

The Efficacy of Online Gamification in Improving Basic English Skills for Fourth-Grade Students

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Abstract

The study aimed to achieve three main objectives: 1) to develop an online gamification system using digital learning platforms for teaching English to Grade 4 students, following the $E1/E2 = 80/80$ efficiency criterion, 2) to compare students' achievement in Basic English through online gamification, and 3) to assess students' satisfaction with the use of online gamification in learning Basic English. The sample comprised 30 Grade 4 students from Settabutr Upathum School in the academic year 2022, selected through purposive random sampling. Research instruments included online Zoom classes, lesson plans, and interactive learning platforms. The study employed mean, standard deviation, and t-tests for dependent samples for data analysis. The results revealed an efficiency value of $E1/E2$ as 70.00/69.00, falling short of the 80/80 criteria. Several factors, such as the comprehensive nature of testing macro skills using digital media beyond cognitive abilities, may have contributed to not meeting the set criterion. Furthermore, a significant improvement in learning achievements in Basic English was observed among Grade 4 students who used online gamification compared to traditional methods, with higher scores in achievement tests at a significance level of 0.05. Finally, students expressed a good level of satisfaction with the online gamification approach in learning Basic English.

Keywords: Efficiency, Enhance Basic English, Online Gamification

1. Introduction

In today's global world, language is very significant in relaying information. It is the pathway to convey our ideas and express our feelings, views, and thoughts. Among all the languages globally, the English language is undeniably the most significant common language spoken universally [1]. It is accentuated that knowledge of English is necessary if one wants to come up in life. It is the primary window of the modern world. English has become the most commonly spoken language and is typically considered the most influential language for establishing global communication. It is remarked that English proficiency is becoming a requirement for success in the interconnected world [2]. There are several areas where the usage of English has been established. It was proven that on the internet, more than 80% of online sites use the English language as a medium of instruction while about 20% use other languages, such as Indonesian, Chinese, and others [3]. It indicates that if people do not learn English as their second language, they will only acquire less than 20% of the new knowledge, for nowadays, new knowledge is mainly shared through the internet. However, it is indicated that a drastic change during the past decade occurred noticeably in teaching and learning through the use of digital and electronic tools [4]. English has increasingly dominated international communication and information access.

At present, teaching has evolved drastically as the world has developed technologically. Technology has become a vital factor, and with each passing day, new software or gadgets are being introduced to the market that serve to advance people's lives and make it easier to incorporate into teaching languages. Technology also allocates support and conditions by escalating freedom of choice, scheduling flexibility, authentic materials, and electronic communication. It is clarified that technology is a significant issue in many fields, including education [5]. Educators use technological resources in their classes in the form of online games. Online gamification has emerged to the point that it has been

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adopted in education. The concept of games has changed from self-entertainment into edutainment through adjustments and modifications. Educators in developing countries such as Poland, China, and the US enhance their English classes with surprisingly positive results [6]. They found that incorporating games in learning improves motivation, promotes positive attitudes and better performance, fosters 21st-century skills, and improves cognitive achievements, social interaction, independencies, and competitiveness among students during the learning process [7].

Moreover, the gamification of education can enhance student engagement levels, similar to how games improve specific skills and optimize learning [8]. When it comes to English as a Second Language (ESL) and English as a Foreign Language (EFL), students and teachers must access a variety of teaching methods that provide opportunities for students to practice and develop their English skills. The four language learning skills are listening, speaking, reading, and writing—a set of capabilities that enable an individual to comprehend and produce spoken language for accurate and effective interpersonal communication. With the emergence of the technological era, several problems hinder the teaching and learning process. Common problems with teaching and learning English as a foreign language involve building links between students and teachers, which should be discussed and addressed by educators. Some issues are related to teaching methodology. Teachers have difficulty adapting to new online learning modes, finding it challenging to transition from traditional to modern methods [9]. It was stated that spending a significant amount of time lecturing causes students to lose interest and become passive learners, particularly in online settings [10]. In virtual classrooms, students are often distracted and inattentive.

