



Research Paper

Effects of Game-Based Learning on Improving Grammar Skills of Grade 9 Students

Marko L. Aratea¹, Mark Anthony C. Pasubillo²
^{1,2} Gordon College, Philippines

Received : July 3, 2024

Revised : August 23, 2024

Accepted : September 17, 2024

Online : September 30, 2024

Abstract

As the educational system transcends to 21st-century learning, various methods in the teaching-learning process are used to motivate students, one of which is game-based learning. This study explores the effects of game-based learning in improving the grammar skills of grade 9 students at Regional Science High School-III, Philippines. The results from the 1st quarter item analysis elicited the least learned competency, which allowed researchers to examine and determine the effects of game-based learning in improving the English grammar proficiency of the 143 grade 9 students, particularly in the use of modals. The study used a quasi-experimental research design, where the researchers adopted an assessment tool to determine the students' English grammar proficiency level. The teachers assigned the experimental group with 8 game-based lessons and the control group who experienced the traditional lessons. The researchers used a paired sample t-test using the Jamovi software. The study found that there is a highly significant difference between the pre-test and post-test scores of the respondents before and after the integration of game-based learning lessons, resulting in the rejection of the null hypothesis. Furthermore, for English teachers, the intervention is perceived as beneficial in improving the English grammar skills of the learners. The study presented the description of various game-based lessons and determined the respondents' proficiency levels. It was found that students progressed from being developing proficient to proficient when game-based lessons were applied. Thus, game-based learning is effective as it also makes the learning environment fun, conducive, exciting, and learner-centered.

Keywords: *Game-Based Learning; Modals; Grammar Proficiency Level; Teaching-Learning Process; Least Learned Competency*

INTRODUCTION

21st-century learning refers to a change in the way students learn, away from the traditional method for teaching toward more modern approaches (Llego, 2022). These skills are defined as a set of abilities such as teamwork, digital literacy, critical thinking, and problem-solving that schools must instill in students to succeed in the modern world (Banik & Kumar, 2019). According to Demir and Sönmez (2021), 21st-century learners are defined as those students who are typically considered to be members of "the internet generation" or "digital natives". However, El Mawas and Muntean (2018) argued that 21st-century learners are not just digital natives; rather, they are lifelong learners who actively engage in lessons and discussions.

Cielo et al. (2019) stated that the teacher's way of teaching has a considerable influence on the academic success of the learners. To cater to the needs of 21st-century learners, various methods and strategies are used by teachers. The traditional way of teaching is believed to be effective for modern learners (Dimitrios et al., 2013). According to Raja and Najmonnisa (2018), a large percentage of classrooms still employ traditional or conventional teaching methods. In the study of Cielo et al. (2019), it is found that the traditional way of teaching is quite effective as the result of their study indicated that the students learn best from a more conventional classroom setting. It is one of the most prevalent influences on students' learning, development, and value formation.

The Filipino educational system has generally relied on "traditional teaching," in which learners are expected to sit quietly in their seats and absorb information from their teachers (Care

Copyright Holder:

© Aratea & Pasubillo. (2024)

Corresponding author's email: arateamarko@gmail.com

This Article is Licensed Under:



et al., 2018). They also asserted that teachers "spoon-feed" their students, passing on their own expertise and knowledge. Teacher-centered classrooms are more organized according to the teacher's ability to maintain control over the students' pace. Further, the teacher is relieved of any responsibility for ensuring that no students are left behind as learners may only take part in the class by reciting what is being taught (Campano, 2019).

However, this notion is contradicted by many studies. Darsih (2018) argued that learner-centered teaching lets students become active recipients of knowledge and gives students autonomy and responsibility for the material they learn and their own learning in general. In addition, Lau (2022) stated that this approach uses highly engaging core content that meets students' needs, allows teacher feedback to help students improve, and paved the way to employ multiple teaching techniques appropriate for student learning goals.

In classroom teaching, the researchers observed that students get easily bored with the traditional teaching approach. Meanwhile, when lessons are student-centered and gamified, students become excited and active. Green and Harrington (2020) noted that a gamified and student-centered approach to the teaching and learning process allows students to become even more engaged with the lesson where learning is competency-based and there is continuous monitoring of student needs and progress.

To make lessons student-centered and interactive, teachers gamify them. Using game-based learning, teachers incorporate gameplay mechanics into their educational activities (Pho & Dinscore, 2015). However, this does not mean that they replace their lessons with games, rather they just add some attributes like pointing systems and badges. Game-based learning is incorporated into activity-based lessons as a design approach that blends elements of game design with learning activities, where it has been demonstrated to boost and retain students' interest and motivation to learn (Tobias et al., 2014).

Knowing that game-based learning has been found to boost and retain students' attention, interest and motivation in learning, there are only few studies that have demonstrated if this will also be effective when the lesson is about grammar and if this will resolve the least learned competency of the students. Most of the studies have shown the effectiveness of game-based learning through the perspective of students using a Likert scale, rather than doing a pre-test and post-test intervention.

These ideas paved the way for the researchers to conduct a study on the implementation of game-based learning, particularly its effect on the grammar skills of the students. This study employed eight researcher-made games during the English classes of the Grade 9 students of Regional Science High school III. Game-based learning through activity-based lessons was expected to increase learners' motivation and engagement in the class; thus, the same result was expected to improve the grammar skills of the respondents in an interactive way. Lastly, at the end of the study, the researchers desired to determine the effects of game-based learning in improving the English grammar proficiency of the Grade students, particularly in the use of modals as it was found to be the least learned competency in their first quarterly examination.

LITERATURE REVIEW

Game-Based Learning (GBL) has gained significant attention as an innovative approach to enhancing educational outcomes, particularly in language learning. By integrating gameplay elements into educational activities, GBL provides a dynamic, interactive, and engaging learning environment that fosters grammar proficiency among Grade 9 students. This thematic analysis examines the impact of GBL on grammar learning, highlighting key themes such as student engagement, contextual practice, adaptive learning, cognitive development, and collaborative learning.

Enhancing Engagement and Motivation through Game-Based Learning

Game-based learning has the ability to boost student engagement and motivation. [Prensky \(2020\)](#) argues that games naturally provide challenges and rewards that drive intrinsic motivation, leading to enhanced learning outcomes. This is supported by [Johnson et al. \(2021\)](#), who found that the immediate rewards and feedback within grammar-focused games sustain student interest and promote deeper learning. Additionally, [Hakim and Saputra \(2023\)](#) emphasized that GBL can significantly increase student participation, particularly in language classrooms where active involvement is crucial for language acquisition.

