



Examining the Effectiveness of Quizizz on the English Proficiency of Ninth-Grade Students in a Selected Boarding Middle School

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Abstract

This study examined the effectiveness of a Quizizz-based homework intervention in improving junior high school students' English achievement. Two intact Grade 9 classes in a public junior high school in China participated in the study, with one class (n = 46) assigned as the experimental group and the other (n = 43) as the control group. Both groups completed a researcher-developed pre-test and post-test assessing vocabulary, grammar, reading comprehension, and overall English performance. The experimental group received four weeks of Quizizz-based homework aligned with the lessons, while the control group completed equivalent paper-based assignments. Statistical analyses included descriptive statistics, reliability testing, normality testing, paired-samples t-tests, and independent-samples t-tests. The results showed that the two groups had comparable baseline proficiency across all components. The experimental group demonstrated significant improvements from pre-test to post-test in vocabulary, grammar, reading, and total English scores, whereas the control group showed minimal or negative changes. Post-test comparisons further revealed that the experimental group outperformed the control group across all components. Gain-score analysis confirmed substantially greater improvements in the experimental group. Overall, the findings indicate that Quizizz-based homework is an effective and engaging approach for enhancing English achievement among junior high school learners.

Keywords: *Chinese Boarding Schools; English Proficiency; Gamification; Quantitative Research; Quizizz*

A. Introduction

Homework has long been regarded as an essential component of English as a Foreign Language (EFL) learning, yet traditional paper-based assignments are frequently criticized for being monotonous, repetitive, and disconnected from meaningful engagement. Students often receive feedback days after completing worksheets, which reduces their interest and limits opportunities for timely correction. Such delayed, mechanical drills tend to result in superficial learning and low motivation, particularly for junior high school learners who require continuous reinforcement of vocabulary, grammar, and reading skills. With the rapid development of educational technologies, teachers have increasingly explored digital tools to redesign homework into more interactive, responsive, and engaging tasks. Gamification, defined as the integration of game design elements such as points, badges, leaderboards, and instant feedback into non-game contexts, has become a promising approach for enhancing participation and sustained learning (Deterding et al., 2011; Werbach & Hunter, 2012). When applied to language

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learning, these features have the potential to transform homework from a passive obligation into a dynamic process that encourages practice, self-reflection, and persistence.

The motivational value of gamified homework can be explained through several theoretical perspectives. Self-Determination Theory (SDT) suggests that learners are more intrinsically motivated when their needs for autonomy, competence, and relatedness are supported (Deci & Ryan, 2000). Platforms such as Quizizz enable students to work at their own pace, receive instant feedback, track their progress, and experience a sense of social connection through rankings or shared challenges, all of which help address these psychological needs. Flow Theory offers an additional explanation: when tasks are balanced between challenge and skill, learners may enter a state of deep concentration, which enhances both enjoyment and performance. Quizizz's timed questions, progress bars, and clear goals make it well-suited for creating optimal learning conditions. From a constructivist perspective, gamified digital tasks also promote active knowledge construction, as learners continually retrieve information, apply rules, form hypotheses, and correct misunderstandings through immediate feedback cycles. These characteristics make gamified homework particularly suitable for vocabulary recall, grammar accuracy, and reading comprehension.

Empirical research further demonstrates the benefits of gamification in education. Studies show that digital game-like elements increase motivation, participation, and academic performance across various disciplines (Hamari et al., 2014; Wang & Lieberoth, 2016). In second language learning, instant feedback, repeated exposure, and interactive formats support vocabulary retention, grammar mastery, and interpretive reading skills (Al-Dosakee & Ozdamli, 2021). Leaderboards and point-based systems may also encourage students to practice more frequently, though scholars caution that poorly balanced competitive elements could increase anxiety among lower-performing learners (Kim et al., 2022; Huang & Hew, 2021). Beyond short-term engagement, gamified homework has been linked to the development of self-regulated learning behaviors, including goal-setting, progress monitoring, and strategic practice, all of which contribute to long-term academic growth (Sun & Hsieh, 2018; Dörnyei, 2009).

