

# Impact of the use of information and communication technologies on reading comprehension performance in high school students

Impacto del uso de las tecnologías de la información y comunicación en el desempeño de la comprensión lectora en los estudiantes de Básica Superior

Impacto da utilização das tecnologias da informação e da comunicação no desempenho da compreensão da leitura dos alunos do ensino básico

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## Abstract

In this research work, we have worked with teachers and students, making an exhaustive review of the lesson plans, didactic unit plans and programming in the subject of Language and Literature. The general objective is to analyze the impact of the use of ICTs through a comparative study, for the performance of reading comprehension in upper elementary school students. The approach of this research is mixed, the collection of information through surveys and interviews, the population is 1,285 students and a sample of 89 with a simple random sampling in three educational units: U.E. Rashid Torbay, U.E. Bilingual Cacique Tumbalá and U.E. Playas de Villamil. The results allowed us to determine the different aspects in the use of ICT and we propose a strategy through the use of techno-educational tools to improve the performance of reading comprehension in students.

**Keywords:** ICTs - reading comprehension - techno-educational tools - Language and Literature - Education

## Resumen

En el presente trabajo investigativo se ha trabajado con los docentes y estudiantes, haciendo una revisión exhaustiva a los planes de clases, planes de unidad didáctica y programación en la asignatura de Lengua y Literatura. El objetivo general, es analizar el impacto del uso de las Tics mediante un estudio comparado, para el desempeño de la comprensión lectora en estudiantes de Básica Superior. El enfoque de esta investigación es mixto, la recolección de información

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mediante encuestas y entrevistas, la población es de 1.285 estudiantes y una muestra de 89 con un muestreo aleatorio simple en tres unidades educativas: U.E. Rashid Torbay, U.E. Bilingüe Cacique Tumbalá y U.E. Playas de Villamil. Los resultados permitieron determinar los diferentes aspectos en el uso de las TIC y se plantea como propuesta la estrategia mediante el uso de herramientas tecno educativo para el mejoramiento del desempeño de la comprensión lectora en los estudiantes.

**Palabras clave:** TICs – comprensión lectora – herramientas tecno educativo – Lengua y Literatura - Educación

### **Resumo**

Neste trabalho de investigação trabalhámos com professores e alunos, fazendo uma revisão exaustiva dos planos de aula, planos de unidades didácticas e programação na disciplina de Língua e Literatura. O objetivo geral é analisar o impacto da utilização das TIC, através de um estudo comparativo, no desempenho da compreensão da leitura em alunos do Ensino Básico. A abordagem desta investigação é mista, a recolha de informação através de inquéritos e entrevistas, a população é de 1.285 alunos e uma amostra de 89 com uma amostragem aleatória simples em três unidades educativas: U.E. Rashid Torbay, U.E. Bilingue Cacique Tumbalá e U.E. Playas de Villamil. Os resultados permitiram determinar os diferentes aspectos da utilização das TIC e propõe-se uma estratégia através da utilização de ferramentas tecno-educativas para melhorar o desempenho dos alunos na compreensão da leitura.

**Palavras-chave:** TIC - compreensão da leitura - ferramentas tecno-educativas - Língua e Literatura - Educação.

### **INTRODUCTION**

The use of Information and Communication Technologies in various fields, especially in education systems, has led to the discussion of different organizations, one of which is UNESCO, which in one of its planned objectives for Education 2030, is to establish knowledge societies that empower and integrate local communities to develop access to and exchange of information in all areas of society.

This document elaborates on the Sustainable Development Goal number 4 of Education 2030, which seeks to improve teachers, who represent strong and influential forces in education and thus ensure equity, access and quality of education. Globally, one of the problems that cause the greatest concern in the educational area

refers to the application of traditional teaching methods, which are generally teacher-driven.

