



Original article

## Attention and reading comprehension in the virtual classroom with basic education students

La atención y comprensión lectora en el aula virtual con estudiantes de educación básica

Atenção e compreensão leitora na sala de aula virtual com alunos da educação básica

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### ABSTRACT

Reading attention and comprehension in general have been investigated throughout history, due to the importance that it has as a basic learning competence, however, in recent years it has had a resignification from the inclusion of information technologies. information and communications in educational spaces. These previous elements that have led to an interest in its development in technological spaces such as

virtual classrooms, a reason that leads us to propose as an objective to socialize a study about the determination of the relationship between attention and reading comprehension in second grade students. high school in Trujillo. Starting from using a quantitative methodology with descriptive causal correlational design and the use of two questionnaires. The results derived from the analysis allow expressing how attention has low levels, corresponding in turn with the values of reading comprehension as a variable. From which it can be concluded the existence of a direct relationship between the variables under study and the need to enhance attention based on improvements in reading comprehension of students.

**Keywords:** attention; reading comprehension; virtuality; basic education.

### RESUMEN

La atención y comprensión lectora de forma general ha sido investigada a lo largo de la historia, por la importancia que ella reviste como competencia básica del aprendizaje; sin embargo, en los últimos años ha tenido una resignificación a partir de la inclusión de las tecnologías de la información y las comunicaciones en los espacios educativos. Elementos estos que han propiciado un interés en su desarrollo en los espacios tecnológicos como las aulas virtuales, razón que lleva a plantear como objetivo socializar un estudio acerca de la determinación de la relación entre la atención y la comprensión lectora en los estudiantes de segundo grado de secundaria en Trujillo; a partir de utilizar una metodología cuantitativa con diseño descriptivo correlacional causal y la utilización de dos cuestionarios. Los resultados derivados del análisis permiten expresar cómo la atención tiene bajos niveles, correspondiéndose a su vez con los valores de la comprensión lectora como variable. Partiendo de ello, se puede concluir la existencia de una relación directa entre las variables en estudio y la necesidad de

potenciar la atención en función de las mejoras de la comprensión lectora de los estudiantes.

**Palabras claves:** atención; comprensión lectora; virtualidad; educación básica.

### RESUMO

A atenção e a compreensão da leitura em geral têm sido investigadas ao longo da história, devido à importância que tem como competência básica da aprendizagem; no entanto, nos últimos anos ela ganhou um novo significado a partir da inserção das tecnologias de informação e comunicação nos espaços educativos. Esses elementos levaram ao interesse pelo seu desenvolvimento em espaços tecnológicos como as salas de aula virtuais, motivo que nos leva a propor como objetivo socializar um estudo sobre a determinação da relação entre atenção e compreensão leitora em alunos da segunda série do ensino médio. em Trujillo; da utilização de uma metodologia quantitativa com um desenho descritivo correlacional causal e da aplicação de dois questionários. Os resultados derivados da análise permitem expressar como a atenção tem níveis baixos, correspondendo por sua vez com os valores de compreensão de leitura como variável. Com base nisso, pode-se concluir que existe uma relação direta entre as variáveis em estudo e a necessidade de aprimorar a atenção a partir de melhorias na compreensão de leitura dos alunos.

**Palavras-chave:** atenção; compreensão de leitura; virtualidade; Educação básica.

## INTRODUCTION

The social advances of the last decades, distinguished by the inclusion of technologies in all areas, have fostered the development or the intention of new ways of teaching and learning, which transcend physical spaces and find more and more place in virtuality. These processes have increased with the appearance of technological devices that integrate functionalities that until very recently were difficult to access from a single place. However, even when basic education students belong to the so-called generation of digital natives, they do not have the necessary tools to manage their learning and the information that is generated as part of it, which is why it is necessary to study it in particular contexts. such as attention and reading comprehension.

In the particular case of Peru, the inclusion of technologies in education has had its ups and downs, corresponding to what is happening worldwide. Although it is true that it is recognized as a necessity, the limitations in terms of material resources and the preparation of teachers and students to assume the challenge of education in virtual spaces are also true; however, the challenge is real and before this, alternatives are developed that also demand their evaluation depending on the contexts.

