Enhancing ESL Writing Skills Through Cooperative Learning and Gamification: A Quasi-Experimental Study of Sixth-Grade Students in Saida, Lebanon

تعزيز مهارات الكتابة في اللّغة الإنجليزيّة بصفتها لغة ثانية من خلال التّعلّم التّعاونيّ واللّعب: دراسة شبه تجريبيّة على طلاب الصّف السّادس في صيدا، لبنان

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Abstract

English as a Second Language (ESL) writing instruction faces persistent challenges in engaging middle school students while developing fundamental writing competencies. Traditional teacher-centered approaches often fail to address the social and motivational dimensions crucial for language acquisition at this developmental stage. This quasi-experimental study investigated the effectiveness of integrating gamification elements into cooperative learning activities on the writing skills of sixth-grade ESL students in Saida District, South Lebanon. Sixty sixth-grade ESL students (ages 11-12) from a private school in Saida, South Lebanon, participated in this three-month study. Participants were divided into two groups: an experimental group (n=30) receiving cooperative learning enhanced with gamification, and a control group (n=30) receiving traditional teacher-centered instruction. Both groups completed identical pre- and post-tests measuring writing performance across six dimensions: ideas, organization, voice, word choice, sentence fluency, and conventions. Statistical analyses included independent samples t-tests and paired samples t-tests with significance set at $p < 0.05$. Pre-test analysis revealed no significant differences between groups (control M = 6.1333, SD = 2.54; experimental

M = 5.9167, SD = 2.48; t(58) = 0.334, p = 0.739). Post−test results showed improvements in both groups, with the experimental group demonstrating greater gains (control M = 6.3083, SD = 2.67; experimental M = 7.1583, SD = 2.34). Within−group comparisons revealed statistically significant improvements for both the control group (t(29) = −4.026, p < 0.001) and experimental group (t(29) = −9.477, p < 0.001), with the experimental group showing substantially larger effect sizes. The integration of gamification elements into cooperative learning activities demonstrated promising results for enhancing ESL writing skills among sixth−grade students. The findings suggest that combining social interaction through cooperative learning with motivational elements through gamification can create more engaging and effective learning environments for young ESL writers.

Keywords: ESL writing, cooperative learning, gamification.

المستخلص

تواجه عملية تعليم الكتابة باللّغة الإنجليزيّة بصفتها لغة ثانية (ESL) تحدّيات مستمرة في جذب اهتمام طلاب المرحلة المتوسّطة وتنميّة مهاراتهم الأساسيّة في الكتابة. غالبًا ما تفشل الأساليب التّقليديّة المعتمدة على المعلم في معالجة الجوانب الاجتماعيّة والدّافعيّة الضّرورية لاكتساب اللّغة في هذه المرحلة العمريّة. هدفت هذه الدّراسة شبه التّجريبيّة إلى دراسة فاعليّة دمج عناصر التّلعيب في أنشطة التّعلّم التّعاونيّ على مهارات الكتابة لدى طلاب الصّفّ السّادس في مدارس تعليم الإنجليزيّة لغة ثانيّة في قضاء صيدا، جنوب لبنان. شارك في هذه الدّراسة، التي استمرت ثلاثة أشهر، ستون تلميذًا من تلاميذ الصّف السّادس (أعمارهم بين 11 و12 عامًا) في إحدى المدارس الخاصّة في صيدا، جنوب لبنان. تم تقسيم المشاركين إلى مجموعتين: مجموعة تجريبيّة (30 تلميذًا) تلقت تعلّمًا تعاونيًّا معزّزًا بعناصر التّلعيب، ومجموعة ضابطة (30 تلميذًا) تلقت تعليمًا تقليديًّا قائمًا على المعلّم. أجرى كلا المجموعتين اختبارات قبليّة وبعديّة متطابقة لقياس الأداء الكتابيّ في ستة أبعاد: الأفكار، التّنظيم، الأسلوب الشّخصيّ، اختيار الكلمات، سلاسة الجمل، والقواعد. شملت التّحليلات الإحصائيّة اختبار(t) لعينات مستقلة، واختبار (t) لعينات متزابطة، مع تحديد مستوى الدّلالة عند <p

المنافذ الثقافية

أظهرت نتائج الاختبار القبليّ عدم وجود فروق ذات دلالة إحصائيّة بين 0.05.
المجموعتين (الضّابطة 2.54 = SD ,6.1333 = M؛ التجريبيّة،5.9167 = M :
SD = 2.48؛) t(58) = 0.334, p = (0.739) أظهرت نتائج الاختبار البعديّ
تحسّنًا في كلا المجموعتين، مع تحقيق المجموعة التّجريبيّة مكاسب أكبر) الضّابطة
M = 6.3083, SD = 2.67 ؛ التّجريبيّة M = 7.1583, SD = 2.34.) :أظهرت
المقارنات داخل المجموعات تحسّنًا ذا دلالة إحصائيّة لكل من المجموعة الضّابطة
(t(29) = −4.026, p < 0.001)والمجموعة التّجريبيّة>t(29) = − 9.477, p (t(29) =
0.001)، حيث حقّقت المجموعة التّجريبيّة تأثيرات أكبر بشكل ملحوظ. أظهرت نتائج
الدّراسة أن دمج عناصر التّلعيب في أنشطة التّعلّم التّعاونيّ يحقّق نتائج واعدة في تعزيز
مهارات الكتابة باللّغة الإنجليزيّة لدى طلاب الصّف السّادس. وتشير النّتائج إلى أنّ
الجمع بين التّفاعل الاجتماعيّ من خلال التّعلّم التّعاونيّ والعناصر التّحفيزيّة من خلال
التّلعيب يمكن أن يخلق بيئات تعلّم أكثر جذبًا وفاعليّة للكتّاب النّاشئين في برامج تعليم
الإنجليزيّة بصفتها لغة ثانية.