Among various platforms, Quizizz has garnered significant attention due to its support for both synchronous and asynchronous learning. Its self-paced mode, multimedia question formats, instant feedback, and detailed analytics make it especially suitable for homework tasks. Teachers can design quizzes aligned with textbook content, monitor accuracy and completion rates, and identify student difficulties more efficiently than through traditional paper worksheets. For students, the game-like structure, rewards, and visual progress indicators increase enjoyment and reduce the pressure associated with language practice. These affordances are particularly valuable in boarding schools, where learners have limited access to individualized support outside class hours.

Despite its potential, several challenges affect the implementation of gamified homework, especially in resource-constrained settings. Boarding schools and rural areas often lack reliable internet access or restrict students from carrying digital devices, creating unequal opportunities for participation (Zhou & Wang, 2021; Nguyen & Habók, 2022). Teacher readiness also remains a concern, as effective use of digital platforms requires not only familiarity with the tools but also pedagogical skills in designing high-quality gamified tasks. Cultural attitudes toward education may also influence acceptance, since parents and teachers in exam-oriented contexts sometimes question whether game-based learning is sufficiently rigorous or may distract students from academic objectives. Additionally, the motivational “novelty effect” of gamification may diminish over time unless activities are updated and meaningfully integrated into instruction (McGonigal, 2020).

Although a substantial body of research supports the motivational and cognitive benefits of gamification, several gaps remain. Most studies focus on in-class applications or real-time competitive quizzes, while fewer examine asynchronous, homework-based implementations. Even fewer studies investigate how gamified homework performs in under-resourced environments such as Chinese boarding schools, where device restrictions and time limitations pose unique challenges. Moreover, limited empirical evidence specifically examines the effects of Quizizz-based homework on vocabulary, grammar, and reading—the core academic components of junior high school English instruction and the skills most easily measured through parallel testing.

To address these gaps, the present study investigates the effectiveness of a four-week Quizizz-based homework intervention on the English proficiency of ninth-grade students in a boarding school setting. By comparing Quizizz homework with equivalent paper-based tasks, the study aims to determine whether gamified digital homework can meaningfully enhance vocabulary, grammar, and reading performance under real-world constraints. In doing so, it contributes quantitative evidence on the pedagogical value and practical feasibility of integrating gamified learning tools into everyday EFL instruction.

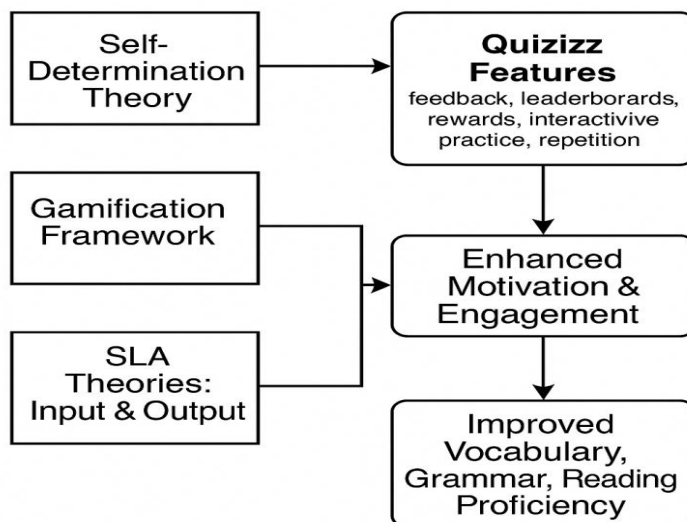


Figure 1. Conceptual framework of the study.

B. Methods

This study employed a two-group pretest–posttest quasi-experimental design to investigate the effectiveness of Quizizz-based homework on the English proficiency of ninth-grade students in a natural school setting. A quasi-experimental approach was appropriate because intact classes, rather than individual students, could be assigned to conditions without disrupting existing administrative groupings (Creswell & Creswell, 2018). Two Grade 9 classes from a boarding middle school in Jiangsu Province were purposively selected based on school records indicating comparable academic achievement and demographic characteristics. One class ($n = 46$) served as the experimental group and completed Quizizz-based gamified homework for four consecutive weeks, while the other class ($n = 43$) served as the control group and completed equivalent paper-based homework covering the same content and workload.