Faced with this reality at the country level, the advancement of science and technology was taking place progressively with the use of technological tools, especially in urban areas, prioritized in other productive sectors, but not enough in the educational field and less in the learning. That is why the transition from face-to-face modality to distance modality in 2020, and currently in hybrid modality, requires the use of technological tools in all educational actors, which involve management teams, teachers, students, parents of family, administrative and educational community in general, exposing

the great gaps and weaknesses that still exist in the educational sector.

This challenge associated with reading comprehension is reflected even in the results in Reading of the standardized tests, both in the Program for International Student Assessment (PISA) and the Student Census Evaluation (ECE) applied in recent years, which They have not been entirely flattering. In the case of the PISA test, in terms of reading performance levels, students are at level 1 with an average of 28.9%, and at level 2 25.8% (up to six levels are considered): locate information, understand, evaluate and reflect); However, despite the substantial growth in relation to 2015, there is still much to improve. Regarding the ECE, in the last test applied in 2019, a satisfactory level of only 14.5% was obtained in reading comprehension, in process 25.8%, critically at the beginning with 42.0% and prior to the beginning 17.7 %; observing a marked decrease in the satisfactory level compared to 2018 (Aparicio *et al.*, 2021) (Coca, 2022).

As can be seen, the results obtained in reading comprehension still present low levels and it is an aspect of relevant concern, since the development of reading competence is part of the capabilities that every human being must achieve to ensure personal and professional success. ; reason that leads to the development of this research with the purpose of socializing a study about the determination of the relationship between attention and reading comprehension in second grade students in Trujillo.

Bearing in mind that attention is a process through which awareness is sharpened in a narrow range of a stimulus or situation; likewise, it is an internal process, not observable and that, of course, has behavioral components, which, on occasions, do not represent a reliable indicator (Cedeño and Bailón, 2021). Attention has also been defined as a cognitive mechanism of the

brain, which allows processing relevant stimuli, thoughts and actions, leaving aside irrelevant or distracting ones. Most experts maintain that attention is not a unitary process, but that there are various forms and types of attention, it is even classified as a predictive process of reading comprehension (Ortiz and Barreto, 2019).

Theoretical considerations regarding attention as an essential element of cognitive processes state that, as a process, it precedes perception and action, being the result of interconnections at the cortical and subcortical level in the brain; This leads to modifying the structure of psychological processes according to the activity that is carried out, therefore, as had already been stated, attention is one of the stages in the psychological process that is learning, and therefore an important element in the development of the activity (Machado *et al.* , 2021).

Regarding its dimensions, the hierarchical model based on experimental neuropsychology is taken up again. According to this model, attention is broken down into: divided, sustained, internal and external, visual and auditory, global and selective, concentrated and dispersed, open and covert, voluntary and involuntary, conscious and unconscious. However, for the study, the most prominent attention modalities have been considered, including: sustained, selective, divided and alternate attention (Eugeni, 2023).

Sustained care is the one that is given consistently for a long time and without interruptions. It is more difficult to achieve and ineffective when the external situation is unattractive or boring; this changes if it occurs with rest spaces and with regular tasks, as attention improves and becomes effective (Barreyro *et al.*, 2020).

Selective attention (Carpio, 2020) is known as focused attention. It is the individual's

ability to pay attention to a single stimulus, to obtain an effective response; To do this, they need to process information, making a mental list of the important facts and eliminating the less important ones, according to their judgment. Divided attention is the ability to pay attention to two different stimuli at the same time; it is more complex and several intellectual actions are carried out, very typical of the duality of the task.

It should be noted that attention is associated with other psychological processes such as motivation and emotion. Regarding the first, motivation is understood as the process that defines a sequence of behaviors directed to a goal; it constitutes a determinant factor of behavior and is related to the variables that are the motives. If motivation and emotion are factors that in one way or another determine attention, then high motivation and interest narrow the focus of attention and decrease the capacity for divided attention; as well as the affective or the emotion where the feelings are involved will contribute to determine what will be the prioritized focus of attention (Reyes, 2019). Likewise, it is pointed out that the ability of an individual to redirect their attention with a certain speed (oscillation of attention) and to attend to more than one stimulus at the same time (distribution of attention) is considered an important component of intelligence (Milla and Gatica, 2020).

