

Application Of The Kahoot! Strategy In The Development Of Reading Comprehension Of Narrative Texts In Elementary School Students, San Juan De Miraflores

María Elena Calderon-Chambi , Johnny Félix Farfán-Pimentel , Katherine Calderon-Basaldúa , Gloria María Flores-Quispe & Raúl Delgado-Arenas*

Universidad César Vallejo.

Abstract

The objective of this scientific article is to determine the influence of the application of the digital tool Kahoot! as a didactic strategy in the development of reading comprehension of narrative texts in elementary school students. The research is of explanatory level and applied type, of experimental design, in the pre-experimental modality, of quantitative approach, the research population was constituted by 124 students and the sample was of 32 students of the second grade of the primary level of an educational institution of San Juan de Miraflores. The evaluation technique was applied and the instrument was the pedagogical test in its pretest and posttest form. In order to verify the effects produced by the Kahoot! virtual tool strategy, the U-Mann-Whitney statistical test was used, which gave a result of $p=0.000<0.05$. Consequently, it was concluded that the application of the Kahoot strategy has positive effects on the comprehension of narrative texts in primary school students and raises the level of development of reading skills.

Keywords: Reading comprehension, reading comprehension levels, reading comprehension, learning strategy, Kahoot!

1. Introduction

Reading comprehension is a skill that every human being must develop to be able to develop in the different areas of life; as well as, in school, professional, family activities and in the participation of the cultural, economic and political life of society. In this sense, students are confronted daily with texts, such as reading through social networks, emails, text messages, homework, reading a literary work, among others; however, many students show difficulties in understanding a text. Hence, the objective of this research is to determine the influence of the application of the digital tool Kahoot! as a didactic strategy in the development of reading comprehension of narrative texts in elementary school students.

Now, education has been carried out remotely or virtually in many countries of the world due to the pandemic caused by Covid-19, reason why teachers have to be knowledgeable and use different strategies to develop reading comprehension in students, one of them is the one presented in the

research, the application of the virtual tool Kahoot! as a strategy to develop reading comprehension.

In the international field, research was presented such as that of Sibel (2018) who executed a research, whose purpose was to investigate the use of Kahoot! as an evaluation tool in elementary schools, the participants were 23 students and a teacher of a primary level institution, the questions were Can I use Kahoot easily? 91% said yes, 4.3% sometimes and 4.7% said no; is Kahoot! useful? 95.7% said yes, and 4.3% said no; did I understand the activity better right after I used Kahoot!? 69% said yes and 30.4% said no, which shows that the Kahoot tool is favorable for students' learning.

Likewise, Curto et al, (2019) proposed in their research the purpose of analyzing and confronting the students' level of liking in terms of their opinions on how the use of Kahoot! has helped them in their learning process in science and mathematics, this study was conducted with a sample of 68 students of second, third and fourth year of secondary education, 33 science students and 35 mathematics students, it was found that in the area of mathematics the items "I have fun while learning", "I have been able to self-evaluate my learning process" and "I think that learning is more active and experiential" could reach more than 50% in their level of preference, which showed that the Kahoot! platform positively influences the learning of students.

Similarly, Caballero & Suárez (2021) considered as a purpose in their research to improve reading in its inferential level, it is necessary to design and carry out teaching strategies supported by gamification; the population consisted of 160 students and the research was conducted with a sample of 19 students, it was of quantitative approach, experimental design, to develop the research they used the games Genially, Kahoot! Quizizz and Google forms; 25 questions were presented with a value of 2 points for each question, obtaining as a result that 84% of students achieved better scores in the post-test; that is, students were able to analyze the text and answer the questions at the highest level of text comprehension, which shows that the strategy proposed by the authors on gamification promoted learning in the classroom.

In Peru, research was also conducted, thus we have the research of Maldonado-Arauzo (2019) in his inquiry raised as a purpose to establish the link that exists between the virtual tool Kahoot! and reading comprehension in elementary school students, it was a basic, descriptive correlational research, with a quantitative approach, it was of non-experimental design, the universe was composed of 240 students and the sample of 148, the instrument used was the questionnaire; and the following result was obtained: at the literal level a value of $p = 0.000$ was achieved; at the inferential level $p = 0.000$ and at the criterion level $p = 0.00$, being less than the significance value $\alpha = 0.05$ at all three levels; which showed that these results indicate that the virtual tool Kahoot! is significantly related to the development of reading comprehension in elementary school students.

