5.902
Gain_Score	34	-13.00	27.00	6.3824	11.07007
Valid N (listwise)	34				

a. Class = Control

A mean gain score of -0.55 (SD= 13.78) was recorded for the experimental groups, in contrast to a mean gain score of 6.38 (SD= 11.07) for the control groups. These outcomes reveal that, overall participants in the control class

exhibited a higher degree of reading comprehension growth compared to their peers in the experimental class.

3.2 Assumption Test

Prior to analyzing the initial performance differences between the two classes, data normality was evaluated via the Shapiro-Wilk procedure. This step served to verify whether the pre-test distribution complied with the distributional requirements needed to perform parametric evaluations.

Table 4. Normality Test Pretest Results Using Shapiro-Wilk

Tests of Normality							
		Kolmogorov-Smirnov ^a			Shapiro-Wilk		
	Class	Statistic	df	Sig.	Statistic	df	Sig.
Pretest Score	Experimental	.161	33	.030	.954	33	.172
	Control	.279	34	.000	.869	34	.001

a. Lilliefors Significance Correction

The Shapiro-Wilk test revealed that the experimental cohort's pre-test data had a normal distribution ($p = .172$, $p > .05$), whereas the control cohort's data varied considerably from normality ($p = .001$, $p < .05$). Due to this partial violation of the normality condition, a non-parametric method was chosen as the best analytical framework for further data processing.

Table 5. Homogeneity Pretest

Independent Samples Test									
		Levene's Test for Equality of Variances		t-test for Equality of Means					
		F	Sig.	t	df	Sig. (2-tailed)	Mean Difference	Std. Error Difference	95% Confidence Interval of the Difference Lower Upper
Pretest Score	Equal variances assumed	2.389	.127	-2.042	65	.045	-5.705	2.794	-11.285 -1.125
	Equal variances not assumed			-2.048	62.957	.045	-5.705	2.785	-11.271 -.139

The homogeneity of the pre-test scores was investigated using Levene's test for equality of variances. The significance value was .127 ($p > .05$), showing that the experimental and control groups' variances were similar. Although the condition of homogeneity was met, the normalcy assumption was not entirely met. The subsequent analysis used a non-parametric statistical test.

Table 6. Normality Gain Score

Tests of Normality							
		Kolmogorov-Smirnov ^a			Shapiro-Wilk		
	Class	Statistic	df	Sig.	Statistic	df	Sig.
Gain_Score	Experimental	.243	33	.000	.769	33	.000
	Control	.203	34	.001	.907	34	.007

a. Lilliefors Significance Correction

The Shapiro-Wilk test was applied to evaluate whether the gain scores followed a normal distribution. Results revealed a significance value of .000 ($p < .05$) in the treatment group and .007 ($p < .05$) in the control group, confirming that the normality assumption was violated across both participants groups.

Table 7. Homogeneity of Gain Scores

Independent Samples Test									
		Levene's Test for Equality of Variances		t-test for Equality of Means					
		F	Sig.	t	df	Sig. (2-tailed)	Mean Difference	Std. Error Difference	95% Confidence Interval of the Difference Lower Upper
Gain_Score	Equal variances assumed	.012	.913	-2.272	65	.026	-6.92781	3.04885	-13.01678 -83883
	Equal variances not assumed			-2.265	61.320	.027	-6.92781	3.05882	-13.04365 -81197

Homogeneity of variance for the gain scores was confirmed through Levene's test, which yielded a significant level of .913 ($p > .05$). while the variance equality assumption was successfully met, the data failed to satisfy the normality criteria. Consequently, a non-parametric statistical method was selected to execute the comparative analysis.

3.3 Hypothesis Test

Based on the results of the assumption tests, the Mann-Whitney U test was used to compare the reading comprehension performance of the experimental and control groups. The test was first conducted on the pre-test scores to examine whether the two groups had comparable initial reading comprehension performance before the intervention. It was then applied to the gain scores to determine whether the improvement in reading comprehension differed significantly between the two groups.

