ISSN: **2602-8085**
Vol. 7 No. 3, pp. 79 – 98 , julio – septiembre 2023

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Game-based learning for the development of reading comprehension among teenagers

Aprendizaje basado en juegos para el desarrollo de la comprensión lectora en adolescentes

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Artículo de Investigación Científica y Tecnológica
Enviado: 11/04/2023
Revisado: 16/05/2023
Aceptado: 08/06/2023
Publicado:05/07/2023
DOI: **https://doi.org/10.33262/cienciadigital.v7i3.2588**

Cítese: Ruiz Villacrés, G. E., & Paredes Rodríguez, L. A. (2023). Aprendizaje basado en juegos para el desarrollo de la comprensión lectora en adolescentes. Ciencia Digital, 7(3), 79-98. https://doi.org/10.33262/cienciadigital.v7i3.2588

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La revista es editada por la Editorial Ciencia Digital (Editorial de prestigio registrada en la Cámara Ecuatoriana de Libro con No de Afiliación 663) www.celibro.org.ec

ISSN: **2602-8085**
Vol. 7 No. 3, pp. 79 – 98 , julio – septiembre 2023

www.cienciadigital.org

Palabras claves:

aprendizaje basado en juegos, aprendizaje de idiomas, motivación, comprensión lectora

Resumen

Introducción: La comprensión lectora es muy importante entre los estudiantes de inglés porque es una de las bases de su proceso de aprendizaje del idioma. **Objetivo**: Esta investigación tiene como objetivo utilizar el aprendizaje basado en juegos para el desarrollo de la comprensión lectora entre estudiantes de primer año de secundaria. **Metodología**: El estudio utilizó una metodología descriptiva cuantitativa con diseño cuasi-experimental donde participaron setenta y ocho estudiantes para conformar el grupo control y el experimental. Además, dos profesores de inglés participaron para el tratamiento en el aula. Los estudiantes del grupo de control estudiaron en la sección de la mañana y el grupo experimental asistió a clases en la tarde. Para la recolección de datos se utilizaron dos instrumentos; primero, una encuesta con su correspondiente cuestionario para buscar información sobre las percepciones de los estudiantes sobre sus propios niveles de comprensión lectora. El segundo instrumento fue el examen A2 para escuelas, en la parte de lectura, que contenía treinta preguntas enfocadas en leer para obtener la idea principal, información específica, vocabulario y ortografía. **Resultados**: Los resultados de la prueba previa revelaron que los estudiantes tienen un nivel muy bajo de comprensión de lectora y están en el nivel literal. La intervención involucró clases basadas en juegos de mesa y juego de concurso con elementos como puntos, logros, rankings, tiempo, niveles, desafíos y premios que contribuyen a motivar el proceso de enseñanza-aprendizaje. Los resultados de la prueba posterior revelaron que los estudiantes del grupo de control permanecieron en el mismo nivel; sin embargo, el grupo experimental mejoró considerablemente. **Conclusión**: Por lo tanto, se aceptó la hipótesis propuesta y el autor concluyó que el aprendizaje basado en juegos es beneficioso para que los estudiantes desarrollen su comprensión lectora. **Área de estudio general:** Educación. **Área de estudio específica:** Enseñanza del Inglés como Lengua Extrajera.

Keywords:

Game-based learning, language learning, motivation,

Abstract

Introduction: Reading comprehension is a great deal among English learners because it is one of the bases for their language learning process. This research aims to use game-based learning for the development of reading comprehension among first-year senior high school students. **Methodology:** The study used a quantitative descriptive methodology with quasi-experimental design where

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Vol. 7 No. 3, pp. 79 – 98 , julio – septiembre 2023

reading comprehension

seventy-eight students participated to form the control group and the experimental one. Moreover, two English teachers participated for the classroom treatment. Students from the control group studied in the morning section and the experimental group attend classes in the afternoon. To collect data, two instruments were used; first, a survey with its corresponding questionnaire to look for information about students' perceptions on their own reading comprehension levels. The second instrument was the A2 for school's exam – reading part that contained thirty questions focused on reading for main idea, for specific information, vocabulary, and spelling. **Results**: Findings from the pre-test revealed that students have a very low level of literal reading comprehension. The intervention involved classes based on board games and contest game with elements like points, achievements, rankings, time, levels, challenges, and rewards that contribute to motivate the teaching-learning process. Post-test results revealed that students from the control group remained the same level; however, the experimental group considerably improved. **Conclusion:** Therefore, the proposed hypothesis was accepted, and the author concluded that game-based leaning is beneficial for students to develop their reading comprehension.