To ensure fairness and internal validity, both groups received identical instructional content, textbooks, class schedules, and assessment standards; the only systematic difference between them was the mode of homework completion (digital vs. paper-based). Both groups took a

standardized English proficiency test before and after the one-month intervention. The pre- and post-tests measured vocabulary, grammar, and reading comprehension and were constructed using parallel blueprints and difficulty levels. Quantitative analyses focused on within-group improvement and between-group differences. Potential threats to internal validity, such as history and maturation, were minimized by keeping the intervention period fixed, aligning instructional content across groups, standardizing test administration, and ensuring that no additional English support programs were introduced during the study.

The participating school had 232 Grade 9 students across five classes. Two intact classes, representative of the cohort in terms of recent English and mathematics scores, gender distribution, and socioeconomic background, were selected in consultation with school administrators. These classes had been formed at the beginning of the academic year and were similar in size and academic standing. A post hoc power analysis conducted using G*Power 3.1 indicated that, assuming $\alpha = .05$, power = .80, and a medium effect size ($d = 0.50$), a minimum of 64 participants would be required. The final sample of 89 students (46 in the experimental group and 43 in the control group), all aged 13–14, therefore exceeded the recommended minimum. Comparable or smaller samples are common in quasi-experimental studies on gamified learning and second language acquisition (e.g., Hung, 2017; Zainuddin & Attaran, 2016; Tsai & Tsai, 2018), supporting the methodological adequacy of the sample size.

Table 1. Baseline characteristics of the two ninth-grade classes (pre-intervention)

Characteristic	experimental group	control group	Test	p-value
	Class 2 (n=46)	Class 3 (n=43)		
Gender, % female	52.2%	48.8%	χ^2	.74
Age, mean (SD)	13.6 (0.5)	13.5 (0.4)	t	.42
English exam score [†] , mean (SD)	69.8 (8.5)	70.5 (9.2)	t	.68
Mathematics exam score [†] , mean (SD)	72.4 (10.8)	71.6 (11.1)	t	.77
Overall academic rank [‡] , median (IQR)	116 (102–130)	113 (98–127)	U	.63
Parent education, % (low/mid/high)	39 / 41 / 20	42 / 40 / 18	χ^2	.89
Attendance rate, %	96.2%	95.8%	t	.81
Prior gamified tool exposure, %	21.7%	23.3%	χ^2	.84
Weekend device access, %	82.6%	83.7%	χ^2	.92

Baseline comparability between the two classes was verified using school records and preliminary analyses. Variables examined included gender distribution, age, recent English and mathematics exam scores, overall academic rank in the grade level, parent education level, attendance rate, prior exposure to gamified tools, and weekend access to digital devices. No statistically significant differences were found (all $p > .05$), indicating that the two classes were equivalent as experimental and control groups at the outset. This comparability strengthened both internal validity by reducing concerns about pre-existing differences and external validity by showing that the sample was reasonably representative of the broader ninth-grade population in the school.

Participant selection emphasized equity and transparency. All Grade 9 classes were informed about the study through class meetings, and information sheets were distributed to

students and parents. Participation opportunities were presented openly rather than through convenience sampling. The decision to include the two selected classes was based on academic representativeness and logistical feasibility rather than on expected performance advantages. Both groups received the same instructional time and curricular content regardless of participation, ensuring that no student was academically disadvantaged by the study.

Clear inclusion and exclusion criteria were applied to protect participants' rights and ensure the integrity of the data. Eligible participants were junior high school students aged 13–14, officially enrolled in Grade 9 at the participating boarding school, and attending regular English classes during the intervention. Because the participants were minors, written informed consent was obtained from parents or legal guardians, and assent was obtained from students prior to participation. Participation was strictly voluntary; students and parents were informed that declining or withdrawing would not affect grades, class standing, or relationships with teachers and the school. To isolate the effect of the intervention, students with prior experience using Quizizz or similar gamified learning platforms for English were excluded. Additional exclusion criteria included withdrawal of consent at any stage, cognitive or emotional difficulties that would prevent meaningful participation, missing more than three English lessons during the intervention, or failure to complete either the pre-test or the post-test. Non-participation or withdrawal had no academic consequences, and students who withdrew continued to receive regular instruction and homework.