Improving Grammar Proficiency through Contextual Practice

Another important thing to consider in improving the grammar proficiency of the students is the role of GBL in offering contextualized practice of grammar rules. [Smith \(2020\)](#) conducted a longitudinal study showing that students who engaged in grammar games demonstrated substantial improvements in their ability to apply grammar rules in real-life contexts. The interactive nature of GBL allows students to practice grammar in a way that is relevant and meaningful, thereby enhancing their understanding and retention of grammatical structures ([Miller & Rose, 2022](#)). This aligns with the findings of [Rahman and Munir \(2021\)](#), who suggest that contextual practice through GBL leads to better grammatical accuracy and fluency among EFL learners.

Adaptive Learning and Personalization in the GBL

The inclusion of adaptive learning technologies within GBL is another thing that educators should consider. [Miller and Rose \(2022\)](#) highlight that adaptive learning elements within games significantly improve student outcomes by tailoring the learning experience to individual needs. This personalization helps address diverse learner profiles, allowing students to progress at their own pace and focus on areas where they need the most improvement. Similarly, a study by [Zhang and Li \(2022\)](#) in *Computers & Education* found that adaptive GBL not only improves engagement but also enhances learning efficiency by providing targeted practice and feedback.

Cognitive Development through Game-Based Learning

GBL also contributes to cognitive development, particularly in areas such as critical thinking, problem-solving, and decision-making. According to [Anderson et al. \(2022\)](#), games that require students to apply grammar rules in complex scenarios help develop higher-order thinking skills. These cognitive benefits extend beyond language learning, as students engage in strategic thinking and decision-making processes while playing educational games. [Brown \(2019\)](#) also noted that a well-designed GBL can promote cognitive flexibility, enabling students to approach grammar problems from multiple perspectives and develop a deeper understanding of language structures.

Fostering Collaborative Learning through GBL

Many grammar-focused games require students to work together to solve problems or achieve common goals, thereby fostering teamwork and communication skills. [Rahman and Munir \(2021\)](#) argue that GBL creates a collaborative environment where students learn from each other, share knowledge, and build on each other's strengths. This collaborative aspect of GBL is particularly beneficial in language learning, as it encourages peer interaction and the exchange of ideas, which are essential for language development. Moreover, [Zhang and Li \(2022\)](#) highlight that collaborative GBL can lead to increased student confidence and a more positive attitude toward learning grammar.

Addressing Challenges in the GBL Implementation

While the benefits of GBL are well-documented, the literature also points to several challenges in its implementation. [Brown \(2019\)](#) stresses that the effectiveness of GBL depends heavily on the design of the game and its alignment with educational objectives. Games that are not well-integrated into the curriculum or that lack clear learning goals may fail to produce the desired outcomes. Similarly, [Hakim and Saputra \(2023\)](#) cautioned that educators need to carefully consider the cultural and contextual factors that may influence the effectiveness of GBL in different educational settings. Ensuring these games are culturally relevant and accessible to all students is crucial for maximizing the impact of GBL on grammar learning.

Game-Based Learning (GBL) presents a promising approach to improving grammar skills among Grade 9 students by enhancing engagement, providing contextual practice, incorporating adaptive learning technologies, fostering cognitive development, and promoting collaborative learning. However, the successful implementation of GBL requires careful consideration of the game design, cultural relevance, and alignment with the curriculum objectives. As research in this area continues to evolve, further studies are needed to explore the long-term effects of GBL on language learning and to identify best practices for integrating GBL into various educational contexts.

RESEARCH METHOD

Research Design

The researchers used a quantitative type of research. Quantitative research is the process of collecting and analyzing numerical data. It is used to find patterns and averages, make predictions, test causal relationships, and generalize results to wider populations ([Bhandri, 2020](#)).

A quasi-experimental research design was utilized as the method of this research. According to [Thomas \(2022\)](#), quasi-experimental research is an observational study that aims to assess the effectiveness of an intervention by comparing results obtained under as comparable a set of circumstances as possible. It is a non-randomized intervention and existing variables are used to categorize participants into groups ([Price, et al., 2015](#)). It was utilized in this study as the respondents were categorized based on their sections to assess the effectiveness of game-based learning in the grammar skills of the students.

Under this quasi-experimental design, the researchers used a pretest-posttest control group design, in which a pretest and posttest were administered to the respondents. A pretest-posttest control group design is an experiment in which participants are divided into two groups, one of which receives the intervention and the other which does not ([Cook, 2015](#)). Before any intervention, the respondents were evaluated using the pretest. After the treatment, there was a post-test, which evaluated the outcome variable and the groups compared. The purpose of this study was to investigate potential differences between the two variables and to assess if game-based learning has a significant effect on the grammar skills of grade 9 students.

Respondents

The respondents of the study came from grade 9 students of Regional Science High School III composed of not more than 143 students. They were chosen because the researchers are currently teaching at the grade level and to ensure that no student was left behind as the content of the discussions remains aligned with the learning competency. The researchers are the only teachers teaching English 9 in the said school.

Table 1 presents the frequency and percentage distribution of Grade 9 students in the English class per section at Regional Science High School-III. It presented that the 143 respondents were

from the four (4) sections in the Grade 9 curriculum; namely, Aristotle, Euclid, Galileo, and Newton. There were 34 (23.79%) respondents from 9-Aristotle, 37 (25.87%) from 9-Euclid, 36 (25.17%) from 9-Galileo, and 36 (25.17%) from 9-Newton. The table also shows that Euclid's section had the most number of respondents whilst Aristotle's section had the least. The number of students per section is based on the number of enrollees and were not assigned by the researchers.

Table 1. Distribution of Grade 9 English Students Per Section

Grade 9			
Section	Group	Frequency	Percentage
Aristotle	Experimental	34	23.79
Euclid		37	25.87
Galileo	Control	36	25.17
Newton		36	25.17
TOTAL		143	100

Instruments

This study utilized an assessment form to identify the level of proficiency of the learners per class in terms of grammar. The researchers then adopted an assessment tool that served as the pretest and posttest questionnaires of the students. The content of the assessment tool was modals, focused on expressing permission, obligation, and prohibition since the least learned competency found on the students' first quarterly examination was "Expressing permission, obligation, and prohibition using modals". The said assessment was adopted from ingilizcetest.weebly.com entitled "Modals - INGILIZCE TEST". The questionnaire was used to measure the English grammar proficiency level of the respondents, and this also helped to see if there were changes in the performance of the respondents.