It is verified that students succeed academically in language learning when placed in a broadly positive learning environment with opportunities to establish communication in authentic situations [11]. They must remain engaged in the learning process. Fortunately, a wide range of resources is easily accessible via the internet. However, methods and tools for preparing an educated generation with cognitive skills may vary over time [12]. Those required in the 20th century differ from those needed in the 21st century. It has become the norm for teaching and learning to involve ICT, as it helps students construct knowledge independently through information generated online. It was noted that online learning is student-centered, allowing students to control their learning pace, with adaptable activities suited to their learning styles [13]. With appropriate online applications, students can engage in discussions, express opinions, and share knowledge equally, regardless of classroom size or time [14]. It was reported that technology in education enables students to receive feedback, improve learning achievement, and develop learning skills [15]. Technology use in education fosters positive attitudes, reduces learning time, enhances problem-solving abilities, and reduces the workload for both students and teachers. The current study also addresses the different online digital platforms available for student learning. Online learning games, such as Kahoot, quizzes, word walls, live worksheets, and others, help teachers capture students' attention and increase engagement in virtual classrooms. Therefore, based on the information above, the researcher intends to conduct a study on the efficiency of online gamification in learning English for grade 4 students to facilitate effective teaching in the future.

2. Research Design

The research utilized a One Group Pre-Test – Post-Test Design to assess the impact of online gamification on the English language proficiency of grade 4 students. In this design, a single sample group (denoted as E) was selected to participate in both a pre-test and post-test. Initially, the students' baseline English skills were measured through the pre-test (O1), which provided a reference point for their existing knowledge. Following this, the group underwent instructional activities (X) using web-based platforms enhanced with gamification tools, such as Quizzis, Kahoot!, and Wordwall!, designed to support self-directed learning and improve their basic English proficiency. After completing the intervention, a post-test (O2) was administered to assess the students' progress and determine the effectiveness of the gamified learning activities. This experimental design allowed the researcher to compare pre-test and post-test results to evaluate the impact of the online gamification intervention on the students' academic achievement in English. The structure of this experimental research design is illustrated in [table 1](#).

Table 1. Experimental Research Design: One Group Pre-Test – Post-Test Design with Online Gamification Intervention

Sample	Pre-Test	Activities	Post-Test
E	O1	X	O2

E: Sample Group; O1: Measurement of pre-test score; X: Instructional activities using web-based instruction through self-directed learning to enhance English Language; O2: Measurement of post-test score

2.1. Population and Sample

The research was conducted at Settabutr Upathum School in Bangkok, Thailand, involving a population of 79 grade 4 students. From this population, a purposive sample of 30 students was selected for the study during the 2022 academic year. The participants were drawn from the Intensive English Program, which included students with varying levels of English proficiency—ranging from low to high. The sample was chosen to represent the diversity of proficiency levels present in the population. This diversity ensured that the impact of online gamification on English learning could be observed across different proficiency groups [16].

2.2. Research Instruments

Several research instruments were employed in this study to measure the effectiveness of the online gamification intervention. These included online Zoom classes designed specifically to enhance the English skills of grade 4 students, lesson plans formulated to guide the instructional activities, and interactive worksheets to facilitate content acquisition. The gamified online activities integrated learning, social interaction, and entertainment, creating a dynamic learning environment for the students. Additionally, an achievement test was developed to measure the improvement in English skills following the gamification activities. To gauge student satisfaction, a questionnaire was administered to those who participated in the online learning process. The combination of these tools provided a comprehensive understanding of both the academic and emotional impact of gamified learning on the students [17], [18].

2.3. Data Collection Procedures

Data collection involved a series of structured steps designed to capture the full range of student experiences and outcomes during the study. Initially, students were introduced to online gamification platforms, including Quizzis, Kahoot!, Wordwall!, Liveworksheets, and ISL Collectives, which were used to support their learning of basic English. A pre-test was then administered to record baseline proficiency scores. Following the pre-test, students participated in a series of gamified learning activities using web-based platforms. After completing the activities, a post-test was administered to measure any improvements in their English proficiency. The final step involved collecting feedback from students through satisfaction questionnaires to determine their perceptions of the gamification approach and its effectiveness in enhancing their English skills [19], [20].