Two main instruments were used in the study: an adapted English proficiency test and the Quizizz platform. The proficiency test was designed to assess vocabulary, grammar, and reading comprehension in alignment with the Grade 8–9 curriculum and the Cambridge English CEFR A2–B1 range. Both the pre-test and post-test consisted of approximately 80 items with a total score of 100 points. The vocabulary and grammar sections each contained about 25 multiple-choice items, focusing on previously taught words and structures. The reading section included three short passages, each accompanied by approximately 30 comprehension questions that targeted main ideas, inferences, supporting details, and vocabulary in context. Two experienced English teachers with more than ten years of teaching experience reviewed and refined all items to ensure curriculum alignment, clarity, and cultural appropriateness. A small pilot test with 12–20 non-participant Grade 9 students was conducted to evaluate clarity, timing, and difficulty. Ambiguous or inappropriate items were revised or replaced in line with classical test theory principles. Both test administrations followed standardized procedures with identical instructions, time limits, and proctoring across classes. Answers were scored using a single-best-response scheme without partial credit, and all scores were double-checked to ensure scoring reliability.

Quizizz was employed as the gamified homework tool for the experimental group. Weekly assignments were designed to reinforce the vocabulary, grammar, and reading objectives taught in class during that week. Each assignment required approximately 15–20 minutes to complete and consisted of multiple-choice and other auto-gradable items. Quizizz features, including immediate feedback, automatic scoring, points, power-ups, answer streaks, and leaderboards, were enabled to increase motivation while maintaining a focus on accuracy and comprehension. A table of specifications was used to guide the distribution of items across content areas and cognitive levels, ensuring balanced coverage of the three skill domains. The control group received parallel paper-based homework that mirrored the content, number of items, difficulty, and expected completion time of the Quizizz assignments, allowing the study to isolate the effect of the homework format rather than the content itself. Although Quizizz automatically generated analytics on accuracy, completion rates, and time on task, these data were used only for monitoring participation; inferential statistics were based solely on pre-test and post-test scores.

Table 2 Sample Table of Specifications for a Weekly Quizizz Assignment (Example: Week 1)

Content Area / Learning Objective	Cognitive Level / Skill	Number of Items	Percentage of Total Items
Vocabulary			
Unit 1: School Life Vocabulary	Recall/Recognition	8	20%
Unit 1: Academic Terms	Application	4	10%
Grammar			
Present Simple Tense	Application/Formulation	10	25%
Adverbs of Frequency	Application/Usage	6	15%
Reading Comprehension			
Short Passage 1 (Main Idea)	Understanding/Analysis	4	10%
Short Passage 1 (Detail Recall)	Recall/Identification	4	10%
Total		36	100%

To ensure cultural and linguistic appropriateness for the Chinese boarding-school context, all test instructions, information sheets, and consent materials were translated into simplified Chinese and reviewed for clarity and sensitivity. Two senior English educators examined the adapted instruments and procedures to confirm alignment with local curricular expectations and the cognitive level of the students. This multi-step validation process helped ensure that the instruments were both pedagogically sound and contextually suitable.

The study followed standard ethical guidelines for research involving minors. The protocol was submitted to the Ethics Review Committee of the researcher's institution for approval prior to implementation. Students and parents were fully informed about the purpose, procedures, potential risks, and benefits of the study. Risks were minimal and primarily involved the additional time required to complete weekly homework tasks and two standardized tests, as well as a slight increase in screen time for the experimental group. Teachers fostered a supportive environment and emphasized that performance on the tests would not affect term grades. Counseling support from the school guidance office was available if any student experienced discomfort or anxiety. All data were treated confidentially: identifying information was replaced by codes before analysis, digital files were password-protected, and paper documents were stored securely. Data will be retained for five years for verification and publication purposes, after which they will be deleted or destroyed. The research team declared no financial or personal conflicts of interest with Quizizz or any other commercial entity, and the study was conducted solely for academic purposes.