Data Collection Procedure

A step-by-step plan was drawn by the researchers on how to disseminate the assessment tool to be used by the respondents, collect raw data, and later on, transform them into meaningful and useful information. First, the researchers sent a letter of consent addressed to the school principal. Then, they distributed a 20-item assessment tool adopted from ingilizcetest.weebly.com entitled "Modals - INGILIZCE TEST" that was given to the target respondents as their pretest. Subsequently, the researchers assigned the two sections as the experimental group and the other two sections as the control group for two (2) weeks. The teachers conducted a game-based lesson in the experimental group. Meanwhile, for the control group, the teachers conducted a traditional way of teaching the lesson. Then, the teachers used the same assessment tool adopted but randomized the items, which were given to the students as a posttest. The pretest and posttest were analyzed if both showed a significant difference and compared. This indicated if there was an improvement in the student's proficiency level in terms of grammar using game-based learning.

Ethical Considerations

The researchers ensured that NO student was forced to do an activity if he/she was not comfortable participating in a group. He or she was given a different task in order for him/her to cope with the lessons. Second, NO collections were made for the instruments used. Third, English classes were only the classes used for the purpose of research as the study was incorporated during the use of prescribed competency for the day or week based on the most essential learning competencies (MELCS) or curriculum guide. Lastly, materials (instruments) and other expenses was shouldered by the researchers alone.

Data Analysis

The collected data were tabulated, analyzed, and interpreted using Microsoft Excel and Jamovi software with the guidance of a statistical expert. For the different games employed in the teaching-learning process, the researchers listed down and described the different games with their mechanics. On the other hand, to identify the proficiency level of the respondents in terms of their pretest and posttest, both in the experimental and control group, the researchers used the mean distribution to know the average score of the students per section. After that, it was analyzed using a 10-point scale that determined the proficiency level of the Grade 9 learners in terms of pretest and posttest. The 10-point scale that the researchers employed to determine the proficiency level of the respondents was as follows:

Table 2. 10-point Scale for English Grammar Proficiency Level

Level of Proficiency	Score	Description
Advanced Proficient	19 to 20	The students are able to correctly identify and use 19 to 20 modals in a 20-point item test. The students are knowledgeable about the use of modals and can express themselves using modals effectively and outstandingly in a scenario with almost, if not, no mistakes at all.
Proficient	17 to 18	The students are able to correctly identify and use 17 to 18 modals in a 20-point item test. The students know the use of each modal and can mostly express themselves using modals in a scenario and sentences correctly and excellently.
Developing Proficient	15 to 16	The students are able to correctly identify and use 15 to 16 modals in a 20-point item test. The students can express themselves using modals in a scenario and sentences in a good way, but rarely commit errors.
Advanced Average	13 to 14	The students are able to correctly identify and use 13 to 14 modals in a 20-point item test. The students can express themselves using modals in a scenario and sentences in a better manner but still commit mistakes.
Intermediate	11 to 12	The students are able to correctly identify and use 11 to 12 modals in a 20-point item test. The students can express themselves using modals in a scenario and sentences in an average manner, but sometimes commit mistakes.
Developed	9 to 10	The students are able to correctly identify and use 9 to 10 modals in a 20-point item test. The students can use modals in a scenario and sentences but sometimes mistakenly use other types of modals in a sentence inappropriately.
Developing	7 to 8	The students are able to correctly identify and use 7 to 8 modals in a 20-point item test. The students can use modals in a scenario and sentences but not as good as others and still need to be improved.
Advanced Beginner	5 to 6	The students are able to correctly identify and use 19 to 20 modals in a 20-point item test. The students are beginning to use modals accurately in a scenario and sentences, but still have some confusion.

Level of Proficiency	Score	Description
Beginner	3 to 4	The students are able to correctly identify and use 19 to 20 modals in a 20-point item test. The students are beginning to use modals in a scenario and sentences but cannot differentiate their differences and mostly commit mistakes.
Non-Proficient	1 to 2	The students are able to correctly identify and use 1 to 2 modals in a 20-point item test. The students have a lot of confusion and still need to be enriched regarding expressing themselves using modals. They lack knowledge about it and mostly commit a lot of mistakes.

This determined if the score of those students in the control group differed from those in the experimental group. Moreover, a paired sample t-test was used to find the difference between the pretest and posttest of the Grade 9 learners. According to the [Boston University School of Public Health \(2016\)](#), when determining the difference between two variables for the same subject, we use a paired sample t-test. This helped in identifying the difference and comparison of the pretest and posttest scores of the Grade 9 learners. It also indicated whether game-based learning has either a positive or negative effect on the students based on their test scores. Lastly, enrichment activities that will help develop the grammar skills of the Grade 9 learners were specified, described, and proposed.

FINDINGS AND DISCUSSION

The game-based lessons included pointing systems, group colors, teams, and interactive instructional materials. According to [Pho and Dinscore \(2015\)](#), game-based learning provides a chance for teachers to include active learning in their classroom teaching sessions, which in turn promotes students' interest and engagement and allows for rapid feedback on their performance. In addition, the game-based lessons employed are not solely games made for fun and engagement of the students. The games are also intended to let the students learn more effectively the least learned competency, which is Modals. [Davidson \(2016\)](#) stated that the main goal of this game-based lesson was to design, put into practice, and assess a cutting-edge instructional method with the goals of enhancing student learning as well as student engagement and overall happiness.

Description of the Games

During the said intervention, all of these features of game-based learning were applied and observed. The researchers ensured that the students would participate actively in the lesson. The implemented game-based lessons are as follows:

Give It or Take It

Students in the two groups played Rock-Paper-Scissors to decide who chose the suitcase first. They identified whether a statement used a modal of permission, deciding to keep or give away the suitcase based on correctness, which impacted their points. This game focused on critical thinking and decision-making.

Power-Up

Students were grouped to spell words and create sentences using modals of permission. They earned points and activated powers like adding or deducting points from other teams. The game developed decision-making abilities and teamwork.

Pick-A-Door

In groups of four, students picked doors containing scenarios and created sentences using modals of obligation. Each correct sentence earned points, and the game encouraged group participation and speaking skills.

Five Stars (Fill-the-Gap)

Students formed groups and answered prompts with modals of obligation. The first group to raise their flag answered first, earning stars for the correct answers. The goal was to enhance critical thinking and group collaboration.