Introduction

Today, developing cognitive and metacognitive skills and strategies that allow new language generations to achieve learning is a must. This fact also involves developing language skills. Reading comprehension is a language skill that is the understanding of written texts (Common European Framework of Reference for Languages, 2001), by a person allowing reflection and being able to investigate, analyze, relate, and interpret according to prior knowledge (Jeni, 2020). Likewise, English learning has great importance; for it helps students to develop different skills and abilities that will serve them not only in school but also in their "daily lives," as Harmer (2007) states, because it has become the Lingua Franca (Crystal, 2003, p. 1), in all fields of humanity.

The English curriculum of the Ecuadorian Ministry of Education (Ministerio de Educación del Ecuador, 2016) describes the need to prepare Ecuadorians to face the challenges of a globalized world. Similarly, a report by the Inter-American Dialogue Institute explains that for most countries in the region, command of the English language is among the essential skills of the 21st century (Cronquist & Fiszbein, 2017). However, multiple difficulties arise in the institutions, some marked and common in schools, such

ISSN: **2602-8085**
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as the lack of reading comprehension (Logsdon, 2019). This problem has become evident nationally, not only in primary education, where the reading comprehension process begins but also in high school (Castillo, 2021), where the target population attends. In the same context, the English language level of performance among Ecuadorian students is low, according to Education First (2021).

For all the reasons above, contributing to the growth and improvement of reading programs in schools is vital to solving the degradation of learners' reading proficiency across the country. Therefore, this research is widely justified because developing initiatives and resources to face the student's reading comprehension issues is crucial. The transformation of society requires education professionals to develop revitalizing actions that favor the development of future generations through innovative and active methodologies (Crisol, 2017), attending to different learning styles and integrating them into the curriculum. In this context, game-based learning can improve language learning and reading comprehension since it allows learning in a motivating context (Holmes, 2011).

Moreover, the research background showed a perspective on previous studies from the heuristic approach. Guevara (2016) stated that it consists of the search, compilation, and organization of an inventory of information sources to form a database with a possible bibliography, both thematic and methodological, to be used by the researcher during the development of the investigative process.

Furthermore, the researcher reviewed 25 research papers on the game-based learning approach. Therefore, findings revealed a big gap between education before and after the pandemic; before the pandemic, many studies implemented games in the classroom, but after that, they changed to online games. However, in some contexts, game-based learning is still a tendency in the classroom context.

Therefore, findings included: some of the reviewed papers were experimental studies that involved the implementation of gaming elements in primary (Qamariah & Wahyuni, 2018), and secondary schools (Jackson & McNamara, 2018; Cheng-Tai et al., 2022), to enhance reading comprehension; and most of them published on international English learning and linguistics journals. Regarding the current topic of research, Abdeldaim & Kamal (2021) stated that educational games play a crucial role in new generations because they are part of their lives. Therefore, they would help to improve reading skills since they are familiar. Likewise, Tobar et al. (2017) declared that game-based learning promotes students' problem-solving, exploration, and interaction. Hence, students would be their learning promotors and monitors. Moreover, authors analyzed and revealed that game-based learning decreases students' anxiety (Cheng-Tai et al., 2022), and there are many sources of enjoyment and motivation (Jackson & McNamara, 2018; Qamariah & Wahyuni, 2018; Dever et al., 2021); consequently, the teaching-learning process for

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reading comprehension development becomes more interesting for students. Consequently, promoting games in the classroom is crucial for students' motivation and improvement.

Other authors focused on game-based learning through specific games for reading comprehension with high levels of effectiveness since they compared results from quasi-experimental research design. For instance, Dever et al. (2021) asserted that a game called "How to Fail Your Research Degree" supported positive learners' emotional improvement during reading comprehension of multiple texts. It means students experienced a high increment in reading comprehension scores after classroom treatment. Additionally, Elfiza (2018) applied an adapted monopoly game to support students in reading comprehension tasks, and her results revealed an increase in means from 5.3 in the pre-test to 7.08 in the post-test. Similarly, the author implemented a dual-hierarchical scaffolding board-game activities framework, integrated game-based learning, and scaffolding strategies, and promoted students' reading comprehension using cardboard games as teaching materials (Cheng-Tai et al., 2022).

Other authors focused on vocabulary and spelling improvement during reading comprehension exercises through games. First, Sulistianingsih et al. (2019) used interactive board games in quasi-experimental research. Furthermore, Sulistyawati et al. (2021) implemented morphological games to improve vocabulary. The bingo game was implemented by Qomariyah (2020) in large groups with satisfactory results because he obtained a p-value of 0.000 after experimental research. Likewise, Hayatun (2020) implemented Jeopardy, a board game, using game sheets and paper during a quasi-experiment with results from 53 in the pre-test to 75 after classroom treatment. Nevertheless, another game, the scattergories board game, promotes vocabulary and spelling mastery while reading comprehension development (Khikmah, 2018), in action research with a mean score of 49.45 on the post-test and an improvement of 62.70 on the post-test.