Data analysis was conducted using SPSS 26. Descriptive statistics (means, standard deviations, and where relevant medians) were computed for pre-test and post-test scores in vocabulary, grammar, reading, and total English achievement for both groups. Within each group, paired-samples t-tests were used to compare pre-test and post-test scores and to determine whether significant improvement occurred over the four-week period. Between groups, independent-samples t-tests were conducted on gain scores (post-test minus pre-test) to assess whether the experimental group achieved significantly greater improvement than the control group. Effect sizes were calculated using Cohen's *d* for within-group changes and Hedges' *g* for between-group comparisons to evaluate the magnitude of differences. In the unlikely event of missing data, listwise deletion was planned for participants without complete pre- and post-test scores. The pattern and extent of missing data were to be examined to determine whether they were missing completely at random; if the proportion of missing data exceeded 5%, multiple imputation procedures were to be considered to preserve statistical validity. The overall analytic

strategy was directly aligned with the study objectives, which focused on quantifying both within-group and between-group improvements in English proficiency. Statistical outputs were independently checked by a qualified statistician to ensure accuracy, reproducibility, and consistency.

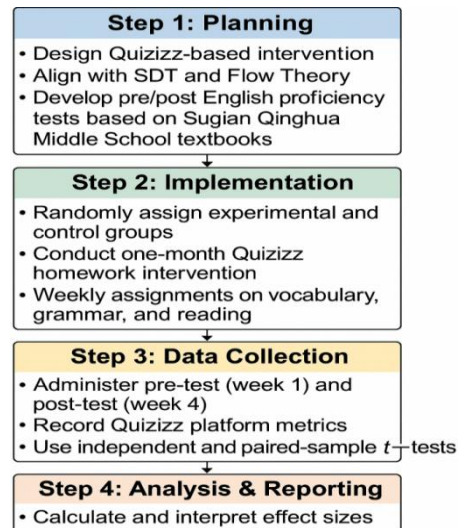


Figure 2. Research procedure

C. Results and Discussion

This chapter presents the statistical analysis conducted to evaluate the effectiveness of the Quizizz-based homework intervention compared with traditional paper-based homework. The analysis focuses on the students' performance on their pre-test and post-test in vocabulary, grammar, reading, and overall English achievement. Descriptive statistics, tests of normality, reliability analysis, paired-samples t -tests, and independent-samples t -tests on gain scores were performed in accordance with the study's research objectives. The findings are organized to address SO1 through SO4, highlighting the baseline equivalence of groups, within-group improvements, between-group differences, and the overall impact of the intervention.

The dataset included 89 students, with 46 in the experimental group (Grade 2) and 43 in the control group (Grade 3). All students completed both the pre-test and post-test, and no missing data were identified. Only the achievement scores from the pre-test and post-test were retained for analysis, while the weekly practice scores (Weeks 1–4) were excluded from this chapter as they functioned only as formative tasks and were not part of the statistical evaluation. Eight variables were analyzed: Pre_Vocabulary (Pre_V), Pre_Grammar (Pre_G), Pre_Reading (Pre_R), Pre_Total, Post_Vocabulary (Post_V), Post_Grammar (Post_G), Post_Reading (Post_R), and Post_Total. Group membership was coded as 1 for the experimental group and 0 for the control group. The data were complete and ready for subsequent statistical analyses. The pre-test demonstrated low internal consistency, with a Cronbach's alpha of 0.41. In contrast, the post-test showed acceptable reliability, with a Cronbach's alpha of 0.83. These values indicate that the post-test scores were more internally consistent than the pre-test scores.

The Kolmogorov–Smirnov and Shapiro–Wilk tests indicated that several pre-test and post-test variables deviated significantly from normality ($p < .05$). These results show that the score distributions were not normally distributed. The descriptive statistics for the pre-test and post-test vocabulary, grammar, reading, and total achievement scores for both groups are summarized

in Table 3. The table presents the mean scores and standard deviations for each component at both testing points for the experimental and control groups.