Picture Perfect

Groups received jigsaw puzzles to solve, then constructed sentences using modals of prohibition based on the image. Points were awarded for correct sentences focusing on teamwork and analytical skills.

Eliminate Me

Students formed teams and took turns using the modals of prohibition to eliminate the numbered boxes. Each correct answer removed a box, with the goal of boosting speaking confidence and contributing to group success.

Flip the Bottle Tic-Tac-Toe

Students flipped bottles to earn the chance to answer questions and place markers on a tic-tac-toe board. The first group to get three in a row won, with the game enhancing agility and critical thinking.

Think-peers-share-write-pass

Groups received prompts corresponding to different modals (prohibition, obligation, permission, no obligation). After composing sentences, they assumed each other's assigned modals, earning points for correct guesses. This game emphasized collaboration and cooperation.

Table 11. Scores of the Experimental Group in the Game-based Learning Activities

Activity	Mean Score	Rank
1. Give It or Take It	18.015	5
2. Power-Up	18.56	2
3. Pick-A-Door	17.96	6
4. Five Stars (Fill-the-Gap)	18.27	4
5. Picture Perfect	17.625	7
6. Eliminate Me	18.55	3
7. Flip the Bottle Tic-Tac-Toe	17.245	8
8. Think-peers-share-write-pass	19.045	1

Table 11 shows that the game where students from the experimental group attained 19.045, which is the highest mean score in their evaluation, is Think-peers-share-write-pass. It was the game employed on the last day of the game-based lesson. The possible reason why students attained the highest score when this game was employed was because it is student-centered and interactive at the same time. The students are the ones creating and constructing questions and answers from their peers while earning points, making it a meaningful activity. [Green and Harrington \(2020\)](#) stated that game-based learning provides a way to make traditional lessons

student-centered, which may improve students' proficiency in the lesson. Furthermore, the students attained an average mean score of 18.56 on their evaluation when the game Power-Up was employed, which yields 2nd to the highest in the ranking. Moreover, when the game Eliminate Me was employed during their game-based lesson, the learners got an average of 18.55 on their evaluation, which yields 3rd to the highest in the ranking. This implies that these top three games are considered the most effective games employed in game-based lessons as the learners got high scores on their evaluation.

On the other hand, the learners attained the lowest mean score of 17.245 in the evaluation after the Flip the Bottle Tic-Tac-Toe game-based lesson. Meanwhile, after the Picture Perfect game, the students got an average score of 17.625 in the evaluation, which is 2nd to the lowest in the ranking. In addition, the students obtained a mean score of 17.96 on their evaluation after the Pick-A-Door was employed during their game-based lesson, which ranked 3rd to the lowest in the ranking. This further implies that these games were effective but not as effective as the other games employed during the game-based lesson. However, it is observable that their scores are equivalent to Proficient; thus, all these games employed during the game-based lessons are seen to be effective regardless of the ranking. According to [Tamosevicius \(2022\)](#), learning through games is an effective method for fostering innovation, analysis, and problem-solving among young students. Games like these employed during game-based lessons increase students' participation and help increase their knowledge of the topic, as supported by the study of [Cheung and Ng \(2021\)](#).

Proficiency Level of the Respondents in the Experimental and Control Group based on their Scores in the Pretest and Posttest

Table 12 presents the pretest scores of the Grade 9 learners regarding their proficiency level of English grammar skills, particularly in the use of Modals, using an adopted assessment tool. The assessment tool consists of 20 multiple-choice items about the use of different modals. As presented, all of the Grade 9 learners, regardless of whether they come from the experimental or control groups, attained the level of proficiency, Developing Proficient, with an average score of 15.29 out of 20 points. To specify, the first experimental group (9-Aristotle) scored an average of 14.97 and the second experimental group (9-Euclid) attained 15.08 out of 20 points, wherein the average score of both experimental groups is 15.025, which is Developing Proficient.

Table 12. Pretest Score Results from the Adopted Assessment Tool

Sections	Groups	Mean Distribution	Verbal Interpretation
9-Aristotle	Experimental Group	14.97	Developing Proficient
9-Euclid	Experimental Group	15.08	Developing Proficient
9-Galileo	Control Group	15.56	Developing Proficient
9-Newton	Control Group	15.56	Developing Proficient
TOTAL		15.29	Developing Proficient

On the other hand, the two control groups both got a mean average score of 15.56 out of 20 points, where the average score of both sections yielded a score of 15.56. This implies that before an intervention occurred, the respondents had the knowledge and proficiency in using modals correctly in a sentence or scenario. The students can express themselves using modals in a scenario and sentences in a good way but rarely commit errors. This may be due to the reason that Modals was already taught to them in the first quarter; however, they still need to attain more proficiency in this topic. Furthermore, it is also observable that in the pretest, the control group slightly attained a higher average score than the experimental group, which implies that most of the students in the

control group are slightly more knowledgeable about the topic than the experimental group.

Thus, the proficiency level before the intervention as reflected on the presented pretest scores, their average is 15.29, which means that the respondents are developing proficient learners in terms of using modals correctly in a sentence or scenario. Hence, the respondents have the knowledge and proficiency in using modals correctly and at a good level. Most students struggle in using modal verbs in sentences, especially in high school. In the study of [Altayeb \(2019\)](#), it was discovered that most students struggled with using modal English verbs correctly and were confused in expressing themselves using modal verbs. Additionally, it was discovered that some modal verbs' varied functions were not understood by the students. Due to this, various teaching strategies were utilized to enable students to enhance their writing skills using modal verbs in a more appealing way, some of which include the traditional teaching and the game-based lessons ([Lúa, 2020](#)).

Table 13. Posttest Score Results from the Adopted Assessment Tool

Sections	Groups	Mean Distribution	Verbal Interpretation
9-Aristotle	Experimental Group	17.08	17.04 Proficient
9-Euclid	Experimental Group	17	
9-Galileo	Control Group	16.78	16.76 Proficient
9-Newton	Control Group	16.75	
TOTAL		16.9	Proficient

Table 13 presents the posttest scores of the Grade 9 learners regarding their proficiency level of English grammar skills, particularly in the use of Modals, using an adopted assessment tool. The same assessment tool was utilized consisting of 20 multiple-choice items about the use of different modals; however, the items were randomized. As shown in the data, all of the Grade 9 learners, regardless of whether they come from the experimental or control group, attained the proficiency level "Proficient" with an average score of 16.9 out of 20 points after the intervention. The first experimental group (9-Aristotle) scored an average of 17.08 and the second experimental group (9-Euclid) attained 17 out of 20 points, wherein the average score of both experimental groups was 17.04, which is Proficient. Meanwhile, the first control group (9-Galileo) got a mean average score of 16.78 out of 20 points, while the second control group (9-Newton) scored 16.75. Both control groups yielded an average score of 16.76, which is Proficient. This implies that after the intervention, all of the respondents progressed and attained knowledge and proficiency in using modals correctly in a sentence or scenario. All the students progress even if in a game-based lesson or the traditional lesson is employed in the teaching-learning process. The students know the use of each modal and can mostly express themselves using modals in a scenario and sentences correctly and excellently.

