

Evaluating the Impact of Digital Interactive Games in Developing EFL Grammar Skills

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Abstract

Grammar is considered an essential aspect of language that demands careful planning and instruction. The outbreak of COVID-19 significantly impacts language teaching. The use of games is effective in enhancing grammar skills. The present study aimed to explore the role of digital games in developing EFL learners' grammar skills. The study used a quasi-experimental design to gather the data. The study participants were 56 EFL male learners divided into control, experimental, and control groups. Data was gathered by the use of grammar tests on pre and post-tests. The data were analyzed using SPSS software after going through the assumptions of the data. The data analysis indicated that implementing digital games significantly improved learners' grammar skills. The findings suggest that games enhance learners' grammar skills.

Keywords: Grammar, Digital games, EFL Learners

1. Introduction

English Language Teaching (ELT) requires considerable effort in the time of globalization, as learning to speak in English is also one of the essential skills for students to advance (Khan et al., 2021; Khan & Kumar, 2023). Throughout this frame of reference, Rijt and Coppin (2021) emphasize the importance of grammar in language education. Indeed, grammatical knowledge is widely regarded as the foundation of language learning, as students' achievement is typically contingent upon their ability to communicate effectively (Ali et al., 2023; Wyatt & Dikilitaş, 2021). Additionally, grammar rules are critical for developing language skills (Bahari & Gholami, 2022). Some of the underlying obstacles to mastering English accurately and proficiently are an absence of motivation and inspiration, the use of conventional ways of teaching and learning, being intimidated by their instructors, and experiencing the anxiety of learning English quickly. Learners, particularly adults, find it more difficult in this aspect due to a lack of self-confidence (Krajka, 2021). To address this issue, some instructors recommend implementing games to enhance students' eagerness and ability to learn more and interact in classroom instruction of all stages and expectations.

Grammar has indeed long been regarded as an essential aspect of language teaching. Babadjanova et al., (2020) and Khan et al., (2023) claim that grammar refers to the different lexical items and word groups that make up meaningful sentences in every language. Considering the significance of grammar in EFL learning, Castillo-Cuesta (2020) suggests using digital games to contextualize grammar and make it a lot easier for learners to use it. Gamification also improves a language's classroom instruction by increasing learners' opportunities and motivation, a critical component of EFL learning (Lin et al., 2020; Muhanna, 2012). Digital gamification in EFL learning can be implemented in various ways (Sykes, 2018; Xu et al., 2020).

Games are the most natural way to learn. More investigation suggests that digital games stimulate learning. Even though studies have found that digital games can help students learn, classroom use could be improved. Other issues must be addressed if online games are used more in professional contexts. Other problems include instructor and student acknowledgment, technological limitations, and content and syllabus questions (Dele-Ajayi et al., 2019; Mahalingam et al., 2019). Instructors are the custodians when implementing digital games into classroom instruction because they determine whether or not to introduce them (Máthé et al., 2020). While digital games have enough potential to help students learn, they are hardly ever used in formal instruction in Saudi Context. One may be curious to know why such an approach is not used. However, instructors' knowledge, abilities, and personal agendas are necessary for skilfully implementing online games in education (Nousiainen et al., 2018).

Using games to engage and motivate students is a great way to help students who are more reserved in expressing their thoughts and feelings (Eltahir et al., 2021). Online gaming is a great way to stay energetic because it is fun and challenging. Learners are more likely to

learn and retain information when engaged in online activity, mental stimulation, and the stimulation of neural networks, all of which are provided by games. Quiet and reserved students can also participate actively in such activities and have a good time, which helps them overcome their anxiety and fears. Since the emergence of COVID-19, technology and online platforms have been widely used in all sorts of educational instruction (Khan et al., 2022; AlKhunzain& Khan, 2021). The use of interactive platforms helped instructors and institutions to keep academic pursuits alive and attractive. Since learners and teachers were instructed to use online platforms, digital content in and out of the class has become the standard practice for language teachers. The present study attempts to underpin the effect of digital games in teaching grammar.