Table 8. Mann-Whitney U Test for the Pretest Scores

Test Statistics^a

	Pretest Score
Mann-Whitney U	373.000
Wilcoxon W	934.000
Z	-2.379
Asymp. Sig. (2-tailed)	.017

a. Grouping Variable: Class

The Mann-Whitney U test revealed that the control group had a higher mean rank (39.53) than the experimental group (28.30). The analysis revealed an Asymp. Sig. (2-tailed) value of .017 ($p < .05$), showing a statistically significant difference between the two groups prior to intervention. These data indicate that the participants did not start the study with equal levels of reading comprehension. After examining the initial differences between the two groups, the analysis focused on the gain scores to evaluate whether the improvement in reading comprehension differed following the implementation of the instructional treatment.

Table 9. Mann-Whitney U Test for the Gain Scores

Test Statistics^a

	Gain_Score
Mann-Whitney U	465.500
Wilcoxon W	1026.500
Z	-1.209
Asymp. Sig. (2-tailed)	.227

a. Grouping Variable: Class

The Mann-Whitney U test showed that the control group had a somewhat higher mean rank (36.81) than the experimental group (31.11). However, the Asymp. Sig. (2-tailed) value was .227 ($p > .05$), indicating that there was no statistically significant difference in gain scores between the two groups. As a result, the data indicate that the progress in reading comprehension was not substantially different between students who learnt via ZEP Quiz and those who got traditional education.

4. Discussion

This study aimed to examine whether there was a significant difference in the improvement of students' reading comprehension between those who learned using ZEP Quiz and those who received conventional instruction. Based on the gain score analysis, the Mann-Whitney U test indicated no statistically significant

difference in students' reading comprehension improvement between the two groups ($p = .227$). Although the control group obtained a higher mean gain score than the experimental group, the difference was not statistically significant. In addition, the findings should be interpreted with consideration of the pre-test results, which showed that the two groups differed significantly in their initial reading comprehension performance before the treatment was implemented.

From a constructivist perspective, these findings suggest that students' active participation in digital learning activities does not necessarily lead to greater improvement in reading comprehension. Constructivist theory emphasizes that learning occurs when students actively construct knowledge by integrating new information with their prior knowledge and experiences. In this study, ZEP Quiz was expected to facilitate this process by promoting active engagement, immediate feedback, and interactive learning activities. However, the absence of a statistically significant difference in gain scores indicates that students' engagement with the platform alone was not sufficient to produce greater improvement in reading comprehension than conventional instruction. As argued by (Le, 2024), the effectiveness of constructivist learning depends not only on students' participation but also on the quality of instructional support and the learning experiences provided. Therefore, while ZEP Quiz encouraged students to participate actively during classroom activities, it may not have fully supported the deeper cognitive processes required for comprehending descriptive texts.

The findings also provide further insight into the implementation of game-based learning in English language teaching. Previous studies have reported that game-based learning can enhance students' motivation, classroom participation, and academic achievement (Wahid et al., 2025; Santoso et al., 2025; Salim & Sukarno, 2025). However, the results of the present study did not demonstrate a significantly greater improvement in reading comprehension among students who learned using ZEP Quiz. One possible explanation is that reading comprehension requires learners to simultaneously process textual information, identify key ideas, make inferences, and integrate new information with their prior knowledge. When game elements are introduced, students may also need to allocate attention to completing game-related tasks. From the perspective of Cognitive Load Theory, this additional demand may increase learners' cognitive load and reduce the cognitive resources available for processing the learning content. As noted by Mojarrad et al. (2022), students' engagement in game-based learning does not necessarily translate into improved learning outcomes. Similarly, Faber et al. (2024) argued that the cognitive demands created by gaming mechanics may limit learners' ability to process instructional content effectively. Unlike previous studies that reported significant improvements following the implementation of ZEP Quiz or other game-based learning platforms, the present study found no statistically

significant difference in students' reading comprehension improvement. This discrepancy suggests that the effectiveness of game-based learning may be influenced by contextual factors such as learners' initial reading ability, instructional implementation, and the complexity of the targeted reading skills rather than by gamification features alone.