Furthermore, it was observed that in the post-test, the experimental group scored higher than the control group as their scores yielded a mean average of 17.04 compared to the control group which got a mean average of 16.76. This further implies that even though both progressed from being developing proficient to completely proficient, the students from the experimental group significantly progressed higher than those in the control group. Therefore, game-based learning can help students progress significantly more than traditional teaching. According to [Al-Azawi \(2016\)](#), game-based learning helps students to understand difficult and confusing topics. Due to this, it was utilized to clarify topics such as the use of modal verbs in class. This is supported by the study of [Vladimirova Barakova \(2020\)](#), wherein they employed game-based learning in the

class, which provided an active class environment that provided clear examples of modal verbs in an engaging way.

Significant Difference between the Pretest and Posttest Scores of Learners in the Experimental and Control Groups after Employing Game-Based Learning Strategies and the Traditional Teaching Strategy

Table 14 shows the paired sample t-test results from the adopted assessment tool used by two English teachers to observe if there will be differences in the English grammar skills of the respondents, particularly in the use of modals, before and after the game-based lessons. The results revealed that the scores before the intervention ($M = 15.028$, $SD = 2.223$) were highly significantly lower compared to the scores obtained after the intervention ($M = 17.042$, $SD = 1.669$), $t(70) = -7.781$, $p = .001$. In addition, the computed p-value ($<.001$) of the study was lower than the alpha level of significance set at $.05$; thus, there was a highly significant difference between the pre-test and post-test scores based on the assessment tool used to measure the level of proficiency of the students in Modals. This suggests that the intervention, which is the game-based lesson, was helpful for English teachers and effective in improving the English grammar skills of the respondents, particularly in expressing themselves using modals.

Table 14. Paired Sample T-Test Results of Pretest and Posttest Scores of Learners in the Experimental Groups

Experimental	N	Mean	SD	t	df	p	Decision	Verbal Interpretation
Pretest	71	15.028	2.223	-7.781*	70	<.001	Reject the null hypothesis	There is a highly significant difference
Posttest	71	17.042	1.669					

Note: * $p < .05$

Game-based learning is a teaching strategy that helps learners to improve their English grammar skills while providing a fun, engaging, and motivating learning environment. The game-based learning strategy could therefore serve as a springboard for teaching and learning practice and customization. In the study of [Lin et al. \(2020\)](#), it was found that the game-based learning game-based learning technique used in the experimental group had considerably fewer contextual errors than the control group. [Idris et al. \(2020\)](#) stated that game-based learning, which possesses engaging aspects, was the factor that led to the reduction of the learners' emotional filter while they were studying grammar, which, in turn, led to an increase in the learners' desire to learn.

The students could express themselves more accurately and confidently using modals after participating in the game-based lessons. This is because games provide a fun and challenging way for learners to practice applying grammar rules ([Al-Jarrah, 2019](#)). Additionally, it provides immediate feedback on their performance ([Chen & Law, 2016](#)). They also argue that game-based lessons can also create a sense of competition, which motivates learners to improve their skills.

Furthermore, game-based lessons offer a variety of activities that cater to different learning styles, increasing the chances of success regarding understanding and applying grammar rules ([Fithriani, 2018](#)). Games can also be easily adopted to different proficiency levels, making them suitable for both beginner and advanced learners ([Lin et al., 2020](#)).

Thus, game-based lessons have proven to be an effective method for improving English grammar skills, particularly in the use of modals. By using games as a learning tool, learners can increase their motivation and engagement while also improving their language skills.

Table 15. Paired Sample T-Test Results of Pretest and Posttest Scores of Learners in the Control Groups

Control	N	Mean	SD	t	df	p	Decision	Verbal Interpretation
Pretest	72	15.556	2.294	-3.769*	71	<.001	Reject the null hypothesis	There is a highly significant difference
Posttest	72	16.763	1.939					

Note: * $p < .05$

Table 15 illustrates the results of a paired sample t-test conducted using the adopted assessment tool by two English teachers to compare the scores on an assessment of the respondents in the control group with regard to their English grammar proficiency, specifically their usage of modals. The results showed a highly significant difference between the pretest scores ($M = 15.556$, $SD = 2.294$) and the posttest scores ($M = 16.763$, $SD = 1.939$), $t(71) = -3.769$, $p = .001$. There is a highly significant difference between students' pretest and posttest scores on the assessment tool used to assess their proficiency level in using Modals, as the level of significance (0.05) is greater than the computed p-value (<.001). This indicates that the intervention conducted in the traditional lesson is effective in enhancing the respondents' knowledge of English grammar, in particular, their ability to express themselves using modals. Traditional teaching strategies also help in improving students' English grammar skills as explicit grammar instruction or directly explaining grammar rules to students and giving them examples of how to use them correctly can help them learn how to use the rules (Renau, 2016).

Furthermore, Hashemi and Daneshfar (2018) stated that it provides students with opportunities to practice using the rules they have learned can help them internalize the grammar concepts. Moreover, the direct teaching method, which is mostly applied in traditional teaching, could be effective, especially if it is well-planned, engaging, and tailored to meet the individual needs of the students (Muijs & Reynolds, 2017). It also becomes effective when there are interactive and authentic activities that promote the practical use of modal verbs in real communicative situations (Lytovchenko et al., 2020). Ultimately, the effectiveness of any teaching method depends on various factors, such as the learners' proficiency level, learning style, motivation, and the teacher's mastery of the subject matter.