3. Result

Table 2 presents an assessment of the effectiveness of online gamification for learning Basic English. The results indicate that students' ongoing scores have a mean of 49.00 and a post-test mean of 38.90, signifying a significant improvement in the usage of online gamification for the learning of basic English among grade 4 students. The table also reveals an efficiency of the process (E1) of 70.00 and an efficiency of the product (E2) of 69.00, resulting in an overall efficiency of 70.00/69.00, which falls short of the 80/80 criteria. Therefore, modifications and improvements are recommended for the instructional media.

Table 2. Assessment of the Effectiveness of Online Gamification in Learning Basic English

Items	n	$\bar{X}$	Percentage	S.D.	Standard	E1/E2
Ongoing score	70	49.00	70.00	13.15	80	70.00
Post-test score	56	38.90	69.00	9.63	80	69.00

The evaluation of online gamification media involved input from three media experts. The 22 evaluation criteria, adapted from the form issued by the Department of Curriculum and Instruction Development, utilized a 5-point rating scale to reflect the media experts' opinions. Each criterion rating is detailed in the [table 3](#).

Table 3. Results of the Evaluation of Gamified Learning for Basic English by Three Media Experts

Evaluation Items		$\bar{X}$	S.D.	Result
Contents				
1.1	The content structure is clear, and each content shows a structural relationship.	4.33	0.58	Good
1.2	The demonstrated contents of instruction cover the learning objectives defined.	5.00	0.00	Very good
1.3	Language use is appropriate and correct.	4.33	0.58	Good
1.4	The learning content is appropriate for the student's grade level.	4.67	0.58	Very good
Instructional Design				
2.1	The objectives and the students' grade level are clearly identified.	4.67	0.58	Very good
2.2	The sequence of content presentation is appropriate according to the types of media used.	4.33	0.58	Good
2.3	Presentation techniques are attractive to students.	4.33	0.58	Good
2.4	Online gamification media are creatively designed.	4.67	0.58	Very good
2.5	The interactive function design in online gamification learning systems, such as the interaction between users and instructional content or teacher, is effective.	4.67	0.58	Very good
2.6	The instruction is designed for individual differences and responds to the needs of diverse students.	4.00	1.00	Good
2.7	Instructional design improves the ability of students to control their pace of learning properly.	4.00	1.00	Good
2.8	Exercises and assessments cover all learning objectives defined.	4.00	1.00	Good
2.9	Interaction and timely feedback are provided suitably.	3.67	.58	Good
2.10	The instructional design enhances students' analytical thinking.	4.33	.58	Good
Screen Design				
3.1	Page layout controls students' attention and facilitates ease of use.	5.00	0.00	Very good
3.2	Choices of typeface, size and color facilities are easy to use and are appropriate for students.	4.67	0.58	Very Good
3.3	Choices of color are appropriate and are applied consistently to specific types of on-screen information.	4.67	0.58	Very good
3.4	Images presented are consistent with instructional content.	4.33	0.58	Good
3.5	Buttons, text displayed, and visual messages can be properly established and can convey a very clear and correct message to the viewers.	4.33	0.58	Good
Techniques				
4.1	The web program is employed correctly, such as the user's information system.	4.33	0.58	Good
4.2	The linkages to each frame or focal point can be correctly established.	4.67	0.58	Very good
4.3	Images and audio can function correctly and rapidly.	4.33	0.58	Good
Total		4.42	0.58	Good

[Table 3](#) presents the evaluation results of gamified learning activities for basic English, as assessed by three media experts. The evaluation focused on key areas including content, instructional design, screen design, and techniques. The findings indicate that the media performed exceptionally well in terms of instructional content, with a perfect mean score ($\bar{x} = 5.00$) for covering the defined learning objectives. Additionally, the page layout was highly effective in capturing students' attention and facilitating ease of use, also achieving a mean score of ($\bar{x} = 5.00$).

While the interaction and provision of timely feedback were rated positively, with a mean score of ($\bar{x} = 3.67$), improvements are suggested in enhancing the social interaction components of the media. Overall, the average mean score of ($\bar{x} = 4.42$) suggests that the gamified learning activities implemented in the classroom are well-suited to the students' levels and abilities, indicating that they provide a good fit for enhancing learning outcomes in basic English.