Another factor that may have contributed to the findings is students' adaptation to the learning environment. Although digital platforms can create engaging learning experiences, students may require sufficient time to become familiar with new learning technologies and instructional approaches. In addition, reading comprehension is a complex cognitive process that involves identifying relevant information, making inferences, and integrating ideas within a text. These processes may require continuous instructional guidance in addition to interactive learning activities. Consequently, the absence of a statistically significant difference in gain scores may reflect that the implementation of ZEP Quiz alone was not enough to produce greater improvement in reading comprehension within the duration of this study.

The findings of this study contribute to the growing body of research on game-based learning in English language teaching by demonstrating that increased student engagement does not necessarily result in significantly greater improvement in reading comprehension. Rather, the effectiveness of digital learning platforms appears to depend on how well they support students' cognitive processing and comprehension of the learning materials. Therefore, ZEP Quiz may serve as a valuable instructional tool for creating interactive and engaging classroom activities when accompanied by appropriate instructional guidance. Future research is encouraged to examine the implementation of ZEP Quiz over a longer instructional period, across different educational contexts, and with larger participant groups to provide a more comprehensive understanding of its effectiveness in improving students' reading comprehension. These findings imply that the successful implementation of game-based learning depends not only on the incorporation of gamified features but also on instructional designs that effectively manage students' cognitive load while providing sufficient scaffolding for meaning construction. Therefore, digital game-based learning platforms should be integrated with structured reading activities and teacher guidance to maximize meaningful learning rather than relying solely on student engagement.

5. Conclusion

This study examined whether the use of ZEP Quiz resulted in a significantly different improvement in tenth-grade students' descriptive text reading comprehension compared with conventional instruction. The findings showed that, although the control group obtained a higher mean gain score than the experimental group, the Mann-Whitney U test indicated no statistically significant

difference in reading comprehension improvement between the two groups. These results imply that, in the context of this study, the use of ZEP Quiz did not result in greater improvement in students' reading comprehension than conventional instruction. The findings further suggest that meaningful learning requires not only active student engagement but also appropriate instructional guidance and support for deeper cognitive processing. The study also contributes to the current understanding of game-based learning in EFL classrooms by demonstrating that gamification alone does not necessarily lead to improved learning outcomes. Instead, the findings reinforce constructivist perspectives that emphasize the importance of instructional scaffolding while supporting Cognitive Load Theory, which highlights the need to manage learners' cognitive resources during technology-enhanced learning. Therefore, rather than serving as a stand-alone strategy for improving reading comprehension, ZEP Quiz may be better utilized as a complementary instructional tool integrated with structured reading activities and teacher guidance. Future studies are recommended to investigate the implementation of ZEP Quiz over a longer instructional period, across different educational contexts, and with larger samples to provide a more comprehensive understanding of its effectiveness in supporting students' reading comprehension.

References

- Annisa, N., & Susanti, A. (2024). The effect of Quizizz application on the students' reading comprehension. *Wiralodra English Journal*, 8(1), 1–12.
<https://doi.org/10.31943/wej.v8i1.244>
- Chand, S. P. (2023). *Constructivism in Education : Exploring the Contributions of Piaget, Vygotsky, and Bruner*. 12(7), 274–278.
<https://doi.org/10.21275/SR23630021800>
- Dewi, E. P., Tahrur, & Masagus Firdaus. (2025). Improving Reading Comprehension Use Quizizz Application and Cognitive Style. *Esteem Journal of English Education Study Programme*, 8(2), 507–517.
<https://doi.org/10.31851/esteem.v8i2.18196>
- Faber, T. J. E., Dankbaar, M. E. W., Broek, W. W. Van Den, Bruinink, L. J., Hogeveen, M., & Merriënboer, J. J. G. Van. (2024). Effects of adaptive scaffolding on performance, cognitive load and engagement in game - based learning : a randomized controlled trial. *BMC Medical Education*.
<https://doi.org/10.1186/s12909-024-05698-3>
- Fatimah, S. (2025). Enhancing Junior High School Students' Reading Comprehension through Quizizz-Based Gamified Assessment. *ELLINE Journal: English Language and Literature in Education Journal*, 3(1), 38–57.
<https://doi.org/https://doi.org/10.63011/tyn8x842>
- Ferdiyanto, F., Islam, U., & Hasan, Z. (2024). *THE ROLE OF METACOGNITIVE SKILLS IN IMPROVING READING COMPREHENSION AMONG*. 6(2), 149–160.
- Hamzah, I. (2023). *The Effect Of Quizizz On Students Reading Comprehension Universitas Teknokrat Indonesia*. 3(1), 51–58.
- Hwang, G. J., Wu, P. H., & Chen, C. C. (2012). *An Online Game Approach for Improving*