Table 16. Comparative Paired Sample T-Test Results of Pretest and Posttest Scores of Learners in the Experimental and Control Groups

Respondents	N	Mean	SD	statistic	df	p	Decision
Experimental							
Pretest	71	15.028	2.223	-7.781*	70	<.001	Reject Ho
Posttest	71	17.042	1.669	-7.781*	70	<.001	Reject Ho
Control							
Pretest	72	15.556	2.294	-3.769*	71	<.001	Reject Ho
Posttest	72	16.763	1.939	-3.769*	71	<.001	Reject Ho

Table 16 presents the comparative paired sample t-test results of the scores from the assessment tool in the pretest and posttest of the learners in both the experimental and control groups. It illustrates that both groups' scores in the pretest and posttest yielded a p-value of <.001 which is lower than the level of significance, which is set to .05. Therefore, there is a highly significant difference between students' pretest and posttest scores. It is also observable that the experimental group scored lower than the control group during the pretest as their mean average score was 15.028, unlike the control group which attained 15.556. During the posttest, it was shown

that the experimental group who experienced game-based lessons scored higher than the control group which experienced traditional teaching as the experimental group attained 17.042 and the control group got 16.763. Furthermore, it can be inferred that the experimental group progressed significantly higher than those in the control group as the experimental group scored from 15.028 on the pretest to 17.042 with a difference of 2.014. On the other hand, the control group scored from 15.556 to 16.763 with a difference of 1.207. Thus, game-based learning is more effective than the traditional teaching strategy as there is a slight significant improvement or advantage to students in learning English grammar, particularly Modals.

According to the findings, game-based learning (GBL) with teacher-created games was almost as effective as conventional or traditional teaching in terms of student knowledge acquisition; however, it was much more successful in terms of boosting student motivation (López-Fernández, 2021). This is supported by the study of Hartt et al. (2020), wherein they stated that the use of games in the classroom is becoming increasingly popular as a cutting-edge educational method that may boost students' levels of intrinsic motivation, emotional involvement, and overall enjoyment. Anastasiadis et al. (2018) stated that game-based learning encourages a learning environment that is centered on the student, one in which the student's health and well-being, as well as their "soft skills," are developed in a way that is dynamic, fun, and playful. In contrast, Hafeez (2021) argued that traditional teaching provides information in a way that is both appealing and relevant. It has the capacity to stimulate people's interest in the subject matter discussed. However, Gudadappanavar et al. (2021) indicated in their study that, unlike the traditional teaching method, game-based learning has recently garnered a lot of attention as a method that may be used to motivate students' learning as it creates learner-centered environments that provide experiential learning opportunities, promote learning, and stimulate students' interest in learning as well as their incentive to learn.

Hence, game-based learning can help students improve their English grammar skills more significantly, particularly in expressing themselves using modal verbs, as it is more interesting, engaging, and establishes student-centered learning.

CONCLUSIONS

Based on the findings, the researchers made the following conclusions: (1) The different activities in game-based learning strategies employed are described as fun, engaging, student-centered, establish a more conducive and playful learning environment, and away from the conventional teaching strategy. The implemented game-based lessons are as follows: Give It or Take It, Power-Up, Pick-A-Door, Five Stars (Fill-the-Gap), Picture Perfect, Eliminate Me, Flip the Bottle Tic-Tac-Toe, and Think-peers-share-write-pass. The scores during the evaluation after the game-based lesson of the experimental group were all high and within the Proficient to Advance Proficient levels; thus, game-based learning appears to be effective. These games described and employed during the game-based learning sessions will be a great help in improving the grammar skills of the students. (2) Before the intervention, the respondents were at the Developing Proficient level; thus, they already had good English grammar skills, especially in using modals correctly in sentences and scenarios, but they rarely made mistakes. The pretest showed that the control group knew more than the experimental group. However, the experimental group scored higher than the control group in the posttest; hence, game-based learning is more effective since students use modals correctly and impressively in sentences and scenarios after the intervention. All Grade 9 students progressed from Developing Proficient to Proficient. Thus, all students improved even in game-based or traditional lessons. Game-based learning may be used to help improve the proficiency level of the students in grammar.

(3) The pre-test and post-test scores of respondents before and after game-based lessons

significantly differed, according to the result from the paired sample t-test. Therefore, employing game-based learning strategies has a difference in improving their English grammar skills. During the pretest, the control group outscored the experimental group. After the intervention, the experimental group outscored the control group in the post-test. Thus, students from the experimental group progressed more than those in the control group. Hence, game-based learning advances students more than traditional teaching. Additionally, it is more effective and beneficial in improving the English grammar skills of the students, particularly in expressing themselves using modals. This creates a meaningful, engaging, fun, and innovative learning environment that challenges and motivates 21st-century learners. Employing such game-based learning activities or lessons will help resolve the least competencies. (4) The proposed enrichment activities or lessons that are game-based have gameplay mechanics, pointing systems, challenges, rounds or stages, roles, and badges. There are eight game-based lessons proposed, which are as follows: Role-Taker, Score Switchers, Keep Mr. Rabbit Free, Guess the Gibberish, Balloon Pop!, Trip to Modals (Trip to Jerusalem Game), Modal Trails, and Last Student Standing. The game-based lessons proposed are fun and engaging. Unlike traditional teaching, they should let students use their learning domains and learn while having fun. This will make the learning of the students even more meaningful and purposeful.

LIMITATION & FURTHER RESEARCH

This study focused on the effects of Game-based Learning in improving the Grammar Skills of the Grade 9 students of Regional Science High School III. The researchers employed eight (8) different activities or games in the English lessons of the students. The study was employed only during the English class of the grade 9 RSHS III students. Grade 9 students were chosen because the researchers are currently teaching in the grade 9 curriculum where they can control (dissemination and collection of instruments) the students accordingly. This study solely focused on the grammar skills of the students, particularly Modals. Since it was found out in the first quarterly examination that the least learned competency of the Grade 9 students is “Expressing permission, obligation, and prohibition using modals”, this research focused on enhancing this particular competency of the students through game-based learning.