Table 3. Descriptive Statistics for Pre-test and Post-test Scores of Experimental and Control Groups

Group	Test	Vocabulary M (SD)	Grammar M (SD)	Reading M (SD)	Total M (SD)
Experimental (n = 46)	Pre-test	14.80 (2.42)	14.61 (2.65)	20.96 (3.59)	50.37 (5.95)
Experimental (n = 46)	Post-test	15.85 (2.60)	15.85 (2.58)	23.61 (3.47)	55.30 (6.14)
Control (n = 43)	Pre-test	14.47 (2.64)	14.58 (2.57)	20.28 (3.53)	49.33 (5.79)
Control (n = 43)	Post-test	14.79 (2.68)	14.88 (2.72)	21.09 (3.85)	50.77 (6.03)

Within-group differences between the pre-test and post-test scores were examined using paired-samples t-tests for both the experimental and control groups across the four achievement components. The experimental group demonstrated statistically significant improvements in vocabulary, grammar, reading, and total scores from pre-test to post-test, indicating that students showed meaningful progress following the four-week Quizizz-based homework intervention. In contrast, the control group exhibited minimal gains, with some components showing non-significant changes or slight decreases. These results suggest that the traditional paper-based homework approach did not lead to comparable improvements. Detailed paired-samples t-test results for both groups are presented in Table 4.

Table 4. Paired-samples t-tests for pre-test and post-test scores within each group

Group	Outcome	n	Pre-test M (SD)	Post-test M (SD)	Mean Diff (Pre-Post)	95% CI (LL, UL)	t	df	p	Cohen's d
Experimental	Vocabulary	46	14.80 (2.31)	15.85 (2.34)	-1.04	[-1.84, -0.25]	-2.65	45	.011	-0.39
Experimental	Grammar	46	14.61 (2.39)	15.85 (2.24)	-1.24	[-2.06, -0.42]	-3.04	45	.004	-0.45
Experimental	Reading	46	20.96 (3.88)	23.61 (3.47)	-2.65	[-4.04, -1.26]	-3.85	45	< .001	-0.57
Experimental	Total	46	50.37 (5.95)	55.30 (6.14)	-4.94	[-7.47, -2.40]	-3.92	45	< .001	-0.58
Control	Vocabulary	43	14.47 (2.20)	9.77 (5.71)	4.70	[2.80, 6.59]	4.999	42	< .001	0.76
Control	Grammar	43	14.58 (2.68)	11.95 (4.71)	2.63	[1.04, 4.22]	3.337	42	.002	0.51
Control	Reading	43	20.28 (3.28)	13.91 (2.72)	6.37	[5.03, 7.72]	9.562	42	< .001	1.46
Control	Total	43	49.33 (5.79)	35.63 (3.56)	13.70	[11.57, 15.83]	12.961	42	< .001	1.98

Note. Negative mean differences for the experimental group indicate improvement (higher post-test scores). Positive mean differences for the control group indicate a decline in performance.

Between-group differences in learning gains were examined using independent-samples t-tests comparing the gain scores (post-test minus pre-test) of the experimental and control groups. Significant differences were found across all four achievement components. The experimental group achieved substantially higher gains in vocabulary, grammar, reading, and total English

proficiency compared with the control group, which showed minimal improvement or performance declines. These results indicate that the Quizizz-based homework intervention produced significantly greater learning gains than the traditional paper-based homework method. Detailed results of the independent-samples t-tests are presented in Table 5.

Table 5. Independent-samples t-tests for gain scores between experimental and control groups

Outcome	Group	n	Mean Gain	SD	t	df	p	95% CI (LL, UL)	Hedges' g
Vocabulary Gain	Experimental	46	1.04	–	4.93	87	< .001	[0.63, 1.46]	1.05
	Control	43	–4.70	–					
Grammar Gain	Experimental	46	1.24	–	4.15	87	< .001	[0.65, 1.83]	0.88
	Control	43	–2.63	–					
Reading Gain	Experimental	46	2.65	–	8.09	87	< .001	[1.98, 3.33]	1.72
	Control	43	–6.37	–					
Total Gain	Experimental	46	4.94	–	10.80	87	< .001	[3.98, 5.89]	2.29
	Control	43	–13.70	–					

Note. Negative gain scores for the control group indicate performance decline. Gains represent post-test minus pre-test scores.