Table 4 presents the evaluation results of gamified learning activities for basic English, as assessed by three curriculum experts. The evaluation focused on several aspects, including standards and indicators, lesson objectives, content, materials, and the teaching process. The average mean score of 4.56, rated at a good level, indicates that the learning activities were well-developed and aligned with the school curriculum. Furthermore, the activities were deemed appropriate for the grade 4 learners at Settabutr Upathum School, effectively supporting their educational development.

Table 4. Evaluation Results of Gamified Learning Activities for Basic English by Three Experts in Educational Curriculum

Evaluation Items		$\bar{X}$	S.D.	Result
Standard and Indicators				
1.1	Conciseness	4.33	0.58	Good
1.2	Wording	4.33	0.58	Good
Lesson Objectives				
2.1	Congruent with the standards and indicators	4.67	0.58	Very good
2.2	Wording	4.67	0.58	Very good
Contents				
3.1	Congruent with the lesson objectives	4.67	0.58	Very good
3.2	Wording	4.33	0.58	Good
3.3	Used prior knowledge	4.33	0.58	Good
3.4	Organized content effectively	4.67	0.58	Very good
Materials				
4.1	Congruent with the teaching-learning process	4.67	0.58	Very good
4.2	Adequate to support the lesson contents and objectives	4.67	0.58	Very good
Teaching Process				
5.1	Congruent with the contents, objectives of the lesson and procedure of the teaching method	4.67	0.58	Very good
5.2	Evaluation of student's achievement, congruent with the teaching process, objectives of the lesson plan, and procedure of the teaching method	4.33	0.58	Good
5.3	Wording	5.00	0.00	Very good
Total		4.56	0.53	Very good

In addition, a comparison was made between the average scores of students' achievement tests before and after learning basic English through online gamification. By participating in the learning activities and completing the tests, students demonstrated improvements in their basic English skills. The post-test results, consistent with the study's second objective, reflect the positive impact of online gamification on students' learning outcomes, as illustrated in table 5.

Table 5. Comparison of Average Scores on Achievement Tests Before and After Learning Basic English through Online Gamification.

Items	n	$\bar{X}$	S.D.	t-test	Sig. (2-tailed)
Pre-test	30	23.00	6.427	7.435	0.000
Post-test	30	29.03	8.348		

Table 5 reflects the effectiveness of online gamification in enhancing the basic English skills of grade 4 students by comparing their pre-test and post-test scores. The results show a clear improvement in students' scores following the implementation of the online gamification activities, with the post-test mean score ($\bar{x} = 29.03$, S.D. = 8.34) being significantly higher than the pre-test mean score ($\bar{x} = 23.00$, S.D. = 6.42). A t-test analysis was conducted to compare the scores before and after the intervention, yielding a t-value of 7.435, which is statistically significant at the 0.05 level. This indicates that the use of online gamification had a meaningful and positive effect on the students' English proficiency.

Additionally, the satisfaction levels of grade 4 students who participated in the online gamification activities were analyzed. The evaluation was based on a student satisfaction questionnaire, which assessed their overall experience in learning basic English through online gamification.

Table 6 presents the results of a satisfaction survey on the use of online gamification in the teaching-learning process for basic English. The overall average mean score was 4.22, with a standard deviation of 0.17, indicating that students expressed a high level of satisfaction with learning basic English through online gamification. The mean scores ranged from 4.20 to 4.80, reflecting a satisfaction level between good and very good.

Table 6. Results of Evaluation of Students' Satisfaction with Learning Basic English through Online Gamification