Based on the following limitations, the researchers recommend the following: (1) To motivate students and elicit learning while having fun, game-based lessons should be implemented in the classrooms because they enable exciting, enjoyable, engaging, and student-centered learning, which is best suited for 21st-century learners, establishing a more conducive and playful learning environment, away from the traditional teaching strategy. (2) Teachers should use game-based learning to develop the level of English grammar proficiency of the students as it is perceived to be more effective than the traditional teaching approach. It is highly recommended to use the game “Think-peers-share-write-pass” as it is proven to be the most effective among all the games employed. Furthermore, use it to improve the problem-solving skills of the learners and attract their attention or motivate them to participate in the English grammar lessons. (3) The curriculum implementers or the teacher may consider developing lessons that are game-based and are aligned to the most essential learning competencies to improve the scores of the students in English grammar assessments, particularly in expressing themselves using modals. This is because game-based learning is beneficial and effective in developing and improving students’ skills in English grammar over time. (4) Game-based learning allows students to explore different aspects of games as a way to learn and improve their skills; thus, teachers should use game-based lessons or activities as an enrichment strategy for the students, especially employing it to resolve the least learned competency found. The lessons or enrichment activities should incorporate gameplay mechanics, badges, levels or rounds, exciting various challenges, and pointing systems. This helps students

retain information, actively participate in class, learn to cooperate with others, decide and answer quickly, and learn while enjoying the enrichment activities or lessons that are typically boring. (5) Similar studies should be conducted in the future by the researchers to enhance and update the research about game-based learning strategy in improving grammar skills of the learners into more timely and relevant literature. Future researchers may also want to consider employing a case study research methodology to further understand the effect of game-based learning in enhancing the grammar skills of students over a longer period of time. In addition, this study can be used by future researchers if they are studying the same topic. The difference in scores, strategies, places, schools, nations, time, context, and others vary differently; thus, the need for future research with regard to this is highly recommended.

REFERENCES

- Al-Azawi, R., Al-Faliti, F., & Al-Blushi, M. (2016). Educational gamification vs. game based learning: Comparative study. *International journal of innovation, management and technology*, 7(4), 132-136. <https://doi.org/10.18178/ijimt.2016.7.4.659>
- Al-Jarrah, J. M., Waari, O. T., Talafhah, R. H., & Al-Jarrah, T. M. (2019). Improving English grammar achievement through educational games among eleventh grade students in East Jerusalem. *International Journal of Academic Research in Progressive Education and Development*, 8(1). <https://ijarped.com/index.php/journal/article/view/491>
- Altayeb, H. B. (2019). Exploring the Difficulties of Using English Modal Auxiliaries among the Tertiary Level Students. Exploring the Difficulties of Using English Modal. <https://repository.sustech.edu/bitstream/handle/123456789/25391/Exploring%20the%20Difficulties.....pdf?sequence=1>
- Anastasiadis, T., Lampropoulos, G., & Siakas, K. (2018). Digital game-based learning and serious games in education. *International Journal of Advances in Scientific Research and Engineering*, 4(12), 139-144. <http://doi.org/10.31695/IJASRE.2018.33016>
- Anderson, C., Thompson, L., & Anderson, M. (2022). Game-based learning and cognitive development: A study of critical thinking and problem-solving in language education. *Journal of Educational Psychology*, 114(3), 401-416. <https://doi.org/10.1037/edu0000582>
- Banik, P., & Kumar, B. (2019). Impact of information literacy skill on students' academic performance in Bangladesh. *International Journal of European Studies*, 3(1), 27-33. <https://doi.org/10.11648/j.ijes.20190301.15>
- Bhandri, P. (2020). What Is Quantitative Research? Definition, Uses and Methods. Scribbr.com. <https://www.scribbr.com/methodology/quantitative-research/>
- Boston University School of Public Health (2016, January 6). Paired sample t-test. <https://sphweb.bumc.bu.edu/otlt/mph-modules/bs/sas/sas4-onesampltest/SAS4-OneSampleTtest7.html>
- Brown, H. D. (2019). Designing effective games for language learning: Challenges and strategies. *Journal of Language Teaching Research*, 10(4), 532-548. <https://doi.org/10.1111/jltr.2019.10.4.532>
- Campano, G. (2019). *Immigrant students and literacy: Reading, writing, and remembering*. Teachers College Press.
- Care, E., Kim, H., Vista, A., & Anderson, K. (2018). Education System Alignment for 21st Century Skills: Focus on Assessment. *Center for Universal Education at The Brookings Institution*.
- Chang, W. L., & Yeh, Y. C. (2021). A blended design of game-based learning for motivation, knowledge sharing and critical thinking enhancement. *Technology, Pedagogy and Education*, 30(2), 271-285. <https://doi.org/10.1080/1475939X.2021.1885482>
- Chen, C. H., & Law, V. (2016). Scaffolding individual and collaborative game-based learning in

- learning performance and intrinsic motivation. *Computers in Human Behavior*, 55, 1201-1212. <https://doi.org/10.1016/j.chb.2015.03.010>
- Cheung, S. Y., & Ng, K. Y. (2021, March). Application of the educational game to enhance student learning. *Frontiers in Education*, 6, 623793. <https://doi.org/10.3389/feduc.2021.623793>
- Cielo, A., Lopez, M. P., Torres, J., Tenio, A., & Dela Fuente, A. L. (2019). Effectiveness of Traditional Method of Teaching in Academic Performance of General Academic Strand Students at Bestlink College of the Philippines. *Ascendens Asia Singapore – Bestlink College of the Philippines Journal of Multidisciplinary Research*, 1(1). <https://ojs.aaresearchindex.com/index.php/aasgbcjpmra/article/view/1245>
- Cook, T. D. (2015). Quasi-experimental design. *Wiley encyclopedia of management*, 1-2.
- Darsih, E. (2018, January). Learner-Centered Teaching: What Makes It Effective. *Indonesian EFL Journal*. 4(1), 33. <https://doi.org/10.25134/ieflj.v4i1.796>
- Davidson, S. J., & Candy, L. (2016). Teaching EBP using game-based learning: Improving the student experience. *Worldviews on Evidence-Based Nursing*, 13(4), 285-293. <https://doi.org/10.1111/wvn.12152>
- Demir, B., & Sönmez, G. (2021). Generation Z students' expectations from English language instruction. *Journal of Language and Linguistic Studies*, 17(Special Issue 1), 683-701. <https://files.eric.ed.gov/fulltext/EJ1285211.pdf>
- Dimitrios, B., Labros, S., Nikolaos, K., Maria, K., & Athanasios, K. (2013, October). Traditional Teaching Methods Vs. Teaching Through The Application Of Information And Communication Technologies In The Accounting Field: Quo Vadis?. *European Scientific Journal*, 9(28). <https://core.ac.uk/download/pdf/328023853.pdf>
- El Mawas, N., & Muntean, C. H. (2018, July). Supporting lifelong learning through development of 21 ST century skills. In *10th International Conference on education and new learning technologies*.
- Fithriani, R. (2018). Communicative game-based learning in EFL grammar class: Suggested activities and students' perception. *JEELS (Journal of English Education and Linguistics Studies)*, 5(2), 171-188. <https://doi.org/10.30762/jeels.v5i2.509>
- Green, C. & Harrington, C. (2020). *Student-centered learning: In principle and in practice*. Lansing, MI: Michigan Virtual University. <https://michiganvirtual.org/research/publications/student-centered-learning-in-principle-and-in-practice/>
- Gudadappanavar, A. M., Benni, J. M., & Javali, S. B. (2021). Effectiveness of the game-based learning over traditional teaching-learning strategy to instruct pharmacology for Phase II medical students. *Journal of education and health promotion*, 10.
- Hafeez, M. (2021). Effects of Game Based Learning in Comparison of Traditional Learning to Provide Effective Learning Environment-A Comparative Review. *International Journal of Social Sciences & Educational Studies*, 8(4), 100. <https://doi.org/10.23918/ijsses.v8i4p100>
- Hakim, A. R., & Saputra, A. (2023). The impact of game-based learning on student engagement and language acquisition: A critical analysis. *Journal of English Language Studies*, 12(2), 113-127. <https://doi.org/10.31098/jels.v12i2.432>
- Hartt, M., Hosseini, H., & Mostafapour, M. (2020). Game on: Exploring the effectiveness of game-based learning. *Planning Practice & Research*, 35(5), 589-604. <https://doi.org/10.1080/02697459.2020.1778859>
- Hashemi, A., & Daneshfar, S. (2018). The impact of different teaching strategies on teaching grammar to college students. *Theory and Practice in Language Studies*, 8(3), 340-348. <http://dx.doi.org/10.17507/tpls.0803.10>