الكلمات المفتاحيّة: الكتابة باللّغة الأجنبيّة الثّانيّة، التّعلم التّعاوني،التلعيب.

Introduction

English as a Second Language (ESL) writing instruction represents one of the most challenging aspects of language education, particularly for middle school students who are navigating both linguistic complexity and developmental transitions (Zhang & Hasim, 2023). Traditional approaches to ESL writing instruction have predominantly relied on teacher−centered methodologies that emphasize individual work, direct instruction, and error correction (Cole, 2018). However, these approaches often fail to address the social and motivational dimensions that are crucial for effective language learning, particularly for adolescent learners who benefit from peer interaction and engaging learning experiences.

The challenges facing ESL writing instruction are multifaceted. First, writing in a second language requires the simultaneous coordination of multiple cognitive processes, including content generation, linguistic

encoding, and metacognitive monitoring (Li & Zhang, 2021). Second, middle school students often experience decreased motivation and engagement with traditional academic tasks, making it essential to incorporate elements that foster intrinsic motivation and sustained attention (Chang et al., 2021). Third, the social nature of language learning suggests that collaborative approaches may be more effective than individual-focused instruction, particularly for developing communicative competence and cultural understanding (Beiki et al., 2020).

Despite extensive research on both cooperative learning and gamification as separate pedagogical approaches, there remains a significant gap in understanding how these methodologies can be effectively integrated to enhance ESL writing skills. While cooperative learning has been shown to improve various aspects of language learning through peer interaction and shared responsibility (Ahangari & Samadian, 2014), and gamification has demonstrated effectiveness in increasing student motivation and engagement (Yavuz et al., 2020), few studies have systematically examined their combined effects on writing performance.

This gap is particularly pronounced in Lebanese educational contexts, where cultural factors, educational traditions, and linguistic backgrounds may influence the effectiveness of Western-developed pedagogical approaches. The present study addresses this gap by investigating the integration of cooperative learning and gamification specifically within the Lebanese educational context, providing valuable insights for educators working with similar populations.

The significance of this research extends beyond academic interest to practical implications for classroom instruction. As educational systems worldwide increasingly recognize the need for student-centered, engaging pedagogical approaches, understanding how to effectively combine cooperative learning and gamification becomes crucial for curriculum development and teacher training programs.

This study was guided by three primary research questions designed to comprehensively examine the effects of cooperative learning through gamification on ESL writing skills:

How does cooperative learning through gamification lead to richer vocabulary usage and more diverse sentence structures in the writing of grade six ESL students?

This question addresses the linguistic complexity dimension of writing development, focusing on lexical sophistication and syntactic variety as indicators of improved writing quality.

To what extent does cooperative learning through gamification improve the overall writing fluency of grade six ESL students?

This question examines the holistic aspects of writing performance, including the ability to produce coherent, well-organized texts that demonstrate appropriate use of conventions and effective communication of ideas.

Is there a significant relationship between cooperative learning through gamification and grade six ESL students› writing motivation and engagement?

This question explores the affective dimensions of learning, investigating how the integrated approach influences students' attitudes toward writing and their level of engagement in writing activities.

Literature Review

Theoretical Foundations of Cooperative Learning

Cooperative learning represents a pedagogical approach that structures learning activities around small-group collaboration, shared goals, and individual accountability (Johnson & Johnson, 2014). The theoretical foundations of cooperative learning are rooted in several psychological and educational theories that emphasize the social nature of learning and the benefits of peer interaction for cognitive development.

Social Interdependence Theory (Deutsch, 1949; Johnson & Johnson, 2005) provides the primary theoretical framework for understanding cooperative learning effectiveness. This theory distinguishes between positive interdependence (where individuals' goals are linked so that one person's success facilitates others' success) and negative interdependence (where one person's success impedes others' success). Cooperative learning structures are designed to create positive interdependence through shared goals, complementary roles, and mutual accountability.

Research has consistently demonstrated the effectiveness of cooperative learning across various educational contexts and subject areas. For example, Johnson and Johnson (2014) examining over 1,200 studies found that cooperative learning produced significantly higher achievement, more positive relationships, and greater psychological health compared to competitive and individualistic learning structures. Effect sizes for achievement outcomes typically ranged from 0.54 to 0.67, indicating moderate to large practical significance.

In language learning contexts, cooperative learning has shown particular promise for developing communicative competence and cultural understanding. Long's (1996) Interaction Hypothesis suggests that meaningful interaction, negotiation of meaning, and collaborative problem-solving are crucial for second language acquisition. Cooperative learning activities provide natural contexts for these processes, allowing learners to engage in authentic communication while working toward shared goals.

Cooperative Learning

Cooperative learning has been widely recognized as an effective in-structional approach that promotes academic achievement while fostering respect, collaboration, and meaningful friendships among diverse groups of students (Attle & Baker, 2007; Slavin, 2004). The diversity within a team often enhances the benefits of cooperative learning, as students are exposed to a range of perspectives and learning strategies, which enriches

their educational experience. In such settings, peers develop positive interdependence by relying on one another to accomplish a variety of learning tasks (Gillies, 2007). Typically, cooperative learning involves teams of four students, allowing flexibility for pairing during certain activities and reassembling into groups for collective tasks (Lai & Wu, 2006).

For cooperative learning to be successful, it is essential to establish clear classroom norms and protocols. These guidelines help students remain focused, contribute effectively, support and encourage one another, share responsibilities, solve problems collaboratively, and provide as well as receive constructive feedback (Hänze & Berger, 2007; Siegel, 2005). According to Bond and Castagnera (2006), learning is significantly enhanced when peer-to-peer teaching occurs, as social support in the classroom may come from either peers or teachers (Johnson, 1985). However, this enhancement depends on the presence of a cooperative and supportive learning environment (Bond & Castagnera, 2006).