The findings of this study collectively demonstrate that the Quizizz-based homework intervention meaningfully enhanced ninth-grade students' English proficiency compared with traditional paper-based assignments. The confirmation of baseline equivalence between the experimental and control groups is essential for interpreting these results. Pre-test scores showed no significant differences in vocabulary, grammar, reading, or overall achievement, indicating comparable initial proficiency. This equivalence strengthens the internal validity of the quasi-experimental design (Creswell & Creswell, 2018) and ensures that subsequent performance differences are attributable to the intervention rather than pre-existing disparities. Theoretically, equivalent starting points imply that both groups possessed similar motivational states and linguistic knowledge. As Self-Determination Theory (SDT) argues, learners' engagement is shaped by their experiences of autonomy, competence, and relatedness (Deci & Ryan, 1985, 2000). Given similar school environments and teaching conditions, it is reasonable to infer that both groups entered the study with comparable fulfillment of these psychological needs. Constructivist Learning Theory also suggests that new knowledge builds on existing cognitive structures (Vygotsky, 1978); thus, equivalent proficiency implies comparable schemas for processing new input. Additionally, second-language acquisition research (Krashen, 1982) indicates that initial proficiency affects how learners internalize comprehensible input, reinforcing the relevance of confirming group equivalence.

Against this foundation, the significant improvements observed in the experimental group demonstrate the positive impact of the Quizizz-based homework model. Students using Quizizz improved in vocabulary, grammar, reading, and total English achievement, suggesting that the platform's combination of repetition, immediate feedback, time constraints, and visual engagement supported deeper learning. These findings are consistent with prior research showing that gamified environments enhance attention, persistence, and accuracy in academic tasks (Deterding et al., 2011; Hung et al., 2018). From an SDT perspective, Quizizz strengthened autonomy through self-paced practice, competence through instant feedback and opportunities to retry, and relatedness through competitive elements such as leaderboards and rankings. These

experiences likely fostered intrinsic motivation and encouraged sustained engagement. In line with Krashen's Input Hypothesis (1982), repeated exposure to comprehensible input in varied contexts supported vocabulary and grammar consolidation. Swain's Output Hypothesis (1985) further explains that real-time feedback enabled learners to notice linguistic gaps and refine their interlanguage systems. Flow Theory also provides insight into the observed gains: the balance between challenge and skill, coupled with real-time progress indicators, likely facilitated deep concentration and enjoyment (Csikszentmihalyi, 1990), enhancing learning performance. Beyond measurable outcomes, the increased self-monitoring and strategy adjustment required by self-paced digital tasks suggest that students developed early forms of self-regulated learning and academic self-development.

The post-test differences between groups further highlight the superiority of the Quizizz homework model over traditional paper-based assignments. While the experimental group achieved higher scores across all proficiency components, the control group showed limited improvement or even declines. This divergence underscores the limitations of conventional worksheets, which provide delayed feedback and limited interactivity. Theoretical explanations again align with these empirical patterns. The interactive, feedback-rich structure of Quizizz provided sustained, meaningful input (Krashen, 1982) and opportunities for immediate output correction (Swain, 1985), strengthening both receptive and productive processes. Motivational affordances such as points, badges, and leaderboards have been shown to increase engagement and persistence (Zainuddin & Attaran, 2020; Deterding et al., 2011), likely contributing to the higher level of effort and attention observed among the experimental group. Flow-inducing task characteristics—clear goals, challenge–skill balance, and continuous feedback—are more inherent to digital gamified tasks than to static paper worksheets (Csikszentmihalyi, 1990). The superior performance also reflects meaningful changes in learning behaviors. The digital environment encouraged students to track their progress, revisit incorrect responses, and take greater responsibility for their learning—behaviors associated with long-term self-regulated learning development. The availability of analytics additionally supports teachers in making more responsive, data-informed instructional decisions, a benefit absent in traditional homework formats. In resource-constrained contexts, the fact that students achieved substantial gains with a free, low-cost platform suggests that gamified digital homework can help narrow learning gaps and provide more equitable learning opportunities.