Likewise, Quinto (2021) proposed as an objective in his research to establish the influence exerted by virtual tools on text comprehension in schoolchildren in distance education, it was carried out within a quantitative orientation, it was of experimental design in the quasi-experimental modality, the group chosen as a sample consisted of 32 students, the virtual tools used by the students were Socrative, Google

Form and Quizizz; The Mann-Whitney U statistic was used to obtain the results, which gave a significance value of 0.002, which is less than 0.05; this showed that the virtual tools contribute to the improvement of text comprehension in elementary school students.

The purpose of the research conducted by Isabel Solé was to establish the influence of the strategies proposed by the researcher to optimize written comprehension at the literal and inferential levels in students. The experimental design was quasi-experimental and framed in a quantitative approach: In the literal level, 74.3% of the students reached the outstanding achievement and 25.7% the expected achievement, and in the inferential level, 22.9% obtained the outstanding achievement, 74.3% the expected achievement and 2.8% were in process.

That is why, the socioconstructivist current proposes that the student is the main promoter of his learning (Ministry of Education, 2016). According to Vygotsky, the student is able to develop autonomously, he acquires knowledge through his experiences; however, there is learning that he has to assimilate with the guidance of a teacher, adult or another student, the ideal is that the student manages to reach the zone of potential development evidencing independence and autonomy in his learning (Escallón et al., 2019). In addition, for Ausubel, learning is meaningful when it is integrated into the student's cognitive structure, producing a development of assimilation in which there is an interaction of the previous knowledge that the student brings with the new knowledge acquired in an activity (Garcés et al., 2018). Adding to what has been said, Bruner highlighted as an important part of learning the student's activity, in which learning is evidenced through experiential experience; likewise, the student achieves learning through discovery using skills such as observing, manipulating, inferring, investigating and proposing possible solutions (Mex et al., 2021).

On the other hand, virtual or remote education has become a necessity in these times, due to the pandemic caused by Covid-19, which is why technology has relevance in different fields of life, especially in the educational field (Crisol-Moya et al., 2020). Thus, teachers use different strategies to develop reading comprehension; these should be planned, thought out and intentional in order to select strategies that will allow students an active reading in relation to the purpose and characteristics of the text (Yana et al., 2019). In addition, the use of relevant didactic strategies, favor the critical reflection of schoolchildren during reading (Peña-García, 2019).

Now, the use in the classroom of active, participatory and interactive virtual tools is a digital resource that facilitates reading comprehension (Suárez-Palacio et al., 2018). In addition, it is common to observe the use of Smartphones, tablets, computers among others in students that allow the application of gamification, transforming the classroom into a game show (Rodríguez-González et al., 2020 and Muhammad & Panah, 2020). In that sense, gamification fosters interest in reading, attention and interest in learning of the student and increase the dynamics in the classroom (Bicen & Kocakoyun, 2018 and Warsihna & Ramdani, 2020). Likewise, a gamified classroom generates attraction to learn (Korkmaz & Öz, 2021 and Kurnia et al., 2020). In that sense, Kahoot! is a platform that provides learning through gamification, it promotes knowledge retention due to its playful essence (Tan et al., 2018 and Sercanoğlu et al., 2021). Additionally, Orejudo (2019) and Gonzáles (2020) expressed that, play is so important for the

child; since, he/she experiences it daily and can learn through it. Therefore, play allows access to the student to build their knowledge (Liberio, 2019).

To play on the virtual platform Kahoot! the teacher sends the game to the students from their computer, mobile device or computer, they connect through their mobile devices to a web page, enter through a link or with the PIN code and participate in the activity. The purpose of the work is to answer as quickly as possible and correctly, after that they receive their score and the one who obtains the highest score and in the shortest time wins (Sercanoğlu et al., 2021); students can participate from home through a mobile device, making Kahoot! a valuable tool to obtain an accurate assessment (Parra et al., 2018).