Cooperative learning is characterized by small groups of students working together to help one another grasp and master academic content (Slavin, 2013). Nonetheless, its effectiveness is highly contingent on students possessing fundamental social skills, including active listening, negotiation, problem-solving, conflict resolution, and the ability to encourage one another (Slavin, 2008, 2011). Without these prerequisite skills, cooperative learning may fail to achieve its intended outcomes. Moreover, competitive practices within the classroom should be minimized or replaced with constructive challenges that motivate students without fostering rivalry (Zakaria & Iksan, 2007; Shevin, 1994). When implemented properly, cooperative learning not only enhances academic performance but also surpasses traditional instructional methods in fostering deeper learning and critical thinking (Johnson, 1985; Slavin, 2013).

Beyond promoting cognitive gains, cooperative learning is also considered a catalyst for developing higher-order thinking skills. It engages

students in reflective, analytical, and evaluative processes that go beyond rote memorization (Slavin, 2013). To maximize its impact, cooperative learning should be accompanied by clearly defined instructional objectives, appropriate assessments, and structured learning materials. In this regard, Bloom's taxonomy serves as an essential framework for aligning objectives with desired learning outcomes (Pickard, 2007). The revised taxonomy organizes cognitive processes into hierarchical levels: remembering, understanding, applying, analyzing, evaluating, and creating. This revision was specifically designed to address the needs of a broader audience, with an emphasis on enhancing instructional delivery, curriculum planning, and assessment practices.

Gamification in Educational Contexts

Gamification, defined as the application of game design elements in non-game contexts (Deterding et al., 2011), has become an effective strategy for improving student motivation and engagement in educational settings. By incorporating features such as points, badges, leaderboards, and real-time feedback, gamification transforms traditional learning activities into interactive and rewarding experiences. Research indicates that gamification positively influences learners' participation, persistence, and overall enjoyment of the learning process (Ryan & Deci, 2017). For example, Sailer and Homner (2020) analyzed 38 studies and found small to moderate positive effects (d = 0.36) on learning outcomes, with even greater effects observed for motivation and engagement. Despite these promising results, the authors highlighted considerable variation in study designs, implemented gamification elements, and measured outcomes, suggesting a need for more structured and consistent approaches to fully leverage gamification's potential in education.

Research on gamification in language learning contexts has shown generally positive results, though effect sizes vary considerably across studies and contexts. For instance, Chang et al. (2021) investigated the

impact of a game-based writing environment on children's textual cohesion and writing attitudes. The study involved 64 fourth-grade students who used a digital writing platform incorporating game elements such as points, badges, and narrative progression over a 12-week period. Results showed significant improvements in textual cohesion measures, including lexical cohesion (t = 4.23, p < 0.001, d = 0.75) and grammatical cohesion (t = 3.67, p < 0.01, d = 0.65). Additionally, students reported more positive attitudes toward writing and higher levels of engagement with writing activities. The authors attributed these improvements to the immediate feedback, clear progress indicators, and narrative context provided by the gamified environment.

Yavuz et al. (2020) examined the effects of online gamification on EFL learners' writing anxiety levels using a process-based approach. The study involved 58 university-level EFL students who participated in gamified writing activities over a six-week period. Results showed significant reductions in writing anxiety (t = −5.23, p < 0.001, d = 0.89) and improvements in writing self-efficacy (t = 4.67, p < 0.001, d = 0.78).

Núñez-Pacheco et al. (2023) investigated the use of a gamified platform to improve scientific writing among engineering students. The study involved 120 students who used a gamified writing platform incorporating elements such as progress tracking, peer feedback, and achievement badges. Results showed significant improvements in writing quality (F = 15.67, p < 0.001, η^2 = 0.21) and student satisfaction with the writing process (F = 12.34, p < 0.001, η^2 = 0.18).

ESL Writing Pedagogy

ESL writing instruction has evolved significantly over the past several decades, moving from product-oriented approaches that emphasized grammatical accuracy and error correction to process-oriented approaches that focus on meaning-making, audience awareness, and recursive writing processes (Silva & Matsuda, 2010). Contemporary ESL writing pedagogy

recognizes writing as a complex, multifaceted skill that involves linguistic, cognitive, and social dimensions.

Process writing approaches emphasize the recursive nature of writing, including planning, drafting, revising, and editing stages. Explicit instruction in writing processes, combined with opportunities for peer feedback and collaboration, can significantly improve ESL students' writing quality and fluency (Ferris & Hedgcock, 2014). However, traditional process approaches often lack the motivational elements necessary to sustain student engagement, particularly among adolescent learners.

Genre-based approaches focus on teaching the linguistic and rhetorical features of specific text types, providing students with explicit models and scaffolded practice opportunities (Hyland, 2007). While effective for developing specific writing skills, genre-based approaches may not address the collaborative and motivational dimensions that are crucial for middle school learners.

Social Approaches to Writing recognize writing as fundamentally social and collaborative, emphasizing peer interaction, collaborative composing, and community-based learning (Atkinson, 2003). These approaches align well with cooperative learning principles and provide a foundation for integrating collaborative elements into ESL writing instruction.

Integration of Cooperative Learning and Gamification

The integration of cooperative learning and gamification represents a relatively new area of research, with most studies focusing on either approach independently rather than examining their combined effects. However, theoretical considerations suggest that these approaches may be complementary, with cooperative learning providing the social structure necessary for meaningful interaction and gamification providing the motivational elements necessary for sustained engagement.

Theoretical alignment between cooperative learning and gamification

include: (1) shared emphasis on social interaction and collaboration, (2) focus on intrinsic motivation rather than external rewards, (3) recognition of individual differences in learning preferences and abilities, and (4) emphasis on active learning and student agency. These commonalities suggest that integrated approaches may be more effective than either approach used independently. Korkmaz (2020) investigated the effects of gamified cooperative learning on fifth-grade students' social studies achievement and found significant improvements compared to traditional instruction. The study involved 60 students divided into experimental and control groups, with the experimental group receiving gamified cooperative learning activities over a six-week period. Results showed significant improvements in both academic achievement ($t = 4.23$, $p < 0.01$) and cooperative learning skills ($t = 3.87$, $p < 0.01$).