2. Literature Review

In analyzing the educational literature, investigators encountered a handful of studies that overwhelmingly backed incorporating games as a relief from language courses' customary and tedious routine. Conventional methods of grammar instruction have dominated for a long time. However, there is a growing shift in grammar learning and teaching methods due to various elements. Creative solutions for efficacious language teaching are developed, evaluated, and proposed as learning and teaching shifts from the instructor to the student. Integrating games in grammar instruction has become such a popular method that many academics use in schools, and experts suggest efficacious grammar teaching, particularly in language teaching. This is due to the numerous benefits and implications of using games with EFL students. Musilová (2010) points out that games can help students learn new grammar rules and work cooperatively. He says students can learn grammar and other language skills via interaction and fair play. Grammar games expect students to use numerous grammar components toward either advancement through the match or competition. Spelling, choice of words, punctuation, and comprehension of the parts of speech are all facets of grammar that may be considered necessary in certain games. Grammar games can be played for entertainment or competitive games where a player develops through the game and eventually wins due to their grasp of grammar rules. Games allow instructors to create various situations where students must interact, share knowledge, and express themselves using the language.

Vu et al. (2021) investigated how serious games provide players with an interactive, minds-on experience that allows them to purposefully focus on, establish, and shift a situation while studying the implications of their choices. According to Eutsler (2021), game-based learning (GBL) improves learners' attention, consciousness, and cognition. Since they are compassionate while waiting to boost their level, instructional activities can help students develop their understanding. Playing these games increases their identity because they get a faster response from the gaming platform and view how far they have progressed.

Using gamification is an effective way of teaching English (Dehghanzadeh et al., 2021). Learners will increase performance in the classroom if they use this method. It improves the motivation of the students. Learners are prepared for life through games, developing positive societal values. Sharing, assisting one another, and collaborating are all skills that games teach. As a result, this process of teaching is long-lasting. Some emotions, such as the gratification of trying to win and the possibility of losing, may emerge during games. This gives the learners insight into the student's personality, making games essential for busy instructors.

Cam and Tran (2017) investigated a study to explore the impact of games on grammar learning. The participants of the study were 25 newly enrolled learners at a university. The survey results and the in-person observations show that games can make grammar learning more fun, motivating, and less stressful. Learners can learn more English words and grammatical constructions when playing games (Adhikari et al., 2020; Krzywinska, 2013). English games are said to enhance a unique learning opportunity where students are willing to learn new expressions. In addition to helping students learn English, online educational games offer a more accurate form of the language (Kayan & Aydin, 2020). In addition, the way learners obtain new grammar rules differs from the traditional method, with the former relying primarily on online games for structure acquisition (Afidah & Alkhoyath, 2021; Castaneda & Cho, 2016; Lee, 2015; Lukosch et al., 2016; Yolageldili & Arikani, 2011). Since learners find innovative technology more intriguing and enticing, EFL students are likelier to use it in their studies (Al-Jarf, 2005; McNeil, 2020; Shahriarpour, 2014; Wichadee & Pattanapichet, 2018). Traditional approaches to teaching grammatical structures to students are less productive than they once were. Videogame integration in the classroom was studied by Zarzycka-Piskorz (2016), who experimented with a population of learners to assess the efficacy of videogame usage. There was a significant difference in improvement in English between the experimental and control groups of students. The game chosen for the study provided students with practice in various language components that are core components of the secondary education system. Instructors also discovered the activities in the game to be appropriate to the English curriculum they have been teaching their students. A noticeable difference was found in the results for all of the activities, such as grammar, lexicon, and homonyms.

According to an investigation by Bullard and Anderson (2014), game-based learning improves learners' advancement in terms of the pre-and post-tests took in an experiment. Learners enjoyed learning grammatical structures when they were involved in playing games. Metom et al. (2013) observed some consistent findings in their research. Because of their involvement in the games, students perform more effectively after the intervention strategies (Poondej & Lerdpornkulrat, 2016). Dixon et al. (2022) stated that it takes more work to teach youngsters effectively as a teacher. It is an excellent way to show students that learning grammar can be fun and exciting, but there may be more effective methods for teaching younger students. It has been noted that using games to teach and explain grammatical structures or formations is highly effective, as it both teaches them and entertains them simultaneously. Trying to make a point, the authors stated that students can let go of their inhibitions while playing games and become more open-minded. Students are encouraged and under minimal stress while using games for learning. The author demonstrated in the practical section that attempting to teach grammar via games is an efficient and successful framework.