In relation to the second variable, PISA specialists (cited by Minedu, 2018) proposed that the progress of reading proficiency allows people to intentionally, functionally and actively apply reading in diverse environments and with a defined purpose; now, "comprehension" is understood as the process of constructing meaning; that is, readers link new knowledge with the knowledge they bring with them, which they obtained through experiences and the texts they read. In addition, Pinzás (2017) argued that reading is a construction process, i.e. the reader builds his own idea or personal meaning of a text, in this way the reader connects with the text, because he integrates the new data, information and knowledge with those acquired through his daily experience. In that sense, the reader understands a text when he links it with his previous knowledge, topics of his interest and when he finds meaning in it (Tokgöz & Işık, 2020 and Bulut, 2017). Also, Fuentes & Calderin (2017) pointed out that, reading is a process that demands the development of cognitive skills that the student must process. In addition, Bravo (2018) indicated that, reading requires the permanent ability to decode words, acquire reading fluency and that the student has knowledge of a wide vocabulary. However, slow readers use more processing capacity to decode, leaving fewer resources for comprehension tasks (Kiuru et al., 2017).

Now, Pinzás (2017) stated that, literal comprehension is related to the information that is read and observed in the text explicitly, this comprehension is basic and will be the starting point for the next level of comprehension. Likewise, Lastre et al., (2018) expressed that, in literal comprehension the reader manages to grasp what the text expresses without developing the cognitive structure. To the above, Ospina & Martínez (2018) added that literal comprehension is superficial, the reader understands what the text wants to make known and to understand it only uses previous knowledge. Similarly, Blything et al., (2020) when referring to literal level questions; stated that, they are less challenging questions and are associated with relatively short answers.

Also, Pinzás (2017) pointed out that inferential comprehension, goes beyond what is stated by the author, it is the information that is read in the text implicitly, it is related to the skill of generating hypotheses and predictions to be able to deduce the actions of the characters or events that happen in the text. In addition, inferential questions or also called high challenge questions pose limitations in the answers because they are difficult to answer (Blything et al., (2020). In that sense, Lastre et al., (2018) pointed out as a main characteristic of inferential comprehension is to examine, analyze and identify a network of meaning connections that empower the reader to read between the lines. Therefore, readers must create their own meanings from the texts they read in order to acquire knowledge (Cobb, 2017). In

that line, Medina & Gonzales (2021) stated the importance of knowledge of the world and that this is required for inferential comprehension. This comprehension is also called deep comprehension, here the reader uses his or her previous knowledge and complements it with the information contained in the text (Ospina & Martínez, 2018).

In the aspect of criterial comprehension, it is a critical evaluation of the reader and shows it when he/she analyzes, reflects and issues an opinion on a topic expressed in the text he/she reads (Pinzás, 2017). Likewise, Lastre et al., (2018) exposed that, critical comprehension has the purpose that the reader is able to express judgments about a piece of writing. This reading comprehension is evident when the reader evaluates the validity of the writing, relates it to others and complements it with his or her previous knowledge (Ospina & Martínez, 2018).

On the other hand, narrative texts are those that convey complete messages, they are written texts that narrate events, facts actions, fictional or real events, these are developed in a certain time and space. In addition, Bermúdez (2017) pointed out that, narrative text is interesting for children, since they imagine and create fantasies about the stories they read and that is attractive and motivating, important criteria to make the reader interested in reading. In this perspective, Bastos & Braga (2021) stated that, narrative texts comprise narrative scenarios, descriptions of places and situations surrounding information by episodes.

After the analysis of the problematic reality, the general problem formulated was: How does the application of the digital tool Kahoot! as a didactic strategy influence the development of reading comprehension of narrative texts in elementary school students? The specific problems are: (i) In what way does the application of the digital tool Kahoot! as a didactic strategy influence the development of the literal level in elementary students? (ii) How does the application of the digital tool Kahoot! as a didactic strategy influence the development of the inferential level in elementary school students? (iii) How does the application of the digital tool Kahoot! as a didactic strategy influence the development of the criterial level in elementary school students?