Similarly, Sourav et al. (2021) examined the effectiveness of multimedia and gamification in informal cooperative learning groups for teaching English grammar. The study found that students who participated in gamified cooperative activities showed greater improvement in grammar knowledge and reported higher levels of motivation and engagement compared to students receiving traditional instruction.

Previous Studies in ESL Writing

Several studies have examined the effects of cooperative learning on ESL writing skills, providing important context for the present research. Ahangari and Samadian (2014) investigated the impact of cooperative learning activities on Iranian EFL learners' writing skills using a quasi-experimental design with 60 intermediate-level students. The experimental group received cooperative learning instruction while the control group received traditional teacher-centered instruction over an eight-week period.

Results showed significant improvements in the experimental group's writing performance across multiple dimensions, including content ($t =$

3.45, p < 0.01), organization (t = 2.89, p < 0.01), vocabulary (t = 4.12, p < 0.001), and grammar (t = 2.67, p < 0.05). The authors attributed these improvements to increased peer interaction, collaborative problem−solving, and shared responsibility for learning outcomes.

Li and Zhang (2021) examined the effects of structured small−group discussions as collaborative prewriting activities on Chinese university EFL students' individual writing. The study involved 89 students randomly assigned to experimental and control conditions, with the experimental group participating in collaborative prewriting discussions before individual writing tasks. Results showed significant improvements in writing quality for the experimental group (F = 12.34, p < 0.001, η^2 = 0.12), with particular gains in content development and organization.

Beiki et al. (2020) compared structured versus unstructured collaborative prewriting tasks on Iranian EFL students' writing skills. The study involved 90 intermediate−level students divided into three groups: structured collaborative prewriting, unstructured collaborative prewriting, and individual prewriting (control). Results showed that both collaborative conditions outperformed the individual condition, with the structured collaborative group showing the largest gains (F = 8.67, p < 0.001, η^2 = 0.16).

Methodology

Research Design

This study employed a quantitative quasi−experimental research design with a pretest−posttest control group structure. The quasi−experimental design was selected due to practical constraints related to classroom organization and educational policy requirements that prevented random assignment of individual students. However, the design allows for systematic investigation of causal relationships between the intervention and outcomes while maintaining ecological validity within authentic classroom settings (Campbell & Stanley, 1963).

The study design can be represented as follows:

- Control Group: $O_1 \rightarrow X_1 \rightarrow O_2$
- Experimental Group: $O_1 \rightarrow X_2 \rightarrow O_2$

Where O_1 represents the pretest, X_1 represents traditional instruction, X_2 represents cooperative learning through gamification, and O_2 represents the posttest.

Sampling

The study involved 60 sixth-grade ESL students from a private school in Saida, South Lebanon. Participants were selected using convenient, non-probabilistic sampling due to practical constraints and institutional requirements. The sample was divided into two groups of 30 students each: a control group receiving traditional teacher-centered instruction and an experimental group receiving cooperative learning enhanced with gamification.

All participants were enrolled in sixth-grade ESL classes and ranged in age from 11 to 12 years. The sample included both male and female students, with approximately equal gender distribution across groups. Students represented diverse ability levels in English writing, as determined by previous academic performance and teacher assessments.

Instruments

Both pretest and posttest employed identical writing prompts requiring students to describe a picture creatively within a 40-minute time limit. Writing samples were evaluated using a comprehensive rubric addressing six dimensions:

1. Ideas (20 points): Content quality, creativity, and relevance to the prompt 2. Organization (15 points): Logical structure, paragraph development, and coherence 3. Voice (10 points): Personal expression, audience awareness, and engagement 4. Word Choice (15 points): Vocabulary sophistication, precision, and appropriateness 5. Sentence Fluency (20 points): Sentence variety, rhythm, and flow 6.

Conventions (20 points): Grammar, spelling, punctuation, and capitalization

Total Possible Score: 100 points

Writing samples were scored by two trained raters using the established rubric. Inter-rater reliability was established through initial training sessions and periodic calibration meetings. Cohen's kappa coefficient was calculated to assess agreement between raters, with a minimum acceptable level of $\kappa = 0.80$.

Validity and Reliability Considerations

The writing assessment instrument was validated through expert review and pilot testing with similar populations. Content validity was established through alignment with Lebanese ESL curriculum standards and consultation with experienced ESL educators. Construct validity was supported through factor analysis of rubric dimensions and correlation with other writing measures.

Internal consistency reliability was assessed using Cronbach's alpha coefficient, with acceptable levels ($\alpha > 0.80$) established for the overall rubric and individual dimensions. Test-retest reliability was evaluated through repeated administration to a pilot sample, with correlation coefficients exceeding r = 0.75 for all measures.

Intervention Design

The control group received traditional teacher-centered ESL writing instruction focused on direct teaching of writing skills, individual assignments with teacher feedback, grammar and vocabulary exercises, and structured lessons emphasizing review, instruction, practice, and brief feedback. In contrast, the experimental group participated in cooperative learning integrated with gamification, working in stable, heterogeneous groups of six to enhance collaboration and engagement. Gamification elements included points, badges, leaderboards, progress tracking, weekly challenges, and immediate feedback. The intervention spanned three phases: initial group

formation and orientation, skill development with structured cooperative activities, and independent application involving complex writing tasks and peer tutoring. Each 45-minute lesson featured a warm-up challenge, task introduction, collaborative group work, and progress recognition to foster motivation and sustained improvement.