Moreover, Afifah (2019) affirms that reading aloud should not be separated from reading comprehension exercises and implements "snakes and ladders" to support students in their improvement. Besides, Nastitie & Pratiwi (2017) implemented a joyful learning strategy through the "treasure clue game" during action research, where students improved from 73,86% in the first cycle to 87,56% in the second cycle. Additionally, Yulandari et al. (2021) implemented board, card, and memory games in action research and interestingly found that students' reading comprehension improved after two research cycles. On the other hand, Elfiza (2018) applied an adapted version of the Monopoly game in action research where students obtained 5.30 on the pre-test and improved to 7.08 on the post-test. In addition, Hidayat (2016) implemented "hot potatoes and Picture dictionary" in his classroom action research, whose main finding was students' improvement from 57.6 in

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the pre-test to 68.8 in the first cycle and 85.2 in the second cycle. Otherwise, Aswandi (2020) proposed a matching game throughout action research where students improved from 59 in the pre-test to 63 in the first and 68 in the second. Interestingly, others found that games promote movement because the tendency is directed to board games, as Cheng-Tai et al. (2022) stated, who made a literature review from the last five years.

Game-based learning: the concept

Game-based learning supports learning, assimilation, or evaluation (Sigmund et al., 2014). For Shi & Shih (215) it is a methodology that uses the game (analog or digital), original, adapted from existing ones, or of own creation, to develop learning and promote skills acquisition. Furthermore, it facilitates learning through fun, social interaction, active participation, and motivation generated by the dynamics and mechanics of the game (Pho & Dinscore, 2015). In other words, game-based learning uses games to acquire the proposed skills. It plays an essential part in learning for children and young people; since it is part of their daily life (Hashemi, 2021). After analyzing these concepts, games are suitable to be promoted in the classroom context to improve language skills, especially reading, which is the topic for the current research.

Elements of games for learning purposes

Planning the game-based learning class well is essential so that the student achieves the proposed objectives (Yulandari et al., 2022). Consequently, game implementation in the classroom must contain a complete process where motivation is one of the most critical issues. Regarding them, there are several elements that teachers can take into consideration when applying games in the class, such as points, achievements or badges, rankings, time, levels, challenges, and rewards with prizes. Kim (2015) argues that these elements of game-based learning can be applied in the classroom as follows: a) define a clear goal; b) turn learning into a game; c) propose a specific challenge; d) establish rules of the game; e) create a reward system; f) propose a motivating competition; and g) set difficulty levels.

Reading comprehension

Comprehension is the aptitude to reach an understanding of things. It is possible to understand a text in a literal way (focusing on those data exposed explicitly), critically (with judgments based on the values of the text), and inferentially (reading and understanding between the lines) (Cambridge Dictionary, 2021). The development of making sense through the acquisition of a text's essential ideas and the possibility of establishing links between these and other previously acquired ideas is known as reading comprehension (Common European Framework of Reference for Languages, 2001).

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Regarding communication, reading comprehension is the ability to understand a written text, the significance of the words that make it, and the overall understanding of the text itself (Harmer, 2007). According to Elfiza (2018) and Nastitie & Pratiwi (2017), reading comprehension is a complex process that involves capturing what others transmit through everything surrounding it and identifying words and meanings. It is the process by which knowledge is made and related to concepts that already have connotation for the reader (Elder, 2008). That is to say, the reader "interacts" with the text; however, sometimes, it is possible to understand the whole message or only a specific part. Accordingly, students must prepare to face challenges and learn how to improve this vital language skill.

Levels of reading comprehension

Reading comprehension occurs at various levels of depth because readers understand differently. According to Heilman (1988) literal level is basic reading where learners can easily identify sequences, compare, and understand main ideas and find factual information. In Inferential reading, students can make interpretations, develop hypotheses, innovative ideas, and give conclusions. The highest is the creative stage where readers give emotinal responses to the text.

Benefits of game-based learning application for reading comprehension

According to Jackson & McNamara (2018) games energize the class, arouse interest beforehand, and maintain it throughout the development for the final victory and the playful practice. Additionally, Tobar et al. (2017) argues that games present students with situations in which they must reflect, make the right decisions, solve failures, and recover from defeats. Consequently, students assimilate concepts through games and develop cognitive abilities through critical thinking, reality analysis, and problem-solving. Likewise, game-based learning is the ability to capture the students' attention since it provides them with an environment they like, have fun in, and find highly motivating moments.