- Students' Learning Performance in Web- based Problem-Solving Activities.*
<https://doi.org/https://doi.org/10.1016/j.compedu.2012.05.009>
- Kapp, K. M. (2012). *The Gamification of Learning and Instruction: Game-based Methods and Strategies for Training and Education.*
<https://books.google.co.id/books?id=M2Rb9ZtFxccC&hl=id>
- Kharimah, I., Nirwanto, R., & Mirza, A. A. (2025). Exploring The Teacher's Strategies In Teaching Reading Comprehension In Senior High School. *Journal of English Language and Education*, 10(3), 751–762.
<https://doi.org/10.31004/jele.v10i3.959>
- Le, H. Van. (2024). *Promoting L2 learners' critical thinking skills : the role of social constructivism in reading class.* June, 1–12.
<https://doi.org/10.3389/feduc.2024.1241973>
- Lorena, N., Budiyanto, D., Tridianti, G., & Palembang, U. T. (2022). *Applying Posse Strategy in Teaching Reading Descriptive.* 3(1), 34–42.
- Lutvita, F. R., & Zuhri, F. (2025). the Effectiveness of Quizizz in Enhancing Junior High School Students' Reading Comprehension of Narrative Texts. *Wiralodra English Journal*, 9(2), 211–222. <https://doi.org/10.31943/wej.v9i2.317>
- Mahaswary, A. N., & Ngafif, A. (2025). *The Effectiveness of Quizizz Application in Teaching Reading Comprehension.* 8.
<http://jiip.stkipyapisdampu.ac.id/index.php/JIIP>
- Marsa, S. S. (2021). The Effect of Kahoot ! Game to Teaching Reading Comprehension Achievement. *Journal of English Teaching*, 7(2021), 133–149.
<https://doi.org/https://doi.org/10.33541/jet.v7i2.2738>
- Mojarrad, H., Hemmati, F., Gohar, M. J., & Sadeghi, A. (2022). *COMPUTER-BASED ASSESSMENT (CBA) VS . PAPER / PENCIL-BASED ASSESSMENT (PPBA) : AN INVESTIGATION INTO THE PERFORMANCE AND ATTITUDE OF IRANIAN EFL LEARNERS ' READING COMPREHENSION.* 4(December), 418–428.
<https://l1nq.com/j9au2hn>
- Monalisa, C. D., Wardah, & Rezeki, Y. S. (2025). Improving Students ' Reading Skill Through. *JEELL (Journal of English Education, Linguistics and Literature)*, 12 No.1. <https://doi.org/https://doi.org/10.32682/jeell.v11i02/14>
- Muslimin. (2025). Integrating Zep Quiz into IPAS Instruction to Enhance Fourth Grade Students ' Critical Thinking Skills. *Journal of Education and Computer Applications*, Vol,2 No.2(ISSN: 3047-8308), 30–37.
<https://doi.org/https://doi.org/10.69693/jeca.v2i2.34>
- Nguyen, T. N., Phan Thanh Tuan, & Nguyen Thi Ha Phuong. (2024). Engaging Students in The Learning Process with Game-Based Learning. *International Journal of English Language Studies*, 6(1), 54–60.
<https://doi.org/10.32996/ijels.2024.6.1.5>
- Olusegun, S. (2015). *Constructivism Learning Theory : A Paradigm for Teaching and Learning.* 5(6), 66–70. <https://doi.org/10.9790/7388-05616670>
- Purnamasari, D., Hidayat, D. N., & Kurniawati, L. (2021). An Analysis of Students' Writing Skill on English Descriptive Text. *English Education: Jurnal Tadris Bahasa Inggris*, 14(1), 101–114. <https://doi.org/10.24042/ee-jtbi.v14i1.7943>
- Ratnawati, D., & Wahyuni, S. (2025). Journal of Educational Sciences. *Journal of Educational Sciences*, 6(3), 444–458.
<https://doi.org/https://doi.org/10.31258/jes.10.1.p.468-479>