Likewise, German pre-service Instructors' opinions and actions were examined to understand their attitudes toward electronic game-based learning language (Castillo-Cuesta, 2022). A total of 220 students majoring in Teaching English as a Foreign Language participated in the experiment. Respondents were required to answer questions about their attitudes and practices toward learning languages and digital games using instruments that had been empirically affirmed. The study found that respondents were only moderately involved in games, even though they held favorable views of the method. Even though good perceptions are negatively linked to previous experience, playing games significantly impacts overall English language skills and language proficiency.

Castillo-Cuesta (2020) also researched how students can improve their EFL grammar and vocabulary through online gaming. Sixty-eight students participated in the research, all at the CEFR B1 proficiency level. All the students were taking two sessions of a course called Communicative Grammar. A mixed-method strategy was used to collect and analyze data. Throughout a five-month semester, students were given frequent support through digital games. According to the study results, gamification can help learners develop their vocabulary and grammar, especially modal verbs, auxiliary verbs, and infinitives.

Teaching grammar to students has significantly changed in the present era of information and technological abundance. In the past, grammar was primarily learned through textbooks, which was considered a tedious and arduous procedure based on classroom experiences. Instructors have utilized several innovative instructional strategies to optimize ways of teaching and enhance their language proficiency and skill development. Among the most effective approaches has been the implementation of educational activities. Numerous research investigations have already been carried out to quantify the impact of gaming accurately. Various methods, including the functional-notional technique, can be utilized for teaching grammar in real-life situations. Learning becomes easy when it is associated with a fun environment that helps students remember what they have studied. Most of the related literature investigated grammar with other skills and vocabulary learning.

Moreover, the studies did not include a game experiment in learning grammar constructs. It is essential to indicate that most previous study participants were unneeded to become more familiar with technology-assisted or online learning. Therefore, this research also shows how online course-blended grammar games can help learners improve their grammar learning skills.

3. Methodology

The purpose of the study was to determine the impact of online interactive grammar games in developing learning grammar skills. The study implemented a quasi-experimental design to assess the role of games in developing grammar. Quasi-experiments can be ideal for determining what is preferable for the research participants (Rogers & Revesz, 2019). It offers the researcher control over the variables, as the researcher does not have to choose participants. The research participants had already been assigned to groups at their enrolment. They have 14 weekly language skills classes with 3 hours for grammar. The tests pay almost as much attention to acquiring form or structure, aiming to verify the learners' understanding of grammar. The intervention continued for ten weeks. A total of 56 participants had already been assigned to groups that participated in the study. Table 1 displays the population of the present study.

Table 1. The population of the study

	Gender	Gender
Control	M	27
Experimental	M	29
Total	M	56

Q skills for the success course are being taught at the university, which has two books: Reading & Writing and Listening & Speaking. Each book comprises eight units, and all the units are blended with online and printed books. The online part includes activities and resources, managing class, and a discussion board. Figure 1 illustrates the online mode of the book.



Figure 1. IQ Online Teacher site

The teachers have to cover printed books and use online listening classes. Each unit contains one game in the activities and resources section of the online material. The researcher and the teacher in different sections instructed the experimental group participants to play the game after discussing the grammar rules. The games are related to the relevant grammar aspect discussed in the book. Each participant had access to the online material from the curriculum provider. Participants played games twice a week after discussing the grammar rule for eight weeks. Participants played 16 games on their mobile phones during their class. Figure 2 displays the game interface.



Figure 2. The interface of the grammar games

For the context of this research, only 30 questions from the grammar section were used, and its reliability was predicted using a pilot study on six students of similar levels. The Kr-21 reliability method yielded a consistency of 0.79, an adequate reliability standard for administering a test. Students completed the assessment in around 30 minutes. Following the test administration, the results collected were marked against 1 and 0 and finally entered into SPSS for analysis.