To achieve this objective, OREALC/UNESCO mentions that education systems are called to undergo paradigmatic changes in their current configuration, and this process will be facilitated and accelerated by the support provided by ICTs for their development. In order to develop these competencies in each of its students, 21st century education requires a new form of schooling that is more flexible, personalized and ubiquitous. A new paradigm is based on the understanding of all members of educational communities as learners.

According to this background, it is important to mention that, in recent years, self-learning has become more relevant worldwide, supported by the development of new specialized technological platforms, such as blogs, digital magazines, interactive learning sites, video tutorials that are published in specialized portals, among others; which facilitate the individual's access to information regarding different topics of interest Diario El País (2015).

The research was developed in three (3) fiscal emblematic establishments of the district 09D22 zone 5 of the Playas Canton in the year 2020, with students of eighth, ninth and tenth year of the following Educational Units: "U.E. Rashid Torbay"; "U.E. Comunitaria Intercultural Bilingüe Cacique Tumbalá"; "U.E. Playas de Villamil", located in the province of Guayas, in the Playas Canton, zone 5, district 09D22, in the school year 2020 - 2021, where there is a limitation in the use of Information and Communication Technologies and in the performance of reading comprehension.

How does the use of Information and Communication Technologies impact on the performance of reading comprehension in students of the upper basic level of fiscal establishments of district 09D22 zone 5 of Playas canton in the year 2020?

The general objective is: To analyze the impact of the use of Information and Communication Technologies through a comparative study, for the performance of reading comprehension in students of the Superior Basic level of fiscal establishments of District 09D22 of the Playas Canton.

Specific objectives include:

To identify the level of use of Information and Communication Technologies in the formative process of higher basic education in the canton of Playas, through surveys to students and teachers of language and literature.

To establish a comparative study of the degree of reading comprehension with the use of technologies in classroom activities in students of higher basic education in Playas Canton, through a quasi-experimental design with control groups.

To determine a strategy through the use of techno-educational tools for the improvement of reading comprehension performance in students of higher basic education in three public schools in district 09D22 zone 5.

In this context, the main cause of the research problem is the degree of digital illiteracy, the lack of knowledge of the use of technologies is due to the scarce interaction with technological tools, which allows improving the teaching-learning process. Due to the low use of technological means, there is a low development of students' skills and competencies.

Another cause is the lack of motivation and little attention in the subject of Language and Literature, specifically in reading comprehension, this is due to the teaching methodology used by the teacher, which can be limited or a traditional teaching which consists of the student listening and copying the class, this behaviorist paradigm does not allow the student to develop their creativity or create ideas and information, rather it causes deficiency in meaningful learning.

Of course, discussions on ICTs should go beyond the issues of availability of equipment and connectivity; it is necessary to move towards the topic of their uses and their impact on learning in the teaching and learning process, which are of great benefit to students. However, there are many shortcomings in the application of these didactic tools and this is due to the digital illiteracy of the teacher or student.

Students have the opportunity to expand their learning experience by using new technologies as tools for constructivist learning. These tools offer them options to turn the traditional classroom into a new space, where they have at their disposal innovative collaborative activities with creative aspects that allow them to consolidate what they learn while having fun at the same time.

These characteristics result in the student himself being able to build his knowledge with the teacher as a guide and mentor, giving him the necessary freedom to explore the technological environment, but being present when he has doubts or a problem arises. (Figuerola Cepeda, 2017, p. 25)

Meaningful learning is a theoretical approach that establishes that the main protagonist is the student, who constructs his knowledge,

making it part of his cognitive scheme through a dynamic and self-critical learning process. Hence the important role currently played by Information and Communication Technologies (ICT), since they have rapidly become one of the main pillars in the teaching-learning process, providing relevant contributions for the future development of education. Therefore, this study addresses those pedagogical strategies that enhance this type of work in order to provide useful conclusions to improve academic performance.

Education in times of pandemic has given a drastic change leaving the classroom behind and becoming a contribution to learning from home with the use of virtual media such as ICT, have given the accompaniment with the corresponding support of teachers the great task of moving forward with learning from home.