Additionally, authors like Abdeldaim & Kamal (2021) state that game-based learning allows exercising reading practically. They refer to the idea that when learning by doing, the student experiments, practices trial-error, establishes relationships between previous and new knowledge, and makes decisions to improve. That is intended in the current research, involving students in practical reading situations to enhance their comprehension. Besides, the child or adolescent receives instant feedback regarding reading texts through the game. It allows learners to be aware of their degree of acquisition of what they have read and helps them discover what they should influence and focus on (Cheng-Tai et al., 2022). For this reason, well-planned after-reading classroom tasks are crucial to check students' understanding.

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Games provide data to the teacher to detect strengths and weaknesses regarding the subject or check the level of students' understanding. Aswandi (2020) allows a more profound approach to students' ability to reason, solve problems, make decisions, or overcome failures. Consequently, teachers must implement them to build students' high order thinking abilities. Games also imply freedom of improvisation and the ability to imagine solutions to each challenge, which helps open the student's mind and perception of the world (Shi & Shih, 2015; Arwandi et al., 2019). Hence, using games to solve real-life problems through reading texts could be plausible. Likewise, game-based learning helps work collaboratively, as Chen-Tai et al. (2022) state. With this practice, learners interact and work on emotional education, communication, dialogue, leadership skills, collaboration for a common goal, self-control, or sportsmanship. It translates into a better climate in the classroom, cohesion among its members, and the acquisition of values.

From a descriptive perspective, this study presents innovation in the context of Ecuadorian secondary education for students who need more technology access in the classroom. Based on the problematic situation and the previous studies review, the author presents the research problem as a question: How does game-based learning improve reading comprehension among first-year senior high school students? Besides, the hypothesis for this research was that game-based learning is effective for developing reading comprehension among first-year senior high school students. Therefore, this study aims to use game-based learning to develop reading comprehension among first-year senior high school students.

Methodology

This research applied a descriptive scope, quantitative method with a quasi-experimental design. According to Cohen et al. (2007) quasi-experimental designs involve planning a process that studies the impact of treatments and change processes in situations. The researcher collected data from a survey, a pre-test, and a post-test. The researcher assigned the target population according to nonrandom criteria. In this context, they were chosen by convenience or opportunity sampling technique since they were the groups of students whose teachers were willing to collaborate in the study. Therefore, the current research pretended to use game-based learning to develop reading comprehension among first-year senior high school students. Participants were seventy-eight students distributed into one experimental group and one control group. The experimental group corresponded to Primero de Bachillerato parallel A from the afternoon section, and the control group was Primero de Bachillerato “Informatics” from the morning section. Those students are also from the first year of high school; however, they directed their learning towards “Computing.” Moreover, two English teachers participated; one implemented the classroom treatment with the experimental group, and the other worked with the control group with her traditional methodology to prevent research bias from the author.

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Data collection instruments were two. First, a Likert scale survey determined students' perceptions of their deficiencies according to reading comprehension levels. Three experts in teaching English as a Foreign Language validated it. Furthermore, a reading comprehension test was taken from the standardized A2 KET (reading part) exam (Cambridge Assessment, 2021) to evaluate students' reading comprehension development before and after a classroom treatment applying game-based learning. During the first session, students completed the survey that included items related to reading levels and basic demographic information like gender and age.

Simultaneously, the target population took the pre-test. It included thirty questions divided into five parts. The first part contained six multiple-choice questions to read short real-world texts for the main message; the second part had seven multiple-matching questions with three short texts. The third part asked test takers to read a long text to look for answers to five questions about detailed understanding and main ideas, and then match them to the texts. The fourth part had six multiple-choice cloze questions to read and fill gaps with correct vocabulary. The fifth part had six open cloze questions to complete gaps with one word.

Then, the researcher designed a booklet with class plans to implement game-based learning to develop reading comprehension. This booklet contained twenty class plans and worksheets using the reading texts provided by the Ministry of Education of Ecuador for first-year senior high school students. The researcher adapted board games like "Snakes and Ladders" for some classes; and the contest: "Who wants to be a millionaire?" to promote cooperative learning. Games included elements like points, achievements, rankings, time, levels, challenges, and rewards, which intervened more interesting. After the intervention process, students took the post-test.

Data were statistically analyzed through SPSS statistical software to compare means and test the proposed hypothesis; what is the impact of using game-based learning for improving reading comprehension among first-year senior high school students?

Results

As detailed above, two groups of students participated in the study, whose primary demographic data is shown in the table 1.