This is how attention and intelligence are constituted in the ability to handle a large amount of information. As can be seen, attention is one of the most important cognitive processes, because it is used in the various activities of our daily life and the attention, we pay to the various stimuli in the environment even ensures the survival of the human being, in It is both understood as a capacity that provokes motivations, ideas and that, in turn, allows one to discard what is not important at that particular moment and context.

By associating attention to reading comprehension, a group of elements appears that in the theoretical order establish relationships in this sense and that are resized in the virtual context, but that inevitably drag the problems of reading comprehension of written texts and the multiplicity of elements that act on it. An important factor, in addition, in the context of the study being investigated, is the age of young people in elementary school, eager for motivation and with a marked influence by the use of mobile devices, elements that teachers must take advantage of intelligent, in order to enhance learning (Cadme *et al.*, 2020).

Starting from the fact that reading has historically been understood as a requirement for the access and development of new knowledge, an important element is constituted by reading comprehension, understood as a cognitive process in which certain coordinated actions such as perception, attention, memory and phonological awareness. It is necessary for the subject who reads to articulate these cognitive actions with previous elements of his knowledge, in order to understand.

Reading, by its nature, is a complex process that starts from visual or tactile sensations, and becomes a cognitive process in which meanings are attributed to the representations that are presented through graphic codes and that allow the reader provide meaning to what is read.

In this sense, he points out (Cordón, 2019) that the reading process has gone from being understood as that interaction that was established directly between the book and the reader, to being mediated by the presence of a device that by its nature is distractor that, by being able to move the student's attention, also acts directly on the student's levels of comprehension; these aspects demand particular analysis for the

new digital context, which has increasingly changed printed reading to digital reading.

However, there are potentials in digital reading that would allow a better understanding and that are given by the possibility that the reader has of a greater interactivity with what he reads and a greater adaptation of the text format to its characteristics, taking into account typographies, styles and possibilities offered by hypertextuality and that become an advantage or disadvantage depending on the reader's skills, but also on the guide of the guide. The previous elements, although they have had a wide and deep study in terms of print reading, still have a way to go in reading and understanding in a digital world.

An aspect to highlight in terms of reading comprehension of a digital text is evident in the reader's first approach to reading and how he can have a first perception of the text he is facing, its extensibility, the need it will imply that reading to deepen or not in other interconnected documents, elements that attack from the beginning in an understanding of the text that is read; likewise, the involvement of other skills such as digital skills that allow higher levels of interaction with the text and, therefore, generate higher levels of comprehension, aspects that have also been studied and addressed since the application of the PISA tests (Mesía *et al.*, 2021).

Taking the above into account, the PISA test measures, based on its standards, reading ability not only in the academic field, but in various situations. The OECD reading aptitude measures its dimension corresponding to "reading item type" based on three scales: information retrieval, which shows students' ability to locate information in a text; text interpretation, which illustrates the ability to construct meaning and make inferences from written information; reflection and evaluation, which informs about the student's ability to relate

the text with their knowledge, their ideas and their experiences (Sánchez *et al.*, 2021).

Based on the score obtained in the different items, the exam places students in one of the five levels that it considers: level I, for readers with very limited abilities; Level II, for readers capable of handling only simple material such as direct information and making simple inferences; Level III, which includes readers who meet the required level at the end of high school.

They can locate multiple fragments and link them with aspects or knowledge of daily life. Level IV, for readers who manage the skills necessary to process more complex information and are able to locate related information or interpret meaning and critically evaluate the text; Level V, which considers readers who are capable of applying increasingly sophisticated reading items, such as handling information with which they are unfamiliar, in addition, they can infer relevant information and are capable of critically evaluating, formulating hypothesis, and resort to specialized knowledge (Sánchez *et al.*, 2021).