The general objective was also formulated as: To determine the influence of the application of the digital tool Kahoot! as a didactic strategy in the development of reading comprehension of narrative texts in elementary school students. The specific objectives are: (i) To determine the influence of the digital tool Kahoot! as a didactic strategy in the development of the literal level in elementary students; (ii) To determine the influence of the digital tool Kahoot! as a didactic strategy in the development of the inferential level in elementary students; and (iii) To determine the influence of the digital tool Kahoot! as a didactic strategy in the development of the criterial level in elementary students.

2. Méthods

The research was explanatory and applied, because the purpose was to solve a difficulty and determine the influence of the application of the digital tool Kahoot! as a didactic strategy in the development of reading comprehension of narrative texts in elementary school students. The research

was of experimental design in the pre-experimental modality, according to Hernández et al. (2014) it is aimed at the application of a method with an experimental group, with the intention of obtaining achievements, after providing the instrument (pre/posttest).

The research variables were 2, the independent variable the Kahoot strategy and the dependent variable Reading comprehension, the population consisted of 124 students of the primary level and the sample was 32 students of the 2nd grade. The technique used was the evaluation and the instrument was the pedagogical test in its pre and posttest form, a database was developed in Microsoft Excel 2016 software, then it was passed to SPSS v.25 to categorize the variables and their dimensions and present the frequency tables and their corresponding figures. The inferential analysis was developed with the Mann-Whitney U test, a nonparametric test.

3. Results

According to the findings of the study, as shown in Table 1, we worked with a sample of 32 students from the educational institution, which yielded the results indicated below:

Table 1. Statistical results

RETEST		PROCESS	POSTEST
N	Válido	32	32
MeEN		6,1250	17,7500
Standard error of the mean		,57458	,36753
Median		6,00	18,00
Mode		4,00	20,00
Desviation		3,25031	2,07908
Variance		10,565	4,323
Range		12,00	6,00
Mínimum		2,00	14,00
Máximum		14,00	20,00
Percentiles	25	4,00	16,00
	50	6,00	18,00
	75	8,00	20,00

Note: Author's database

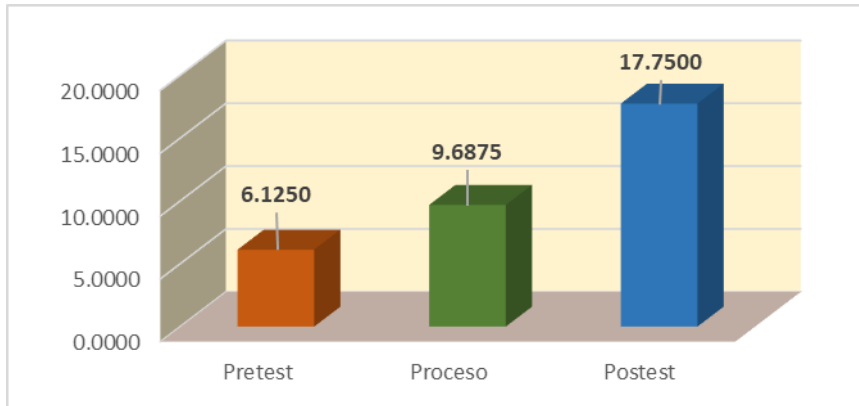


Figure 1. Frequency distribution of mean score.

Interpretation: In table 1 and figure 1 of the descriptive statistics it is observed that an average score is obtained in the pretest of 6.125 while in the process an average score of 9.6875 is observed; likewise, for the posttest an average score of 17.75 is evidenced. In this sense, the information details that there is a quantitative evolution that allows asserting that a significant change was generated in the scores of the evaluations applied as a product of the application of the Kahoot!

Inferential Statistics

To determine whether the data present a normal distribution, the Shapiro-Wilk test was used because the study sample is smaller than 50 units of analysis.

Hypothesis Statement

Ho: The research data set follows a normal distribution.

H1: The research data set does not follow a normal distribution.

Contrast test:

If the value of $p > 0.05$ the Ho is accepted.

If the value of $p < 0.05$ the Ho is rejected.