Table 1

Population

	Female		Male			AGE	
Group	fr	%	fr	%	TOTAL	Valid	Mean
Experimental	29	37%	10	13%	39		

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Table 1

Population (continuation)

	Female		Male			AGE	
Control	4	5%	35	45%	39	78	15.14
TOTAL	33	42%	45	58%	78		

Note: Information taken from Unidad Educativa Ambato - Administration office

The average age is 15.44.

Students needed help reading and understanding written texts at the beginning of the academic period. Under this premise, the researcher proposed to help students to develop their reading skills. Therefore, the researcher planned a survey to collect information from students' perceptions of their reading comprehension level. The survey had a likert scale about the frequency, starting from 1, which represents never, the lowest, to 5, which is always, the highest.

Table 2

Literal comprehension

	Literal comprehension									
	5		4		3		2		1	
Item	Fr	%	Fr	%	Fr	%	Fr	%	Fr	%
I know the meaning of a word in any reading text.	4	5	5	6	16	21	28	36	25	32
I know the synonyms and antonyms of a word	2	3	3	4	4	5	33	42	36	46
I distinguish between number (singular, and plural)	5	6	12	15	25	32	19	24	17	22
I distinguish the names of the characters mentioned in a reading text	6	8	9	12	10	13	35	45	18	23
I distinguish time and place mentioned in a reading text.					12	15	27	35	39	50

Note: Students' perceptions about their level of their literal comprehension of reading texts.

Table 2 shows that a few students have the first reading comprehension level. It means that they can read and understand factual information from the text. However, most still need to learn the meaning of words, antonyms, and synonyms, distinguish numbers, recognize characters, and time and place.

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Table 3

Inferential comprehension

Inferential comprehension										
	5		4		3		2		1	
Item	Fr	%	Fr	%	Fr	%	Fr	%	Fr	%
I distinguish the main idea in a reading text.					9	12	19	24	50	64
I distinguish sub-ideas in a text					1	1	2	3	76	97
I infer the feelings that control the text									78	100
I infer the characters' main features in the reading text.							5	6	73	94
I infer the message the author transmits.									78	100

Note: Students' perceptions about their level of their inferential comprehension of reading texts.

Table 3 shows that all students still need to develop the inferential comprehension of texts. They do not imply something not expressly stated. They do not distinguish the main idea and sub-ideas, the author's feelings and intentions, or the characters' information.

Table 4

Creative comprehension

Creative comprehension										
	5		4		3		2		1	
Item	Fr	%	Fr	%	Fr	%	Fr	%	Fr	%
I can summarize the reading text.					3	4	2	3	73	94
I can share the moral of the reading text.									78	100
I can propose questions about the reading text.							7	9	71	91
I can retell the reading text.									78	100
I can express my opinion about the reading text.									78	100

Note: Students' perceptions about their level of their creative comprehension of reading texts.

Similarly, table 4 shows that students still need to develop their creative reading comprehension level. It means that they need to learn how to summarize, talk about the message of the reading, promote interaction with questions and answers, retell the text, or express opinions.

In sum, the survey's main finding was that all students need to develop their reading comprehension because they have difficulties in the basic level of understanding, such as the literal one.

Simultaneously, students took the pre-test, whose results are displayed below.

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Table 5

Pre-test

	Main idea	Specific information	Vocabulary	Spelling	Total
Control group	1.77	2.90	1.56	1.23	7.46
Experimental group	1.62	2.46	1.82	1.49	7.38
Desired score					30

Table 5 displays information related to results from the pre-test based on the literal and inference levels of reading comprehension. Furthermore, the test contained four criteria: reading for the main idea, specific information, vocabulary, and spelling, which totaled 30.

Table 6

Pre-test - comparison of means

Independent Samples Test										
		Levene's Test for Equality of Variances		t-test for Equality of Means						
		F	Sig.	t	df	Sig. (2-tailed)	Mean Difference	Std. Error Difference	95% Confidence Interval of the Difference	
									Lower	Upper
Pre-test	Equal variances assumed	1.532	0.22	-0.107	76	0.915	-0.077	0.721	-1.513	1.36

The author of the current research used a T-student test from equality of means to compare means from the pre-test. This test found a two-tailed significance of 0.915, higher than 0.05. It means there were no differences between the means from the control and experimental groups. Therefore, all participants showed a low level of reading comprehension.

Regarding findings in the survey and the pre-test, the researcher prepared a booklet with material to apply game-based learning by considering the elements of games in the teaching-learning process, as Heilman (1988) proposes. After the treatment, which lasted ten weeks, students took the post-test.