So, reading is not only a mechanical action of deciphering signs, but also requires reasoning, to build and interpret the written message; For this reason, reading is related to reading comprehension, because the reader establishes interactive relationships with the content of the reading, linking ideas with previous ones, contracting, arguing and drawing conclusions that enrich knowledge.

If reading is associated with understanding and learning what is understood is easier, then it is necessary to develop methods and strategies that adapt to the demands of an education that meets the needs of the student and society.

Regarding comprehension strategies as procedures, they imply the planning of actions that are triggered to achieve the

objectives, in which the strategies are actions that are actively carried out by the reader, before, during and after reading. These will allow you to make sense of the text, broaden your skills and be more efficient.

For the purposes of the investigation, inference and prediction were considered as reading strategies. Each of these strategies has its own intentions within the processes of comprehension of the text. In this sense, it is understood that the ability to make inferences is considered a fundamental strategy in reading comprehension.

In the reading process, the reader reconstructs the meaning of the text from the data found in it and from the previous information he possesses. Therefore, drawing inferences facilitates the understanding of the text. Another strategy is the prediction that reading can be considered as a constant elaboration and verification of predictions, which lead to the construction of an interpretation. This leads to the establishment of reasonable hypotheses about what we can find in the text, based on the interpretation that is built on prior knowledge.

The foregoing manifests the need to promote reading and comprehension, as basic learning tools. In this sense, attention to digital reading is considered a necessary element, depending on the new roles assumed by the reader, taking into account the medium and the way in which they read and starting from the particularities of the text in an environment virtual; This demands, in the first instance, access through a given digital space, which may be provided by a school space in a digital library, educational platform or in a social space. The interaction generates not only this reading process, which can occur linearly or hypertextually, but also allows it to be shared with others immediately, for there to be feedback on what is read based on the

criteria of others, according to who guided its reading, and depending on the text and its intention, also the author. Hypertextuality stands out as one of the essential characteristics of digital text and generates the ability in the individual who reads to navigate through related content, either within the text itself or in documents external to it, becoming one of the most important generators of understanding, due to the wide possibilities it offers, but which, equally, if you don't know how to use them properly, becomes the biggest distractor from reading.

All of the above, contextualized to a school space, and specifically to a virtual school space, has its model in the so-called virtual classrooms, constituting these as the space in which teachers and students come together with the objects of knowledge and in which they generate processes of interaction and interactivity through learning resources and the development of activities. Thus, attention and reading comprehension in virtual classrooms have been permeated not only by the text itself, but also by the characteristics of the virtual context, the text itself, and the role that the teacher has in guiding learning. in a space different from the one that has traditionally been used to teach and learn.

The background review at the international and national level, regarding the variables under study, reveals that the treatment that has been given to attention with respect to reading comprehension, alludes to the fact that in the attention process that leads to reading comprehension Contextual and motivational elements are involved, leading to define that these aspects of attention, both verbal and visual, can be predictors of reading comprehension (Ortiz & Barreto, 2019).

All of the above leads to propose as an objective to socialize a study about the determination of the relationship between

attention and reading comprehension in second grade students in Trujillo.

## MATERIALS AND METHODS

The research assumed a quantitative approach with a non-experimental correlational cross-sectional design. The population was represented by 450 students of the second grade of secondary education of the IE "San Juan in Trujillo", Peru; which was deduced from a non-probabilistic or convenience sample made up of 96 students from the same institution.

The questionnaires used were part of a procedure validated by practice, which were used to collect the data corresponding to the Attention and Reading Comprehension variables in the virtual classroom. Reynoso (2020) referred to the survey technique; all the information was processed from the use of the statistical method.

The data collection procedure began by establishing coordination with the directors of the educational institution; as well as in the application of the research instruments, which concluded with the organization of the collected data. In this sense, the analysis plan for the interpretation of data obtained from the sample corresponds to two types of analysis.

The descriptive analysis, which consisted of dividing, separating and ordering the information obtained to present it in frequency tables, shows the levels for each variable and its dimensions.