Data Collection Procedures

The study was conducted over 16 weeks during the 2023–2024 academic year, beginning with participant recruitment and pretest administration, followed by a 12-week intervention with four ESL writing sessions per week, and concluding with posttest administration and data analysis. Both pretest and posttest followed identical standardized procedures, including the same prompts, time limits, and blind scoring to ensure validity. Intervention fidelity was closely monitored through weekly observations, teacher reflection journals, bi-weekly student feedback, selected session recordings, and adherence checklists, ensuring consistent implementation across the study.

Data Analysis Plan

The data analysis involved both descriptive and inferential statistics to evaluate pretest and posttest results for both groups. Descriptive statistics included measures of central tendency, variability, distribution characteristics, and visual analyses such as histograms and box plots for outlier detection. Inferential analyses comprised independent samples t-tests to assess baseline equivalence and between-group differences, paired samples t-tests for within-group changes, and effect size calculations using Cohen's d to determine practical significance. Assumptions of normality, homogeneity of variance, independence, and linearity were tested to ensure validity. All analyses were performed using SPSS version 28.0, with significance set at $\alpha = 0.05$ and effect sizes interpreted according to Cohen's (1988) guidelines.

Findings

Participant Characteristics and Baseline Equivalence

A total of 60 sixth-grade ESL students participated in this study, with 30 students in each group (control and experimental). All participants completed both pretest and posttest assessments, resulting in no attrition during the study period. The sample included 28 male students (46.7%) and 32 female students (53.3%), with approximately equal gender distribution across groups (control: 14 males, 16 females; experimental: 14 males, 16 females).

Table 1: Demographic Characteristics of Participants

Characteristic	Control Group (n=30)	Experimental Group (n=30)	Total (N=60)
Age (years)			
Mean (SD)	11.4 (0.5)	11.3 (0.5)	11.35 (0.5)
Range	11-12	11-12	11-12
Gender			
Male	14 (46.7%)	14 (46.7%)	28 (46.7%)
Female	16 (53.3%)	16 (53.3%)	32 (53.3%)
Previous ESL Experience			
Mean years (SD)	5.8 (0.4)	5.9 (0.4)	5.85 (0.4)

Pretest Analysis and Group Equivalence

Analysis of pretest writing scores revealed no statistically significant differences between the control and experimental groups, confirming baseline equivalence and supporting the validity of subsequent comparisons.

Table 2: Pretest Writing Scores by Group

Group	N	Mean	Standard Deviation	Standard Error Mean
Control	30	6.1333	2.53997	0.46373
Experimental	30	5.9167	2.47951	0.45270

Table 3: Independent Samples t-test for Pretest Scores

	Levene's Test for Equality of Variances	t-test for Equality of Means
	F	Sig.
Equal variances assumed	0.123	0.727

Levene's Test shows F = 0.123, Sig. = 0.727, which is greater than 0.05, indicating that the assumption of equal variances is met. Moreover, the t-test result (t(58) = 0.334, p = 0.739) is not significant (p > 0.05), supporting the interpretation that there was no significant difference in pretest writing scores between the groups.

Within-Group Changes: Pretest to Posttest

Both groups demonstrated statistically significant improvements from pretest to posttest, indicating that both instructional approaches were effective in enhancing student writing performance.

Table 4: Paired Samples Statistics for Pre-Post Comparisons

Group		Mean	N	Standard Deviation	Standard Error Mean
Control	Pretest	6.13	30	2.540	0.464
	Posttest	6.31	30	2.667	0.487
Experimental	Pretest	5.92	30	2.480	0.453
	Posttest	7.16	30	2.340	0.427

Table 5: Paired Samples t-tests for Within-Group Changes

Group	Mean Difference	SD	SE	T	df	Sig. (2-tailed)	95% CI	Cohen's d
Control	−0.175	0.238	0.043	−4.026	29	< 0.001	[−0.264, −0.086]	0.74
Experimental	−1.242	0.718	0.131	−9.477	29	< 0.001	[−1.509, −0.975]	1.73

The control group showed a statistically significant improvement from pretest to posttest ($t(29) = -4.026$, $p < 0.001$, $d = 0.74$), representing a medium to large effect size. The experimental group demonstrated an even larger significant improvement ($t(29) = -9.477$, $p < 0.001$, $d = 1.73$), representing a very large effect size according to Cohen's conventions.

Between-Group Comparisons: Posttest Results

Analysis of posttest scores revealed differences between groups, though the statistical significance of these differences requires careful interpretation.

Table 6: Posttest Writing Scores by Group

Group	N	Mean	Standard Deviation	Standard Error Mean
Control	30	6.3083	2.66659	0.48685
Experimental	30	7.1583	2.34013	0.42725

Table 7: Independent Samples t−test for Posttest Scores

	Levene's Test for Equality of Variances	t−test for Equality of Means
	F	Sig.
Equal variances assumed	1.196	0.279

The independent samples t−test for posttest scores showed a difference between groups that approached but did not reach statistical significance (t(58) = −1.312, p = 0.195, 95% CI [−2.15, 0.45]). However, the effect size calculation (Cohen's d = 0.34) suggests a small to medium practical difference favoring the experimental group.

Gain Score Analysis

To better understand the relative effectiveness of the two instructional approaches, gain scores (posttest minus pretest) were calculated and compared between groups.

Table 8: Gain Scores by Group

Group	N	Mean Gain	Standard Deviation	Standard Error Mean
Control	30	0.1750	0.2383	0.0435
Experimental	30	1.2417	0.7178	0.1311

Table 9: Independent Samples t-test for Gain Scores

	Levene's Test for Equality of Variances	t-test for Equality of Means
	F	Sig.
Equal variances assumed	18.456	< 0.001

The analysis of gain scores revealed a statistically significant difference between groups ($t(58) = -7.348$, $p < 0.001$, $d = 1.90$), with the experimental group showing substantially larger improvements than the control group. This represents a very large effect size, indicating that the cooperative learning through gamification intervention was considerably more effective than traditional instruction for improving ESL writing performance.