Evaluation Items		$\bar{X}$	S.D.	Result
Contents				
1.1	The learning contents are suitable for the learning time defined.	4.43	0.50	High
1.2	The learning topics and contents are interesting.	4.56	0.50	Very High
1.3	The demonstrated contents cover the learning objectives of each chapter.	4.40	0.49	High
1.4	The learning contents are appropriate for the student's grade level.	4.50	0.50	High
1.5	The learning contents are clearly explained and enough for understanding.	4.46	0.50	High
1.6	Question items in the unit exercises are relevant to the content.	4.46	0.50	High
1.7	The contents of 3 chapters are appropriate for learning using online gamification.	4.60	0.49	Very High
1.8	The unit exercises are sufficient for checking to understand.	4.33	0.54	High
1.9	The question items in the unit exercises are clearly stated and easy to understand.	4.63	0.49	Very High
Screen Design				
2.1	The layout of each page is established appropriately for learning.	4.46	0.50	High
2.2	Choices of typeface and size facilities ease of use.	4.63	0.49	Very High
2.3	A loud and clear sound is provided.	4.63	0.49	Very High
2.4	Interaction and timely feedback are provided appropriately.	4.50	0.50	High
2.5	Choices of color are appropriate.	4.56	0.50	Very High
2.6	Screen design is attractive to students.	4.63	0.49	Very High
2.7	Lesson navigation and buttons are appropriately established and relevant to online gamification.	4.40	0.49	High
Usage of Online Gamification				
3.1	The online gamification platforms' instructions are easy to use.	4.80	0.40	Very High
3.2	The interactive functions between users and instructional content are effective.	4.20	0.55	High
3.3	Learners can control and use these online gamification platforms on their own.	4.70	0.46	Very High
3.4	The user's manual clearly describes how to use online gamification platforms.	4.53	0.57	Very High
3.5	These online gamification platforms are fun and interesting.	4.50	0.50	High
3.6	Specific times for learning these online gamification platforms are appropriate.	4.40	0.49	High
3.7	If it is possible, you would like to learn other subjects with these online gamification platforms.	4.60	0.49	Very High
Evaluation				
4.1	Pre-tests and post-tests offer students an understanding of the contents appropriately.	4.73	0.44	Very High
4.2	The question items are clear.	4.56	0.50	Very High
4.3	The tests are made with the objectives and media.	4.53	0.57	Very High
4.4	The difficulty of the test is appropriate for students.	4.33	0.54	High
4.5	The score between the pre-test and post-test is clear.	4.66	0.47	Very High
Total		4.22	0.17	High

The highest level of satisfaction was recorded for the ease of use of the online gamification platforms, with a mean score of 4.80 and a standard deviation of 0.40. This suggests that students found the instructions for using the platforms to be straightforward and user-friendly. The second highest score was for the pre-test and post-test evaluation, which helped

students understand the content effectively, with a mean of 4.73 and a standard deviation of 0.44. On the other hand, the interactive functions between users and the instructional content received the lowest satisfaction score, with a mean of 4.20 and a standard deviation of 0.55. Despite this lower score, it still reflects a good level of satisfaction, indicating room for improvement in enhancing interactivity within the gamified learning environment.

4. Discussion

The research conducted on the use of online gamification for learning basic English among grade 4 students at Settabutr Upathum School, Bangkok, Thailand, was designed to evaluate whether the efficiency value of E1/E2, based on the 80/80 efficiency criteria, could be met. The experiment was divided into three stages: an individual tryout, a small group tryout, and field testing. During the individual tryout, three students participated in testing a web-based lesson on English reading comprehension. Feedback from this stage was used to make content adjustments in preparation for the second stage, the small group tryout. In the final stage, the adjusted materials were tested with a larger group of 30 students. The results revealed an efficiency value of 70.00/69.00, which did not meet the targeted 80/80 criteria. This outcome contrasts with earlier studies, which found higher efficiency in similar settings [21], [22]. The lower efficiency in this case may be attributed to the broad scope of skills being tested using digital media, which could have impacted overall results.

The study also examined the learning achievements of grade 4 students in Basic English following the use of online gamification. The comparison between pre-test and post-test scores revealed a significant improvement in achievement levels, with a statistical significance at the 0.05 level. This finding is consistent with the outcomes of previous studies, which highlighted the positive impact of digital media and gamified learning on students' motivation, performance, and skill development [23], [24]. These studies collectively emphasize that digital tools, particularly gamification, provide an effective means of enhancing student engagement and aligning with educational curriculum standards. The improved performance in post-test results demonstrates the value of online gamification as a tool for improving learning outcomes in basic English education.