The gain-score analysis offers further support for the effectiveness of Quizizz-based homework. The experimental group showed substantially larger improvements than the control group across vocabulary, grammar, reading, and overall English achievement. These results reflect not only statistical significance but also practical educational value. The mechanisms identified earlier—enhanced motivation through autonomy, competence, and relatedness (Deci & Ryan, 1985, 2000), repeated exposure to comprehensible input (Krashen, 1982), and opportunities for noticing and repairing linguistic gaps (Swain, 1985)—explain why the experimental group demonstrated greater progress. Gamification principles such as rewards, levels, and performance tracking further promote engagement (Deterding et al., 2011; Dichev & Dicheva, 2017), likely increasing the amount and quality of learners' homework practice. Flow Theory again accounts for the deeper cognitive engagement observed in the experimental group. These gain differences also indicate developmental changes in learners' self-efficacy and independence. Students accustomed to monitoring their own performance and adjusting study strategies in interactive digital environments are more likely to form productive academic habits than those completing traditional worksheets, which provide limited feedback and few opportunities for reflection.

Collectively, these results demonstrate that Quizizz-based homework supports both immediate learning outcomes and broader academic development. The platform's motivational, cognitive, and interactive affordances promote more effective language learning than traditional homework methods, even within the constraints of a boarding school environment. The findings highlight the potential for low-cost digital interventions to enhance English proficiency, foster self-regulated learning, and provide scalable, equitable strategies for improving academic performance in resource-limited educational settings.

D. Conclusion

This study investigated the effectiveness of a Quizizz-based homework intervention on the English achievement of junior high school students in vocabulary, grammar, reading, and overall performance. Four conclusions were drawn based on the statistical results aligned with the study's specific objectives. First, the experimental and control groups demonstrated comparable baseline proficiency, as no significant differences were found in their pre-test scores. Second, the experimental group demonstrated significant improvement from the pre-test to the post-test across all achievement components. Third, post-test comparisons indicated that the experimental group outperformed the control group in vocabulary, grammar, reading, and total English scores. Finally, gain-score analysis confirmed that the experimental group achieved substantially higher gains than the control group. Overall, the findings indicate that the Quizizz-based homework intervention produced positive effects on students' English achievement across the four target components.

Based on the findings and conclusions of this study, several recommendations are proposed for students, teachers, school administrators, and future researchers to optimize the use of gamified digital platforms such as Quizizz in enhancing English achievement. For Students. Students are encouraged to actively engage with gamified learning tools both inside and outside the classroom. Because platforms like Quizizz provide immediate feedback, repeated exposure, and opportunities for self-paced practice, students can utilize these tools to reinforce vocabulary, grammar, and reading comprehension independently. Students should also take advantage of the motivational features of gamified platforms—such as points, badges, and rankings—to set personal learning goals and track their progress. For Teachers. Teachers are advised to integrate Quizizz or similar platforms into their homework routines to provide more engaging, interactive, and feedback-rich learning experiences. The results of this study indicate that gamified homework can significantly enhance academic performance compared to traditional paper-based tasks. Teachers should design items that align with lesson objectives, incorporate varying difficulty levels, and use feedback analytics to identify students' learning gaps. Additionally, teachers may combine Quizizz with classroom instruction to create blended learning environments that support both input- and output-based language practice. For School Administrators. School leaders should consider incorporating digital, gamified tools into the school's instructional technology initiatives. Providing sufficient digital infrastructure—such as stable internet access and devices—would allow more students to benefit from interactive learning experiences. Training programs for teachers on effective integration of gamified platforms into curriculum and assessment practices are also recommended. Administrators may explore institutional policies that support innovative assessment and encourage technology-enhanced learning. For Future Researchers. Subsequent studies may investigate the long-term effects of gamified homework on language retention, motivation, and learner autonomy. Researchers may also explore other English components, such as listening, speaking, or writing, or compare Quizizz with other gamified platforms to identify the most effective features. Mixed-methods or qualitative studies could further examine students' perceptions, engagement patterns,

and motivational changes. Expanding the sample to multiple grade levels or schools is also recommended to strengthen generalizability. The value of integrating gamified learning tools in junior high school English instruction is suggested, along with directions for improving practice, policy, and research.

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