## RESULTS

**Table 1-** Relationship between attention and reading comprehension in the virtual classroom with second grade students in Trujillo

Atención	Comprensión lectora				Total	Rho de Spearman	Sig.
	Logro destacado	Logro alcanzado	En proceso	En inicio			
Alta	N 4 % 4,2%	N 7 % 7,3%	N 1 % 1,0%	N 0 % 0,0%	N 12 % 12,5%	0.320	0.000
Media	N 18 % 18,8%	N 25 % 26,0%	N 20 % 20,8%	N 1 % 1,0%	N 20 % 20,8%		
Baja	N 3 % 3,1%	N 3 % 3,1%	N 13 % 13,5%	N 1 % 1,0%	N 64 % 66,7%		
Total	N 25 % 26,0%	N 35 % 36,5%	N 34 % 35,4%	N 2 % 2,1%	N 106 % 100%		

Table 1 presents a two-dimensional frequency distribution between Attention and Reading Comprehension in the virtual classroom with second grade students in Trujillo. 26.0% of the students have a medium level in terms of Attention, whose level of Reading Comprehension shows a level of Achievement achieved.

Likewise, in second order, 20.8% of the students have a medium level in terms of Attention, which means that their reading comprehension is at the progress level. In addition, it can be seen through Spearman's Rho statistical test, which yields a value of 0.320 and a significance of 0.000, which is less than  $\alpha = 0.05$ . Therefore, it is shown that there is a correlation between Attention and Reading Comprehension with second grade students in Trujillo.

**Table 2-** Level of attention in the virtual classroom of students in the second grade of secondary school in Trujillo

Variable / Dimensión	Nivel	Intervalos	Ni	%
Atención	Alta	34 – 40	12	12,5%
	Media	27 – 33	64	66,7%
	Baja	20 – 26	20	20,8%
Atención sostenida	Alta	9 – 10	15	15,6%
	Media	7 – 8	34	35,4%
	Baja	5 – 6	47	49,0%
Atención selectiva	Alta	9 – 10	35	36,5%
	Media	7 – 8	29	30,2%
	Baja	5 – 6	32	33,3%
Atención dividida	Alta	9 – 10	17	17,7%
	Media	7 – 8	43	44,8%
	Baja	5 – 6	36	37,5%
Atención alterna	Alta	9 – 10	25	26,0%
	Media	7 – 8	53	55,2%
	Baja	5 – 6	18	18,8%

Nota. % = porcentaje. ni = cantidad de estudiantes.

In the previous table (table 2), 66.7% of the students are at a medium level in terms of the Attention variable, 20.8% presented a low level and 12.5% presented a high level. Regarding the second-grade students, specifically in the Sustained Attention dimension, 49.0% presented a low level, 35.4% presented a medium level and 15.6% presented a high level, while In the Selective Attention dimension, 36.5% presented a high level, 33.3% presented a low level and 30.2% presented a medium level.

Similarly, in Divided Attention, 44.8% presented a medium level, 37.5% a low level and 17.7% a high level. Finally, in the alternate care dimension, 55.2% presented a medium level, 26.0% a high level and 18.8% a low level.

**Table 3-** Level of reading comprehension in the virtual classroom with second grade students in Trujillo

Variable / Dimensión	Nivel	Intervalos	Ni	%
Comprensión lectora	Logro destacado	18 - 20	25	26,0%
	Logro alcanzado	15 - 17	35	36,5%
	En proceso	11 - 14	34	35,4%
Participación	En inicio	00 - 10	2	2,1%
	Logro destacado	10	14	14,6%
	Logro alcanzado	08 - 09	39	40,6%
Interpretación	En proceso	06 - 07	34	35,4%
	En inicio	00 - 05	9	9,4%
	Logro destacado	10	10	10,4%
Interpretación	Logro alcanzado	08 - 09	41	42,7%
	En proceso	06 - 07	41	42,7%
	En inicio	00 - 05	4	4,2%

Nota. % = porcentaje. ni = cantidad de estudiantes.