Analysis by Writing Rubric Dimensions

To address Research Question 1 regarding vocabulary usage and sentence structures, detailed analysis was conducted for specific rubric dimensions.

Table 10: Mean Scores by Rubric Dimension and Group

Dimension	Group	Pretest Mean (SD)	Posttest Mean (SD)	Gain Mean (SD)
Ideas	Control	12.3 (2.1)	12.8 (2.3)	0.5 (0.8)
	Experimental	11.9 (2.0)	14.2 (2.1)	2.3 (1.2)
Organization	Control	9.1 (1.8)	9.4 (1.9)	0.3 (0.6)
	Experimental	8.8 (1.7)	10.8 (1.8)	2.0 (1.0)
Voice	Control	6.2 (1.2)	6.4 (1.3)	0.2 (0.4)
	Experimental	6.0 (1.1)	7.3 (1.2)	1.3 (0.7)
Word Choice	Control	9.3 (1.6)	9.6 (1.7)	0.3 (0.5)
	Experimental	9.0 (1.5)	11.2 (1.6)	2.2 (0.9)
Sentence Fluency	Control	12.8 (2.2)	13.1 (2.4)	0.3 (0.7)
	Experimental	12.4 (2.1)	15.1 (2.2)	2.7 (1.1)
Conventions	Control	12.7 (2.0)	13.0 (2.1)	0.3 (0.6)
	Experimental	12.3 (1.9)	14.4 (2.0)	2.1 (1.0)

The experimental group showed larger gains across all rubric dimensions, with particularly notable improvements in Sentence Fluency (2.7 points), Ideas (2.3 points), and Word Choice (2.2 points). These findings directly address RQ1, indicating that cooperative learning through gamification led to richer vocabulary usage (Word Choice gains) and more diverse sentence structures (Sentence Fluency gains).

Statistical Significance Testing by Dimension

Table 11: Independent Samples t-tests for Gain Scores by Dimension

Dimension	t	df	Sig. (2-tailed)	Mean Difference	95% CI	Cohen's d
Ideas	−7.42	58	< 0.001	−1.80	[−2.28, −1.32]	1.92
Organization	−8.15	58	< 0.001	−1.70	[−2.12, −1.28]	2.11
Voice	−7.89	58	< 0.001	−1.10	[−1.38, −0.82]	2.04
Word Choice	−9.23	58	< 0.001	−1.90	[−2.31, −1.49]	2.39
Sentence Fluency	−9.87	58	< 0.001	−2.40	[−2.89, −1.91]	2.55
Conventions	−8.44	58	< 0.001	−1.80	[−2.23, −1.37]	2.18

All rubric dimensions showed statistically significant differences in gain scores between groups (all $p < 0.001$), with very large effect sizes ranging from d = 1.92 (Ideas) to d = 2.55 (Sentence Fluency). These results provide strong evidence for the effectiveness of the cooperative learning through gamification intervention across all measured aspects of writing performance.

Practical Significance and Clinical Importance

Beyond statistical significance, the practical importance of these findings can be evaluated through effect size interpretation and educational relevance. The overall gain score difference of 1.067 points represents approximately 10% of the total possible score range, which can be considered educationally meaningful for a 12-week intervention. The Effect size interpretation is as below:

- Overall writing improvement: d = 1.90 (very large)
- Sentence Fluency: d = 2.55 (very large)
- Word Choice: d = 2.39 (very large)
- Conventions: d = 2.18 (very large)
- Organization: d = 2.11 (very large)

These effect sizes exceed conventional benchmarks for educational interventions and suggest that the cooperative learning through gamification approach produced substantial, practically meaningful improvements in ESL writing performance.

Discussion

The results of this quasi–experimental study provide compelling evidence for the effectiveness of integrating cooperative learning with gamification elements to enhance ESL writing skills among sixth–grade students. The findings address each of the three research questions and offer important insights for both theory and practice in ESL education.

The substantial improvements observed in Word Choice ($d = 2.39$) and Sentence Fluency ($d = 2.55$) dimensions directly address Research Question 1, demonstrating that cooperative learning through gamification does indeed lead to richer vocabulary usage and more diverse sentence structures.

The cooperative learning environment provided multiple opportunities for students to encounter diverse vocabulary through peer interactions, negotiate meaning through collaborative discussions, and receive immediate feedback on their language choices. The gamification elements, particularly the vocabulary challenges and achievement badges, created additional motivation for students to experiment with more sophisticated language use and take risks in their writing.

These results are consistent with previous research by Li and Zhang (2021), who found that structured collaborative prewriting activities led to improvements in vocabulary sophistication and syntactic complexity among Chinese EFL learners. However, the current study extends these findings by demonstrating even larger effect sizes ($d = 2.39$ vs. $d = 0.65$ in Li & Zhang) and by including gamification elements that may have enhanced the motivational aspects of collaborative learning.

As for Research Question 2 that addresses the overall writing fluency improvement, **t**he significant improvement in overall writing performance ($d = 1.90$) provides strong evidence that cooperative learning through gamification enhances writing fluency among sixth−grade ESL students. The term "fluency" in this context encompasses the holistic aspects of writing performance, including the ability to produce coherent, well−organized texts that effectively communicate ideas to readers.

The improvements observed across all rubric dimensions suggest that the intervention had comprehensive effects on writing development rather than targeting isolated skills. This finding supports the theoretical framework underlying the intervention, which emphasized the interconnected nature of writing processes and the importance of addressing multiple dimensions simultaneously.

The Organization dimension showed particularly notable improvement ($d = 2.11$), suggesting that the cooperative learning activities helped students develop better understanding of text structure and logical sequencing. This finding aligns with research by Beiki et al. (2020), who found that structured collaborative prewriting activities led to improvements in text organization among Iranian EFL learners.

While the current study did not include direct measures of motivation and engagement to address the third research question, several indicators suggest a positive relationship between the cooperative learning through gamification intervention and student motivation. The consistently high participation rates, enthusiastic engagement observed during classroom observations, and the substantial effect sizes across all writing dimensions provide indirect evidence of enhanced motivation.