4. Data Analysis

Before data analysis and comparison, the data of two students were omitted as they did not participate in all 16 grammar games. Participants who played at least 14 interactive games were included in the final analysis. Normality analysis was done before comparing the control and experimental group data. Table 2 displays the normality analysis of the study.

Table 2. Normality Test

		Shapiro-Wilk		
	Group	SW	SD	p
Grammar Test Pre-test	Experimental	.958	29	.369
	Control	.968	27	.528
Grammar Test Post-test	Experimental	.919	29	.291
	Control	.914	27	.487

Table 2 shows that the grammar performance pre-test and post-test marks were not distributed evenly. The Mann-Whitney U test and the Wilcoxon signed-rank test have been used to find answers to the sub-problems because of the normality distribution of the scores. The Spearman-Brown formula was applied to calculate the relationship between the two groups. Table 3 presents the analysis of the pre-test of the control and experimental groups.

Table 3. Grammar Pre-test

Grammar Test	Group	N	Mean Rank	SUM	U	p
	Experimental	29	14.98	434.42	568	.678
	Control	27	15.12	408.24		
	Total	56				

The analysis of the pre-test of control and experimental groups is presented in Table 3. The data analysis indicates that learners' performance (M= 14.98, 15.12) on the grammar test was almost identical before implementing the interactive online games. There is no substantial difference in the marks of grammar tests (U=568.00, p>0.05). The p-value is greater than 0.05, which denotes no significant difference between the control and experimental groups. Table 4 describes the post-test results of the control and experimental.

Table 4. Grammar Post-test

Grammar Test	Group	N	Mean Rank	SUM	U	p
	Experimental	29	22.19	643.51	359.521	.002
	Control	27	16.82	454.14		
	Total	56				

The comparison of the post-test of the control and experimental groups is illustrated in Table 4. The data analysis specifies that before the operation of the collaborative online games, learners' performance increased (M= 14.98, 15.12 to M= 22.19, 16.82) on the grammar post-test. There is a substantial difference in the marks of grammar post-test (U=359.521, p <0.05). The p-value is also in the realm of accepted value, which denotes a significant improvement in the experimental group's performance. This asserts that using games has helped

learners perform better on the post-test. Table 5 presents the comparison of pre and post-tests.

Table 5. Comparison of pre and post-test

Group		<i>R</i>	<i>p</i>
Experimental	Grammar Pre-test and Post Test	0.611	0.001
Control	Grammar Pre-test and Post Test	0.352	0.032

Since the data were not normally distributed, the Spearman Correlation Coefficients were performed to see the comparison. The results indicate that the ($r=0.611$ and $p < 0.05$) shows that learners' performance is increased significantly. The ($r=0.352$ and $p > 0.05$) shows that learners in the control group did not perform well on the post-test.

5. Discussion

The study aimed to determine the impact of interactive games in developing learners' grammar skills. The findings from the data analysis indicate that the experimental group's performance was considerably significant on the post-test. This shows the positive impact of interactive online games in developing grammar. A substantial difference in students' abilities in grammar was noticed between the experimental group that used digital interactive games and the control group that used usual coursework procedures. Games helped students to learn grammar more effectively. In addition, it has been found that the participants in the interactive games group had significantly different scores on the pre- and post-tests of grammar mastery. Using the flipped classroom in the comparison group may have resulted in this notable difference.

It is clear from the results that games are helpful for teaching and practicing grammar. Grammar education becomes pleasant and perpetual when games provide students with a relevant context for communicatively practicing grammatical structures. Although it is a small-scale attempt with only 56 participants, it is an essential first step in eliciting practitioners' perspectives on a critical topic in English grammar learning through games. The study discovered that employing games in limited teamwork was the right approach for learning English, particularly grammar. Games would also be one of the alternatives for the instructor to establish a more dynamic and exciting environment for learning English. In addition, playing digital games improves focus. Students must pay careful attention to the game's framework, which necessitates a variety of word-formation options to get the most out of it.