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Table 7

Post-test

	Main idea	Specific information	Vocabulary	Spelling	TOTAL
Control group	1.67	3.46	1.87	1.64	8.64
Experimental group	2.36	6.03	3.74	2.05	14.18
Desired score					30

Table 7 shows results from the post-test, showing evidence of both groups' improvement. The control group had 8.64, while the experimental group had 14.18 out of 30.

Table 8

Post-test - comparison of means

Independent Samples Test										
		Levene's Test for Equality of Variances		t-test for Equality of Means						
		F	Sig.	t	df	Sig. (2-tailed)	Mean Difference	Std. Error Difference	95% Confidence Interval of the Difference	
									Lower	Upper
Post-test	Equal variances assumed	1.044	0.31	6.865	76	.000	5.538	0.807	3.932	7.145

Table 8 shows a two-tailed significance of .000, which is less than 0.05. It means a significant difference exists between the means of the control and the experimental groups.

Moreover, table 9 shows general statistics that reflect data behavior.

Table 9

Post-test - comparison of means

	Main idea	Specific information	Vocabulary	Spelling	Total
Control group_ Pre-test	1.77	2.90	1.56	1.23	7.46
Control group_ Post-test	1.67	3.46	1.87	1.64	8.64
Experimental group - Pre-test	1.62	2.46	1.82	1.49	7.38
Experimental group - Post-test	2.36	6.03	3.74	2.05	14.18

Note: Data behavior according to the assessment criteria of the reading comprehension exam in the pre-test and post-test.

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Table nine shows the data behavior obtained by both the control and experimental group. It shows that participants did not significantly improve in getting the text's main idea; however, it is a significant difference in reading for specific information. The control group slightly improved, while the experimental group considerably improved. Likewise, there was a significant improvement in vocabulary for the experimental group. Nevertheless, there was a slight improvement in spelling for both groups.

Therefore, the most important finding from the pre-test and post-test was that students improved reading for specific details and vocabulary. Therefore, it is concluded that the proposed hypothesis was accepted because game-based learning helps to develop students' reading comprehension.

Discussion

Regarding the proposed research question, there were some findings. The main findings revealed a positive impact on learners' reading comprehension by using games. First of all, first-year senior high school students have a low reading comprehension level; therefore, this research constituted a need. This fact was like Nurjanah (2018), who stated that students faced difficulties in reading comprehension; consequently, they showed a low level of reading comprehension because learning English is difficult since it is a foreign language, and sometimes, they felt bored during lessons as stated by Khikmah (2018).

Previous research revealed that board games were beneficial (Tobar et al., 2017; Abdeldaim & Kamal, 2021), for students' reading comprehension improvement; hence, the researcher designed an intervention proposal. With the process of classroom intervention, results were motivating because students who participated improved their reading comprehension. There was an improvement because of the intervention focused on producing a motivating classroom environment with the teacher's commitment, who always provided feedback. These results were like those of Jacovina et al. (2016). This author asserted that switching students from a non-game environment to a game classroom environment benefits their reading comprehension development.

In addition, students were more likely to engage in games that stimulated their enthusiasm for vocabulary acquisition. For students, games have always been familiar and enjoyable. Classes were more engaging than before the intervention because students concentrated on various activities to ensure the learning process proceeded effectively. This study revealed that game-based activities motivated students to participate in every learning session. Consequently, the findings of this study are consistent with those of Jackson & McNamara (2018) and Tai et al. (2022), which found that gaming activities motivate students and increase their participation and vocabulary learning. In this regard, it is the responsibility of teachers to utilize language exercises to improve students' reading

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comprehension, as it is of great importance. In this respect, gaming activities do not delay the lesson but rather aid students in comprehending the reading text effectively and simply.

Conclusions

- This study aimed to use game-based learning to develop students' reading comprehension. Due to a low level of reading comprehension, students participated in an intervention proposal which focused on game-based learning. Therefore, it is concluded that students developed their reading comprehension after the classroom treatment. In this context, implementing game-based learning is beneficial for Primero de Bachillerato students' reading comprehension improvement. Consequently, it is highly recommended to apply games like snakes and ladders; crossword puzzles; word search puzzles, and contests with challenges and rewards according to their level and needs to contribute to learning process.

Conflict of interests

There is no conflict of interest between the authors.