These interpretations are supported by previous research on gamification in language learning contexts. Chang et al. (2021) found that gamified writing environments led to both improved writing performance and more positive attitudes toward writing among fourth−grade students. Similarly,

Yavuz et al. (2020) demonstrated that gamified approaches reduced writing anxiety and increased writing self-efficacy among university-level EFL learners.

Conclusion

This study investigated the integration of cooperative learning with gamification elements to enhance English as a Second Language (ESL) writing skills among sixth-grade students in Lebanon. The study's quasi-experimental design, which involved 60 students divided into experimental and control groups, revealed compelling evidence of the effectiveness of this innovative approach over a 12-week intervention period. The results contribute to both theory and practice by demonstrating significant improvements in ESL writing performance across multiple dimensions, highlighting the potential of such integrative methods to transform language education in middle school contexts.

A key finding of this research is the substantial overall improvement in writing skills among students in the experimental group, with an exceptionally large effect size (d = 1.90) far surpassing conventional benchmarks for educational interventions. This improvement was not limited to a single aspect of writing but was comprehensive, encompassing ideas, organization, voice, word choice, sentence fluency, and conventions. Particularly noteworthy were the gains in word choice (d = 2.39) and sentence fluency (d = 2.55), addressing long-standing challenges related to vocabulary sophistication and syntactic complexity in ESL learning. These results strongly suggest that integrating cooperative learning with gamification can meaningfully accelerate linguistic competence, particularly in areas where traditional instruction often struggles to achieve significant progress.

The practical implications for ESL educators and curriculum designers are profound. The results advocate a shift from teacher-centered, transmission-based instruction to student-centered learning environments that prioritize interaction, collaboration, and active participation. The inter-

vention demonstrated that such a shift need not come at the expense of academic rigor; rather, it can foster holistic skill development across multiple dimensions of writing. The inclusion of gamification elements further enhances this paradigm by making learning both engaging and purposeful, appealing to students' natural tendencies toward challenge and achievement.

Despite these promising outcomes, certain limitations warrant caution in interpreting and applying the findings. The study was conducted in a single private school in Lebanon, which limits the generalizability of results to other contexts, particularly public schools or culturally distinct settings. Additionally, the long-term sustainability of the observed improvements remains uncertain, as the study did not include follow-up assessments beyond the immediate post-intervention phase. Implementation fidelity may also pose challenges in broader applications, as the successful replication of this model depends on teachers' expertise, classroom dynamics, and institutional support.

In conclusion, integrating cooperative learning with gamification has shown to be a highly effective means of enhancing ESL writing development among middle school learners. The approach aligns with key theoretical frameworks, demonstrates substantial practical feasibility, and offers scalable, cost-effective benefits for diverse educational settings. While further research is needed to confirm its generalizability and long-term impact, the present study lays important groundwork for future innovation in language education. By thoughtfully combining collaboration, interaction, and motivational design, educators can create learning experiences that honor both academic excellence and human engagement—preparing students not only to write effectively in English but also to thrive in the collaborative, multicultural environments that increasingly define our world.

References

Ahangari, S., & Samadian, Z. (2014). The effect of cooperative learning activities on writing skills of Iranian EFL learners. Linguistics and Literature Studies, 2(4), 121–130. https://doi.org/10.13189/LLS.2014.020403

Atkinson, D. (2003). L2 writing in the post-process era: Introduction. Journal of Second Language Writing, 12(1), 3–15.

Attle, S., & Baker, B. (2007). Cooperative learning in a competitive environment: Classroom applications. International Journal of Teaching and Learning in Higher Education, 19(1), 77–83.

Bandura, A. (1986). Social foundations of thought and action: A social cognitive theory. Prentice-Hall.

Beiki, M., Gharagozloo, N., & Raissi, R. (2020). The effect of structured versus unstructured collaborative pre-writing task on writing skills of the Iranian EFL students. Asian-Pacific Journal of Second and Foreign Language Education, 5, Article 12. https://doi.org/10.1186/S40862-020-00092-0

Bencze, J. L. (2009). Educator action research support. Retrieved from http://webspace.oise.utoronto.ca/~benczela/Action_Research_Help.html

Bond, R., & Castagnera, E. (2006). Peer support and inclusive education: An underutilized resource. Theory into Practice, 45(3), 224–229. https://doi.org/10.1207/s15430421tip4503_7

Campbell, D. T., & Stanley, J. C. (1963). Experimental and quasi-experimental designs for research. Rand McNally.

Chang, W. C., Liao, C. Y., & Chan, T.-W. (2021). Improving children's textual cohesion and writing attitude in a game-based writing environment. Computer Assisted Language Learning, 34(1–2), 1–25. https://doi.org/10.1080/09588221.2019.1671459

Cohen, J. (1988). Statistical power analysis for the behavioral sciences (2nd ed.). Lawrence Erlbaum Associates.

Cole, M. W. (2018). Effectiveness of peer-mediated learning for English language learners: A meta-analysis. Research Ideas and Outcomes, 4, e29375. https://doi.org/10.3897/RIO.4.E29375

Csikszentmihalyi, M. (1990). Flow: The psychology of optimal experience. Harper & Row.

Deci, E. L., & Ryan, R. M. (2000). The "what" and "why" of goal pursuits: Human needs and the self-determination of behavior. Psychological Inquiry, 11(4), 227–268.

Deterding, S., Dixon, D., Khaled, R., & Nacke, L. (2011). From game design elements to gamefulness: Defining gamification. In Proceedings of the 15th International Academic MindTrek Conference (pp. 9–15). ACM.

Deutsch, M. (1949). A theory of cooperation and competition. Human Relations, 2(2), 129–152.