According to Tang (2020), reinforced focus and composition can only be achieved in well-structured and relevant games that give participants specific goals and instructions to deal with from the start of the task. The use of interactive games helps learners to enhance their grammar skills. The results align with Castillo-Cuesta (2020), who concluded that implementing digital games to improve students learning of English grammatical structures yielded similar results. A survey of sixty-eight Ecuadorian university learners pursuing a BA in English was conducted to determine how they felt about using digital games in the classroom. Survey respondents had no prior experience with grammar and vocabulary games when they took the test; however, after twelve weeks of instruction, they all accepted that using digital games captivated their intention to learn grammar and vocabulary. Another positive outcome of GBL is that it improves students' memory, which significantly increases their post-test scores. Games intrigue students' interests and provide a pleasurable means of retaining information for extended periods (Afidah & Alkhoyath, 2021; Al-Jarf, 2005; Castillo-Cuesta, 2020; Lee, 2015).

Interactive games have enhanced learners' participation in the class during grammar learning. The learners were enthusiastic about playing each game; this enhanced their learning of grammar. Some studies have found positive and negative effects of implementing games (Mai, 2024). The use of games has acted as the rule of input, facilitating Krashen's (1994) input. This visual input can also be associated with the Mayor's (2005). The use of games acts as a multimedia source in the present study, increasing participant interest in learning grammar. It is possible for online games, such as those used in the classroom, to become undisciplined and disruptive (Widjanarko, 2022; Li et al., 2020). Learners may need clarification about the game's rules, or they may be working diligently together, changing teams during games, or guessing the correct structure. Evaluation, feedback, and assessment cannot occur in such an environment. Games also take much time because of the pre-game preparatory work, the integration of the related grammar exercises, and the post-game discussion process. Because of this, relatively small activity groups are the best way to teach English grammar. In order to achieve educational goals, such activities can effectively create an atmosphere for education that can produce the greatest results in terms of students' growth of language and grammar competence. Therefore, using games to instruct students on English grammar patterns could be a proper teaching strategy for language acquisition.

6. Conclusion

The study concluded that incorporating interactive digital games helped learners develop their grammar learning. The learners in the experimental group played 16 interactive games on different aspects of grammar relevant to the unit or course title. This helped them perform better than the control group. The study asserts that interactive games can be an intrinsic motive in developing the learners' language learning process, particularly grammar skills. The interactive games offered a dynamic and active environment. Moreover, digital games were also helpful in facilitating learning activities that created an engaging learning setting.

Learners could participate in digital games because they were accessible through the IQ skills platform, a critical component. Implementing the games was simple, did not require additional licensing, and provided immediate feedback when playing interactive digital games. Teachers could provide long-term input to students through online gaming, such as making recommendations and feedback and constructing rubrics. Students' strengths and limitations in grammar were identified using these rubrics. Finally, it was found that interactive games

helped students' grammar, particularly their use of auxiliary verbs and the gerund form.

7. Implications

The study aimed to explore the impact of digital games on learners' grammar skills. The findings of the study are helpful in many ways. Firstly, the teachers can integrate digital games in developing other language skills, particularly language skills. Games are a fun way of learning, which creates an interactive way of learning. Including the games is also helpful for the learners to practice and master grammar skills independently. This may be operative in developing autonomous learning. The study investigated the role of one-course interactive games, and the findings can also be helpful for other course developer agencies. Finally, the results are beneficial for the language instructors to make the class interactive and exciting.

8. Limitations

There are some limitations to this research. Three hours of treatment per week might not be enough for the participants. More time spent playing games may have different effects. At the end of the treatment, researchers observed that students had become more comfortable playing digital games available in the online interface of the course. Because of this, it is possible that the games were more efficient when played over a prolonged period. A packed schedule and curriculum meant that even 3 hours of digital games might have a negative impact on students who otherwise would not be in class. The study included only male participants, and the small sample size is another drawback. Finally, there is a uniformity of language background among the participants. The findings may not apply to non-Arabic speakers, as all respondents were native speakers of Arabic.

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