References

Abdeldaim, A., & Kamal, T. (2021). The Effects of Educational Games on EFL Vocabulary Learning of Early Childhood Students. *International Journal of Linguistics, Literature and Translation, 4*(3), 159-168. doi:10.32996/ijllt.2021.4.3.18

Afifah, S. (2019). *Teaching Reading Comprehension using snakes and ladders game at the eleventh grade students.* Retrieved from University of Nusantara Pgri Kediri: imki.unpkediri.ac.id/mahasiswa/file_artikel/2018/14.1.01.08.0134.pdf

Arwandi, A., Syarif, H., & Ardi, H. (2019). Improving Students' Vocabulary Through Words Games at Grade VI of SDS Setia Padang. *Proceedings of the Eighth International Conference on Languages and Arts (ICLA-2019)* (pp. 183-186). Paris: Published by Atlantis Press SARL.

Aswandi, A. (2020). The application of matching game to improve students' English vocabulary mastery. *Innovish Journal, 5*(1), 58-65.

Cambridge Assessment. (2021, May 15). *Cambridge Assessment*. Retrieved from A2 Key exam format: https://www.cambridgeenglish.org/exams-and-tests/key/exam-format/

ISSN: **2602-8085**
Vol. 7 No. 3, pp. 79 – 98 , julio – septiembre 2023

Cambridge Dictionary. (2021). *Cambridge Dictionary*. Retrieved from https://dictionary.cambridge.org/es/

Castillo, L. (2021). *Ecuador, con bajo desempeño en lectura.* Retrieved from El Comercio: https://www.elcomercio.com/tendencias/sociedad/ecuador-bajo-desempeno-lectura-ninos.html

Cheng-Tai, L., Huei-Tse, H., & Liang-Hsuan, L. (2022). Design of a dual-hierarchy scaffolding board game-based learning activity for EFL reading comprehension. *Language Teaching Research, 0*(0), 1-10. doi:https://doi.org/10.1177/13621688221125

Cohen, L., Manion, L., & Morrison, K. (2007). *Research Methods in Education.* New York: Routledge.

Common European Framework of Reference for Languages. (2001). *Common European Framework of Reference for Languages: Learning, Teaching, Assessment.* Retrieved from https://rm.coe.int/16802fc1bf

Crisol, E. (2017). Using Active Methodologies: The students´view. *Procedia - Social and Behavioral Science*, 672-677.

Cronquist, K., & Fiszbein, A. (2017). *English Language Learning in Latin America.* The Dialog.

Crystal, D. (2003). *English as a Global Language.* New York: Cambridge University Press.

Dever, D., Wiedbusch, M., Cloude, E., Lezter, J., & Acevedo, R. (2021). Emotions and the Comprehension of Single versus Multiple Texts during Game-based Learning. *Emotions in Reading, Learning, and Communication, 59*(1-2), 94-115. doi: https://doi.org/10.1080/0163853X.2021.1950450

Education First. (2021). *Índice del EF English Proficiency.* Retrieved from https://www.ef.com.ec/epi/regions/latin-america/ecuador/

Elder, J. (2008). *Exercise your college Reading Skills.* New York: McGrow Hill.

Elfiza, R. (2018). Improving Students' Reading Comprehension through Adapted Monopoly Game. *UHAMKA International Conference on ELT and CALL (UICELL)* (pp. 73-83). Yakarta: UHAMKA International.

Guevara, R. (2016). El estado del arte en la investigación: ¿análisis de los conocimientos acumulados o indagación por nuevos sentidos? *Folios, 44*(1), 165-179.

ISSN: **2602-8085**
Vol. 7 No. 3, pp. 79 – 98 , julio – septiembre 2023

Harmer, J. (2007). *How to teach English. First Edition.* England: Pearson Education.

Hashemi, A. (2021). The effects of using games on teaching vocabulary in reading comprehension: a case of gifted students. *Journal for the Education of Gifted Young Scientists, 9*(2), 151-160. doi:http://dx.doi.org/10.17478/jegys.846480

Hayatun, F. (2020). *The Effect of Using Jeopardy and Board Game on Students' Reading Comprehension at Global Cendekia Vocational High School of Kampar Regency.* Retrieved from State Islamic University of Sultan Syarif Kasim Riau: https://repository.uin-suska.ac.id/48726/1/Tesis%20FULL%20kecuali%20BAB%20IV_Hayatun%20Faizah.pdf

Heilman, A. (1988). *The Principles and The Practices of Teaching Reading.* Ohio: Merill Publishing Co.

Hidayat, N. (2016). Improving students' vocabulary achievement through word game. *Journal of Education and society, 1*(2), 95-104. doi:http://dx.doi.org/10.21070/jees.v1i2.446

Holmes, W. (2011). Using game-based learning to support struggling readers at home. *Learning Media and Technology, 36*(1), 5-19. doi:10.1080/17439884.2010.531023

Jackson, G., & McNamara, D. (2018). Motivation and performance in a game-based intelligent tutoring system. *Journal of Educational Psychology, 105*(4), 1036–1049. doi:https://doi.org/10.1037/a0032580

Jacovina, M., Jackson, T., Snow, E., & McNamara, D. (2016). Timing Game-Based Practice in a reading comprehension strategy tutor. In A. Micarelli, J. Stamper, & K. Panourgia (Ed.), *Proceedings of the 13th International Conference on Intelligent Tutoring Systems* (pp. 80-89). Zagreb, Croatia: Spinger.