Table 2. Normality test

	Shapiro-Wilk		
	Estatistic	gl	Sig.
PRETEST	,887	32	,000
PROCESS	,941	32	,000
POSTEST	,838	32	,000

Interpretation: Table 2 shows the value of $p = 0.000$ for the dependent variable, showing a significance level of less than 0.05. Consequently, the null hypothesis is rejected, certifying that the data set of the variables mentioned above does not follow a normal distribution, so the non-parametric statistic will be used. The Mann-Whitney U test will be used.

General hypothesis test

Ho: There is no significant difference in the application of the Kahoot! didactic strategy for the

development of reading comprehension of narrative texts in elementary school students.

Hg: There is a significant difference in the application of the Kahoot! didactic strategy for the development of reading comprehension of narrative texts in elementary school students.

For this, the following significance value is proposed: $\alpha = 0.05$.

If $p < \alpha$, the null hypothesis is rejected.

If $p > \alpha$, the null hypothesis is accepted.

Table 3. Results of the general hypothesis test

GROUPS	N	Average rank	Sum of ranks	Sig.	Test Statistic
PRE	32	16,59	531,00		U of Mann-Whitney 3,000
POS	32	48,41	1549,00		W of Wilcoxon 531,000
				0,000	Value Z -6,900

Interpretation: Table 3 shows that in the contrast statistics the null hypothesis H_0 is rejected, because $Sig=0.000 < 0.05$; consequently, it is manifested that there is a significant difference in the application of the didactic strategy Kahoot! for the development of reading comprehension of narrative texts in elementary school students.

Specific hypothesis 1.

H_0 : There is no significant difference in the application of the didactic strategy Kahoot! for the development of reading comprehension of narrative texts at the literal level in elementary school students.

H_1 : There is a significant difference in the application of the Kahoot! didactic strategy for the development of reading comprehension of narrative texts at the literal level in elementary school students.

For this purpose, the following significance value is proposed: $\alpha = 0.05$.

If $p < \alpha$, the null hypothesis is rejected.

If $p > \alpha$, the null hypothesis is accepted.

Table 4. Results of the specific hypothesis test 1.

GROUPS	N	Average rank	Sum of ranks	Sig.	Test Statistic
PRE	32	16,97	543,00		U de Mann-Whitney 15,000
POS	32	48,03	1537,00		W de Wilcoxon 543,000
				0,000	Valor Z -7,029

Interpretation: Table 4 shows that in the contrast statistics the null hypothesis H_0 is rejected, because $Sig=0.000 < 0.05$; consequently, it is manifested that there is a significant difference in the application of the didactic strategy Kahoot! for the development of reading comprehension of narrative texts at the literal level in elementary school students.

Specific hypothesis 2.

Ho: There is no significant difference in the application of the Kahoot! didactic strategy for the development of reading comprehension of narrative texts at the inferential level in elementary school students.

H2: There is a significant difference in the application of the Kahoot! didactic strategy for the development of reading comprehension of narrative texts at the inferential level in elementary school students.

For this, the following significance value is proposed: $\alpha = 0.05$.

If $p < \alpha$, the null hypothesis is rejected.

If $p > \alpha$, the null hypothesis is accepted.

Table 5. Results of the specific hypothesis test 2.

GROUPS	N	Average rank	Sum of ranks	Sig.	Test Statistic
PRE	32	17,41	557,00		U de Mann-Whitney 29,000
POS	32	47,59	1523,00		W de Wilcoxon 557,000
				0,000	Valor Z -6,605

Interpretation: Table 5 shows that in the contrast statistics the null hypothesis Ho is rejected, because $\text{Sig} = 0.000 < 0.05$; consequently, it is manifested that there is a significant difference in the application of the didactic strategy Kahoot! for the development of reading comprehension of narrative texts at the inferential level in elementary school students.

Specific hypothesis 3.

Ho: There is no significant difference in the application of the Kahoot! didactic strategy for the development of reading comprehension of narrative texts at the criterion level in elementary school students.

HE3: There is a significant difference in the application of the Kahoot! didactic strategy for the development of reading comprehension of narrative texts at the criterion level in elementary school students.

For this, the following significance value is proposed: $\alpha = 0.05$.

If $p < \alpha$, the null hypothesis is rejected.

If $p > \alpha$, the null hypothesis is accepted.