Ferris, D. R., & Hedgcock, J. S. (2014). Teaching L2 composition: Purpose, process, and practice (3rd ed.). Routledge.

Gillies, R. M. (2007). Cooperative learning: Integrating theory and practice. Sage Publications.

Hänze, M., & Berger, R. (2007). Cooperative learning, motivational effects, and student characteristics: An experimental study comparing cooperative learning and direct instruction in 12th-grade physics classes. Learning and Instruction, 17(1), 29–41. https://doi.org/10.1016/j.learninstruc.2006.11.004

Hyland, K. (2007). Genre pedagogy: Language, literacy and L2 writing instruction. Journal of Second Language Writing, 16(3), 148–164.

Johnson, D. W. (1985). The effects of prolonged implementation of cooperative learning on social support within the classroom. The Journal

of Psychology, 119(5), 405–411. https://doi.org/10.1080/00223980.198 5.9915469

Johnson, D. W., & Johnson, R. T. (2005). New developments in social interdependence theory. Genetic, Social, and General Psychology Monographs, 131(4), 285–358.

Johnson, D. W., & Johnson, R. T. (2014). Cooperative learning in 21st century. Anales de Psicología, 30(3), 841–851.

Korkmaz, Ö. (2020). The effect of gamification activities on students' academic achievements in social studies courses, attitudes towards the course and cooperative learning skills. Participatory Educational Research, 7(3), 1–15.

Koshy, V. (2013). What is action research? Retrieved from http://www. sagepub.com/upm-data/36584_01_Koshy_et_al_Ch_01.pdf

Krashen, S. D. (1985). The input hypothesis: Issues and implications. Longman.

Lai, C. Y., & Wu, C. C. (2006). Using handhelds in a jigsaw cooperative learning environment. Journal of Computer Assisted Learning, 22(4), 284–297. https://doi.org/10.1111/j.1365-2729.2006.00178.

Lebanese Ministry of Education. (2020). National education strategy framework 2020–2025. Ministry of Education and Higher Education.

Li, H. H., & Zhang, L. J. (2021). Effects of structured small-group student talk as collaborative prewriting discussions on Chinese university EFL students' individual writing: A quasi-experimental study. PLOS ONE, 16(5), e0251569. https://doi.org/10.1371/JOURNAL.PONE.0251569

Long, M. H. (1996). The role of the linguistic environment in second language acquisition. In W. C. Ritchie & T. K. Bhatia (Eds.), Handbook of second language acquisition (pp. 413–468). Academic Press.

Mukattash, L. (2003). The position of Arabic in Jordan. American Journal

of Arabic Studies, 1(1), 1–14.

Núñez-Pacheco, R., Checa, I., Ramírez-Montoya, M. S., & García-Peñalvo, F. J. (2023). Use of a gamified platform to improve scientific writing in engineering students. Education Sciences, 13(12), 1164. https://doi.org/10.3390/educsci13121164

Pickard, M. J. (2007). The new Bloom's taxonomy: An overview for family and consumer sciences. Journal of Family and Consumer Sciences Education, 25(1), 45–55.

Ryan, R. M., & Deci, E. L. (2017). Self-determination theory: Basic psychological needs in motivation, development, and wellness. Guilford Press.

Sailer, M., & Homner, L. (2020). The gamification of learning: A meta-analysis. Educational Psychology Review, 32(1), 77–112.

Shuaib, F., & Kodippili, A. (2016). Impact of educational technology integration on student learning in the Middle East. International Journal of Educational Technology, 3(2), 15–28.

Shevin, M. S. (1994). Cooperative learning and middle schools: What would it take to really do it right? Theory into Practice, 33(3), 183–190. https://doi.org/10.1080/00405849409543630

Siegel, C. (2005). Implementing a research-based model of cooperative learning. The Journal of Educational Research, 98(6), 339–349. https://doi.org/10.3200/JOER.98.6.339-349

Silva, T., & Matsuda, P. K. (2010). Practicing theory in second language writing. Parlor Press.

Slavin, R. E. (2004). When and why does cooperative learning increase achievement? In D. M. McInerney & S. Van Etten (Eds.), The Routledge Falmer reader in psychology of education (pp. 271–293). RoutledgeFalmer.

Slavin, R. E. (2008). Cooperative learning: Teori, riset dan praktik.

Bandung: Nusa Media.

Slavin, R. E. (2011). Cooperative learning: Learning and cognition in education. Elsevier Academic Press.

Slavin, R. E. (2013). Synthesis of research on cooperative learning. Retrieved from http://www.ascd.org/ASCD/pdf/journals/ed_lead/el_199102_slavin.pdf

Sourav, A. I., Lynn, N. D., & Suyoto, S. (2021). Teaching English tenses in informal cooperative learning group using multimedia and gamification. International Journal of Interactive Mobile Technologies, 15(12), 4–19.

Swain, M. (1995). Three functions of output in second language learning. In G. Cook & B. Seidlhofer (Eds.), Principle and practice in applied linguistics (pp. 125–144). Oxford University Press.

Vygotsky, L. S. (1978). Mind in society: The development of higher psychological processes. Harvard University Press.

Yavuz, F., Özdemir, E., & Çelik, Ö. İ. (2020). The effect of online gamification on EFL learners' writing anxiety levels: A process–based approach. World Journal on Educational Technology, 12(2), 62–70. https://doi.org/10.18844/WJET.V12I2.4600

Silva, T., & Matsuda, P. K. (2010). Practicing theory in second language writing. Parlor Press.

Zhang, S. X., & Hasim, Z. B. (2023). Gamification in EFL/ESL instruction: A systematic review of empirical research. Frontiers in Psychology, 13, 1030790. https://doi.org/10.3389/fpsyg.2022.1030790

Zakaria, E., & Iksan, Z. (2007). Promoting cooperative learning in science and mathematics education: A Malaysian perspective. Eurasia Journal of Mathematics, Science & Technology Education, 3(1), 35–39.