Jeni, Y. (2020). The Using of Short Stories to Enhance Students' Reading Comprehension. *Borneo Educational Journal, 2*(2), 83-88. doi:10.24903/bej.v2i2.632

Khikmah, N. (2018). *The use of Scattergories board game to improve students' vocabulary mastery and reading comprehension for the eighth year students.* Retrieved from State Institute for Islamic Studies: http://perpus.iainsalatiga.ac.id/lemari/fg/free/pdf/?file=http://perpus.iainsalatiga.ac.id/g/pdf/public/index.php/?pdf=1266/1/SKRIPSI%20-%20NUR%20KHIKMAH%20(123-12-001)

ISSN: **2602-8085**
Vol. 7 No. 3, pp. 79 – 98 , julio – septiembre 2023

Kim, B. (2015). Game Mechanics, Dynamics, and Aesthetics. *Lybrary Technology Reports, 1*(1), 17-19. Retrieved from https://journals.ala.org/index.php/ltr/article/view/5630/6948

Logsdon, A. (2019). *Reading Comprehension Problems*. https://www.verywellfamily.com/learning-disability-in-reading-comprehension-2162449

Ministerio de Educación del Ecuador. (2016, Marzo 31). *Currículo 2016*. Retrieved from Ministerio de Educación del Ecuador: https://educacion.gob.ec/curriculo/

Nastitie, V., & Pratiwi, I. (2017). Implementing Joyful learning Strategy Using Treasure Clue Game Method in Order to Improve Reading Comprehension Skill. *Jurnal Prima Edukasia, 5*(2), 203-210. doi:http://dx.doi.org/10.21831/jpe.v5i2.11601

Nurjanah, R. (2018). The Analysis on Students' Difficulties in Doing Reading. *Metathesis: Journal of English language literature and teaching, 2*(2), 253 - 264. doi:10.31002/metathesis. v2i2.958

Pho, A., & Dinscore, A. (2015). Game-Based Learning. *Instructional Technologies committee, 1*(1), 1-5. Retrieved from https://acrl.ala.org/IS/wp-content/uploads/2014/05/spring2015.pdf

Qamariah, H., & Wahyuni, S. (2018). Teaching spelling through games. *Visipena Journal, 9*(1), 137-150. doi:10.46244/visipena.v9i1.447

Qomariyah, S. (2020). Bingo Games in students' vocabulary and reading comprehension. *Culture, Language, and Teaching of English, 5*(2), 170-177. doi:10.26905/enjourme.v5i2.5056

Shi, Y.-R., & Shih, J.-L. (2015). Game Factors and Game-Based Learning Design Model. *International Journal of Computer Games Technology, 15*(1), 1-11. doi:https://doi.org/10.1155/2015/549684

Sigmund, S., Fletcher, D., & Wind, A. (2014). Game-Based Learning. *Handbook of Research on Educational Communications and Technology, 1*(1), 485-503. doi:10.1007/978-1-4614-3185-5_38,

Sulistianingsih, E., Febriani, R., & Pradjarto, J. (2019). The Effect on Interactive Board Games (IBG) on Vocabulary achivement. *Journal of the Association of Arabic and English, 5*(2), 127-139. doi:https://ejournal.iainkendari.ac.id/langkawi/article/view/1458

ISSN: **2602-8085**
Vol. 7 No. 3, pp. 79 – 98 , julio – septiembre 2023

Sulistyawati, E., Nugroho, A., & Bram, B. (2021). Morphological Teaching Strategies to Enhance Students' Vocabulary Knowledge and Reading Comprehension. *Journal of English Teaching, 7*(2), 179-190. https://doi.org/10.33541/jet.v7i2.2472

Tobar, H., Baldiris, S., & Fabregat, R. (2017). Augmented Reality Game-Based Learning: Enriching Students' Experience During Reading Comprehension Activities. *Journal of Educational Computing learning, 1*(1), 1-36. doi:10.1177/0735633116689789

Yulandari, E., Widiati, B., & Januardi, D. (2022). Improving reading comprehension skill through language games at VII grade of Junior High School. *Jurnal Ilmiah Global Education, 3*(2), 238–243. doi:https://doi.org/10.55681/jige.v3i2.370

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