- Idris, M. I., Said, N. E. M., & Tan, K. H. (2020). Game-based learning platform and its effects on present tense mastery: Evidence from an ESL classroom. *International Journal of Learning, Teaching and Educational Research*, 19(5), 13-26. <https://doi.org/10.26803/ijlter.19.5.2>
- Johnson, R., Smith, P., & Thompson, M. (2021). Game-based learning and language proficiency: A meta-analysis of research in language education. *Journal of EFL Teaching and Research*, 15(3), 289-305. <https://doi.org/10.1177/21582440211018325>
- Lau, H. S. (2020). Comparing the Effectiveness of Student-Centered Learning (SCL) Over Teacher-Centered Learning (TCL) of Economic Subjects in a Private University in Sarawak. *International Journal of Innovation, Creativity and Change*. https://www.ijcc.net/images/vol10iss10/101012_Soon_2020_E_R.pdf
- Lúa, G. Q. L. (2020). The influence of modal verbs in the writing skill (Bachelor's thesis, Universidad de Guayaquil. Facultad de Filosofía, Letras y Ciencias de la Educación).
- Lin, C. J., Hwang, G. J., Fu, Q. K., & Cao, Y. H. (2020). Facilitating EFL students' English grammar learning performance and behaviors: A contextual gaming approach. *Computers & Education*, 152, 103876. <https://doi.org/10.1016/j.compedu.2020.103876>
- Llego, M. A. (2022, September 14). *21st-Century Learning: What It Is and Why It's Important*. TeacherPH. <https://www.teacherph.com/21st-century-learning/>
- López-Fernández, D., Gordillo, A., Alarcón, P. P., & Tovar, E. (2021). Comparing traditional teaching and game-based learning using teacher-authored games on computer science education. *IEEE Transactions on Education*, 64(4), 367-373. <https://doi.org/10.1109/TE.2021.3057849>
- Lytovchenko, I., Lavrysh, Y., Lukianenko, V., & Ogienko, O. (2020). How to teach grammar to adult ESP learners at technical university more communicatively: task-based approach. *Multidisciplinary Journal for Education, Social and Technological Sciences*, 7(1), 54-71. <https://doi.org/10.4995/muse.2020.12419>
- Miller, J., & Rose, S. (2022). Adaptive learning technologies in game-based grammar instruction: Impacts on student outcomes. *Journal of Educational Technology & Society*, 25(1), 98-112. <https://doi.org/10.1016/j.edutech.2021.10.001>
- Muijs, D., & Reynolds, D. (2017). *Effective teaching: Evidence and practice*. Sage.
- Pho, A., & Dinscore, A. (2015). Game-Based Learning. Tips and Trends: Instructional Technologies Committee. <https://acla.ala.org/IS/wp-content/uploads/2014/05/spring2015.pdf>
- Prensky, M. (2020). Digital game-based learning: Practical ideas for classroom implementation. *Journal of Interactive Learning Research*, 31(2), 147-163. <https://doi.org/10.1145/3451234.3451236>
- Price, P. C., Jhangiani, R., & Chiang, I. A. (2015). *Quasi-Experimental Research - BC Open Textbooks*. <https://opentextbc.ca/researchmethods/chapter/quasi-experimental-research/>
- Rahman, F., & Munir, A. (2021). Collaborative learning in game-based environments: Implications for language education. *Journal of Language Teaching & Learning*, 8(3), 233-249. <https://doi.org/10.1080/23272927.2021.1845692>
- Raja, F. U., & Najmonnisa, S. (2018). Comparing Traditional Teaching Method and Experiential Teaching Method using Experimental Research. *Journal of Education and Educational Development*. <https://files.eric.ed.gov/fulltext/EJ1200262.pdf>
- Renau, R. M. L. (2016). A review of the traditional and current language teaching methods.
- Smith, J. (2020). Longitudinal effects of game-based learning on grammar proficiency in secondary education. *Journal of English Language Teaching*, 34(2), 244-258. <https://doi.org/10.1177/0741088320912055>
- Stiller, K. D., & Schworm, S. (2019, March). Game-based learning of the structure and functioning of body cells in a foreign language: Effects on motivation, cognitive load, and performance.

- Frontiers in Education*, 4, 18. Frontiers Media SA. <https://doi.org/10.3389/feduc.2019.00018>
- Tamosevicius, R. (2022, November 22). Why Is Game-Based Learning Important?. *eLearning Industry*. <https://elearningindustry.com/why-is-game-based-learning-important>
- Thomas, L. (2022, July 21). *Quasi-Experimental Design | Definition, Types & Examples*. scribbr. <https://www.scribbr.com/methodology/quasi-experimental-design/>
- Tobias, S., Fletcher, J. D., & Wind, A. P. (2014). Game-based learning. Handbook of research on educational communications and technology. *Springer*.
- Barakova, M. V, (2020). Game-based learning for speaking practices in ESL contexts.
- Zhang, L., & Li, X. (2022). Adaptive game-based learning in language education: Personalization and effectiveness. *Computers & Education*, 176, 104369. <https://doi.org/10.1016/j.compedu.2021.104369>