- Salim, M., & Sukarno, K. M. (2025). *Using Gamified Quizzes to Enhance Students' English Reading Comprehension Skills*. 33(1), 125–142.
<https://doi.org/doi.org/10.21381/diksi.v33i1.74744>
- Salim, M., Sukarno, K. M., Robbaniyah, I., Fauzan, M., Widyastuti, S. H., Bariyyah, K., & Hidayati, A. N. (2025). *Utilizing Gamified Quizzes to Enhance Students' English Reading Comprehension Skills*. 1, 136–144.
<https://doi.org/https://doi.org/10.36987/jes.v12i1.6555>
- Santoso, D., Tamara, P., Nabhila, C., Sujarwo, G., & Fadlilah, N. (2025). ZepQuiz Game-Based Learning for Improving Students' Narrative Reading Skills: ZepQuiz: Pembelajaran Berbasis Permainan untuk Meningkatkan Keterampilan Membaca Naratif Siswa. *Academia Open*, 10 No.1.
<https://doi.org/https://doi.org/10.21070/acopen.10.2025.12792>
- Setiawan, B. (2023). Game Based Learning Design and Development for Effective Instructional Process at Senior High School Level. *Jurnal Ilmiah Pendidikan Dan Pembelajaran*, 7(3), 425–432. <https://doi.org/10.23887/jipp.v7i3.58391>
- Shaheen, A., Ali, S., & Fotaris, P. (2023). Assessing the Efficacy of Reflective Game Design: A Design-Based Study in Digital Game-Based Learning. *Education Sciences*, 13(12). <https://doi.org/10.3390/educsci13121204>
- Sudarman, R., Damaianti, V. S., & Mulyati, Y. (2024). *Constructivism in Writing Learning in Elementary School ; Systematic Literature Review*. 4(1), 176–192.
- Wahid, R., Putra, P., Karimullah, I. W., & Mustofa, M. (2025). *Zep Quiz in Action : Empowering Students' Vocabulary through Gamified Learning*. 4778, 5461–5473. <https://doi.org/10.24256/ideas>
- Widyaningrum, D., Smaragdina, A. A., & Rizky, D. D. (2025). MENINGKATKAN MOTIVASI BELAJAR SISWA MENGGUNAKAN ZEP QUIZ PADA PEMBELAJARAN INFORMATIKA DI SMP Dhea. *Pendas: Jurnal Ilmiah Pendidikan Dasar*, 10(02). <https://doi.org/https://doi.org/10.23969/jp.v10i02.28792>
- William, G. (2009). *Reading in a Second Language: Moving from Theory to Practice*. Cambridge University Press.
https://books.google.co.id/books?hl=id&lr=&id=prvRHZ7DrIcC&oi=fnd&pg=PR11&dq=grabe+2009&ots=DEknQmZU-u&sig=pHK96mGNXL7cDNxCBpqp8QQffLM&redir_esc=y#v=onepage&q=grabe+2009&f=false
- Yulianti, T., Insani, N. H., & Sukoyo, J. (2025). EFEKTIVITAS MEDIA PEMBELAJARAN QUIZ ZEP TERHADAP HASIL BELAJAR KOGNITIF BAHASA JAWA SISWA SMA. *Jurnal Ilmiah Pendidikan Citra Bakti*, 12(November), 1170–1183. <https://doi.org/https://doi.org/10.38048/jipcb.v12i4.5627>
- Zainuddin, Z., Cu, S. K. W., Shujahat, M., & Perera, J. (2020). *The Impact of Gamification on Learning and Instruction: A Systematic Review of Empirical Evidence*. <https://doi.org/https://doi.org/10.1016/j.edurev.2020.100326>