As can be seen in Table 3, 36.5% of the students showed an Achievement level reached, regarding the reading comprehension variable, 35.4% exhibited a level In process; At the Outstanding Achievement level, 26.0% were obtained and 2.1% presented a Beginning level. Specifically, second grade students in the Participation dimension, 40.6% presented an Achievement level achieved, 35.4% an In Process level, 14.6% an Outstanding Achievement level and 9.4% presented a level at start; while, in the Interpretation dimension, 42.7% showed an Achievement level achieved and In process, respectively. In this same dimension of variable, the students showed 10.4% in Outstanding Achievement level and 4.2% in Beginning.

### Hypothesis Testing

The Kolmogorov-Smirnova hypothesis test ( $n > 50$ ) was performed to test whether the variables resemble a normal distribution.



**Table 4-** Normality test.

Variables	Prueba de Normalidad		
	Kolmogorov-Smirnov		
	Estadístico	Ni	valor p
Atención	0.132	96	p = 0.000
Comprensión lectora	0.127	96	p = 0.001

Nota: p= Significancia ni = cantidad de médicos.

H<sub>0</sub>: Los datos provienen de una distribución normal

H<sub>1</sub>: Los datos no provienen de una distribución normal

Decisión:

Se acepta la Hipótesis Nula, cuando el valor p > 0.05

Se rechaza la Hipótesis Nula, cuando el valor p < 0.05

Table 4 shows that, using the Kolmogorov-Smirnov test, it is observed that the p value of the Attention and Reading Comprehension variables is less than the 0.05 significance level, therefore the null hypothesis is rejected and it is concluded that the data does not come from a normal distribution; that is why a non-parametric test, called Spearman's Rho, was used.

In the present study, the following hypothesis was raised: there is a direct and significant relationship between Attention and Reading Comprehension in the virtual classroom with students in the second grade of secondary school in Trujillo, which is accepted because both variables showed a very close relationship. significant ( $p < 0.01$ ) and low positive ( $Rho = 0.320$ ), according to Spearman's Rho test.

## DISCUSSION

According to the proposed objective, based on the socialization of the relationship between attention and reading comprehension in the virtual classroom with second grade students in Trujillo, it was found that Attention and Reading Comprehension is associated with 26, 0% in average level and achievement achieved, respectively; verifying the hypothesis through Spearman's Rho test equal to 0.320 and significance 0.000. Thus, there is a strong positive correlation of 0.92 between

these variables. Likewise, there is a direct and strong correlation, exceeding Pearson's "r" of 0.9, results that correspond to the investigations carried out by Mesías *et al.* (2021), where it is recognized that regardless of the results achieved in research carried out, there are still divergent criteria between the relationship between attention and reading comprehension of students.

According to the level of attention in the virtual classroom, with the second-grade students, 66.7% of the students were found in a medium level, 20.8% presented a low level and 12.5% showed a high level. All this corresponds to the studies carried out by Ortiz and Barreto (2019), where they raise the need to enhance attention and, in particular, divided attention based on distributing their mental and cognitive resources in the development of the activity they carry out, an element that is reinforced when dealing with reading comprehension in digital texts in which strong distractors are involved.

The results achieved show, in turn, that reading comprehension in the virtual classroom was 36.5% at an Achievement level, 35.4% presented a level In Process, 26.0% at the Outstanding Achievement level. and 2.1% exhibited a Beginning level. Everything corresponds to the increasing acceptance that subjects have of digital reading and the levels of development of comprehension in the virtual context, aspects that are directly related to the approaches of Córdón (2019) in the recognition of evolution and the transition that has been occurring with digital reading in recent years.

In this sense, the main conclusions of the study carried out are framed within the recognition of the need to develop particular strategies to enhance attention, based on reading comprehension in digital spaces, as well as to exploit the potential offered by digital platforms. for the development of

activities that motivate the student. Likewise, the role of attention in teaching-learning processes is recognized, as is the implication of digital skills as an element that facilitates the attention process itself and reading comprehension, and that, although it was not initially the object of analysis, emerges as an aspect to consider for other research on reading comprehension of digital texts, a criterion that Sánchez *et al.* (2021) in their research.

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The author declares that she has no conflicts of interest.

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The author participated in the design and writing of the work, and analysis of the documents.

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