Table 6. Results of the specific hypothesis test 3.

GROUPS	N	Average rank	Sum of ranks	Sig.	Test Statistic
PRE	32	22,50	720,00		U de Mann-Whitney 192,000
POS	32	42,50	1360,00		W de Wilcoxon 720,000
				0,000	Valor Z -5,123

Interpretation: Table 6 assures with certainty that in the contrast statistics the null hypothesis Ho is rejected, because $\text{Sig} = 0.000 < 0.05$; consequently, it is manifested that there is a significant difference in

the application of the didactic strategy Kahoot! for the development of reading comprehension of narrative texts at the criterion level in elementary school students.

4. Discussion

In relation to the results obtained in the general hypothesis of the present research, it was proven that the application of the Kahoot! produces positive effects on the comprehension of narrative texts in elementary school students, this is evidenced in the result of the significance level, which was $\text{Sig}=0.000<0.05$; these findings agree with the results obtained by Sibel (2018) pointed out that the use of Kahoot as an evaluation tool in elementary schools, 91% of students stated that they can use Kahoot easily, 4.3% sometimes and 4.7% indicated that they cannot, likewise they coincide with the inquiry of Curto et al, (2019);obtained as a result that more than 50% of students thought that the use of Kahoot is active and experiential.

In relation to the specific hypotheses, the first specific hypothesis evidenced $\text{Sig}=0.000<0.05$; consequently, it is manifested that there is a significant difference in the application of the Kahoot didactic strategy for the development of reading comprehension of narrative texts at the literal level in elementary school students, similarly Quinto (2021) in his research work issued as a finding a significance value of 0.002 which is less than 0.05; this shows that virtual tools have an important influence on the ability of written comprehension.

The second hypothesis had as a result $\text{Sig}=0.000<0.05$; consequently, it was shown that there is a significant difference in the application of the didactic strategy Kahoot! for the development of reading comprehension of narrative texts at the inferential level in elementary school students, also Caballero & Suárez (2021) indicated that in order to improve reading at the inferential level, teaching strategies supported by gamification should be designed and implemented, to develop the research they used the games Genially, Kahoot and Quizizz and Google forms, obtaining as a result that 84% of the students adequately answered the inferential level questions, which showed that the strategy proposed by the authors promotes learning in the classroom; Likewise, Avendaño (2020) stated that in order to establish the influence of the active didactic strategies, it was obtained as a result that in the literal level 74.3% of the students reached the outstanding achievement and 25.7% the expected achievement and in the inferential level 22.9% obtained the outstanding achievement, 74.3% the expected achievement and 2.8% in process, in light of the findings achieved, it is evident that the strategies proposed by Solé significantly increase the written comprehension in the students.

Finally, in the third hypothesis it was demonstrated that there was a significant difference when applying the didactic strategy Kahoot! for the development of reading comprehension of narrative texts at the criterion level in elementary school students, since, it was found as a significance level $\text{Sig}=0.000<0.05$; this result coincides with the research of Maldonado-Arauzo (2019) pointed out that there is a link between the virtual tool Kahoot! and reading comprehension in elementary school students, at the criterion level the value of $p = 0.000$ was obtained; being lower than the theoretical significance value $\alpha = 0.05$; what these results show is that the virtual tool Kahoot! is significantly related to text

comprehension.

5. Conclusions

1. It was determined that the use of the digital tool Kahoot! as a didactic strategy significantly influences the development of reading comprehension of narrative texts in elementary school students, according to the Mann-Whitney U-test with a p value of $0.000 < 0.05$.
2. Likewise, it was determined that, the use of the digital tool Kahoot! as a didactic strategy significantly influences the development of the literal level in elementary students, according to the Mann-Whitney U Test with a p value of $0.000 < 0.05$.
3. As it was also determined that, the use of the digital tool Kahoot! as a didactic strategy significantly influences the development of the inferential level in elementary students, according to the Mann-Whitney U Test with a p value of $0.000 < 0.05$.
4. Finally, it was determined that the use of the digital tool Kahoot! as a didactic strategy significantly influences the development of the criterion level in elementary school students, according to the Mann-Whitney U-test with a p-value of $0.000 < 0.05$.

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