In addition to examining learning outcomes, the study assessed students' satisfaction with the use of online gamification for learning English reading comprehension. The results indicated a high level of satisfaction among the students, consistent with findings from other research on the use of gamified platforms in education [25], [26]. The engaging, motivating, and competitive nature of platforms like Kahoot! and Quizzes played a significant role in fostering active participation and concentration during learning. These tools were found to effectively promote student engagement, making the learning process more interactive and enjoyable. The high satisfaction levels support the continued integration of online gamification in the classroom as a means to enhance both the educational experience and learning outcomes.

5. Conclusion

The findings of this study successfully addressed the research objectives. The efficiency assessment of online gamification in teaching basic English to grade 4 students at Settabutr Upathum School, Bangkok, Thailand, revealed an E1/E2 efficiency coefficient of 70.00 for the learning process (E1) and 69.00 for performance (E2), which did not meet the expected 80/80 standard. This suggests that while online gamification holds promise as an instructional method, its overall efficiency in this context needs improvement. Further refinement of the approach could help better align it with the desired outcomes.

In terms of students' learning achievements, the results showed a significant improvement in post-test scores compared to pre-test scores, with a statistically significant difference at the 0.05 level. This indicates that the use of online gamification has a positive impact on students' academic performance in basic English, demonstrating its value as an effective teaching tool.

The evaluation of student satisfaction also revealed positive feedback, with an average satisfaction score of 4.22. Students particularly appreciated the ease of use of the gamification platforms, which contributed to their engagement and enjoyment of the learning process. This high level of satisfaction suggests that online gamification enhances students' motivation and participation in learning.

Based on these findings, several practical recommendations are proposed. First, it is suggested to adjust the E1/E2 criterion to 70/70 to better reflect the diversity of students' learning needs. This adjustment aligns more realistically with the varied skills being targeted and the different learning areas. Furthermore, the developmental testing model, whether using single or multimedia instructional media, should be tailored to different research contexts to maximize effectiveness.

Additionally, it is recommended that parents, school administrators, and teachers consistently integrate online gamification into students' learning experiences. This approach not only captures students' attention but also enhances their understanding of English language skills. To maximize the impact, gamification can be specifically tailored to target the four core language skills: reading, listening, speaking, and writing.

To improve future surveys on student satisfaction, it is advised to simplify the language used in the survey, ensuring clarity and ease of understanding for all respondents. Clear phrasing will result in more accurate feedback and improve the reliability of the survey data.

Moreover, exploring a broader range of digital learning platforms—such as Bamboozle, Plickers, Mentimeter, Vonder, Flippity, and Educandy—could provide students with greater variety in learning activities. These tools offer diverse interactive formats, enriching the students' overall learning experience and further developing their academic skills.

In terms of suggestions for further study, one important area for future research is the development of communication platforms, such as web boards using Line or Messenger apps. These platforms could enhance the interaction between students and teachers, facilitating clearer communication, providing space for questions, and offering timely feedback. This could lead to improved learning outcomes by maintaining engagement outside of the classroom.

Another area for future research is the optimization of audio-visual media for enhancing listening and speaking activities. Investigating the impact of these media on students' comprehension, spelling, pronunciation, and sentence construction could provide valuable insights into improving their overall language proficiency.

Lastly, future studies should explore the application of online gamification at different educational levels, such as middle school and higher education. Expanding the research across various academic levels could provide deeper insights into how gamification can be adapted to more complex topics and help develop critical thinking, problem-solving abilities, and Socratic methods among students. These areas offer significant potential for advancing the field of educational technology and improving the quality of learning experiences at all levels.

6. Declarations

6.1. Author Contributions

Conceptualization: T.P. and T.S.; Methodology: T.S.; Software: T.P.; Validation: T.P. and T.S.; Formal Analysis: T.P. and T.S.; Investigation: T.P.; Resources: T.S.; Data Curation: T.S.; Writing Original Draft Preparation: T.P. and T.S.; Writing Review and Editing: T.S. and T.P.; Visualization: T.P.; All authors have read and agreed to the published version of the manuscript.

6.2. Data Availability Statement

The data presented in this study are available on request from the corresponding author.

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6.4. Institutional Review Board Statement

Not applicable.

6.5. Informed Consent Statement

Not applicable.

6.6. Declaration of Competing Interest

The authors declare that they have no known competing financial interests or personal relationships that could have appeared to influence the work reported in this paper.

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