In synchronous learning, there is real-time interaction between teachers and students, so that any problems or doubts they may have can be solved right there, in addition to the fact that in this modality students can see and interact with their classmates.

Asynchronous classes allow the learner to be independent by giving him/her the opportunity to organize his/her time. In addition, they are available at all times, and the learner can even download the content and access it, even if he/she does not have internet access. This also helps the learner to go back to a lesson or activity and review if he/she has doubts.

ICT in the classroom has become an ally in favor of the teaching-learning process, improving the styles of knowledge transmission by teachers to their students, these technological tools facilitate the process of information, its storage, communicating information, allowing a lasting transformation.

Some authors Granda (2019); Sánchez-Otero (2019), have synthesized the most distinctive characteristics of technologies in features such as innovative and creative, allows giving access to new ways of communicating. In the same way it is presented as a greater influence and benefits in the educational area as it makes it more accessible and dynamic interconnection, interactivity, instantaneity, innovation, high parameters of image and sound quality, digitization, influence on processes rather than on products, interconnection and diversity.

ICTs help in educational, cultural and social development with their applications that facilitate the exchange of information in real time. In research conducted by Angarita (2017), they refer to ICTs have revolutionized the method of learning, complementing the education imparted through school books and magazines, facilitating students'

access to a greater mass of information and encouraging creativity and initiative.

Regarding reading comprehension, Moreno (2017), defines it as the action of reading in a simple and easy to master way, accompanied by a reading process with skills in order to obtain a final objective of reading and understanding what has been read. According to the author, Pulido (2019), who states that reading comprehension should be considered as a domain or skill that students should develop throughout their studies, facilitating the understanding of messages, texts and ideas, helping to make value judgments about what has been read and allowing the student to make sense of what has been written.

By understanding what is read, the student is getting to know the contents and relating the reading to the meaning of things, in some cases identifying the author's narrative. Orna (2015) mentions that when reading there is a greater probability of constructing their own ideas of the text and it becomes a way of learning something new through reading.

It is important to follow a strategy during the process Guzmán (2017) considers as a macro process and it is done consciously and not automatically, that is, it goes from identifying the different parts that make it up, to making hypotheses of what is read. It is of vital importance to prepare a reading analysis script that includes the aspects of interest to be addressed. This strategy is based on three stages: pre-reading, reading and post-reading. The reading or reading comprehension levels are literal, inferential and critical or evaluative. For this proposal, these levels were applied in the three educational units to evaluate reading comprehension and the difficulties are presented in the reading levels.

It should be noted that in Ecuador, researchers such as Prado (2017); Rosero (2018); González (2019), Loja (2020), all agree on the level of impact that the integration of ICT has as tools for learning in different areas in secondary education students. In this way, it is sought that educational institutions at all levels have the design of policies, specifically, the formulation of the "Digital Educational Agenda 2017-2021" as a public policy instrument of the Ministry of Education of Ecuador, spaces organized with the purpose of achieving learning.

In this context, Ecuador has oriented its educational policies to improve the quality of education, reflected in the National Development Plan 2017 - 2021, thus, the 2008 Constitution (arts. 26 and 28) established that education is a priority area of public policy

and state investment, in addition, the Organic Law of Intercultural Education (LOEI) was enacted as a norm, both to establish the basic regulations that allowed the operation of the National Education System, as well as to deepen the rights and obligations of its actors. However, studies conducted by the Latin American Laboratory for Assessment of the Quality of Education (LLECE) coordinated by UNESCO-OREALC, in its report presents low learning results, as is the case of reading, in national and international tests, shows large gaps in reading comprehension between rich and poor, private and public schools, urban and rural schools. The school population is below the regional average in reading in basic education (TERCE-UNESCO, 2013).

Finally, in spite of looking for ways to improve the performance of reading comprehension in the teaching-learning process, there is still a gap between all those involved, who use the language in an incorrect way with idioms that are not part of our culture. This lack of reading skills is increasingly seen in students as they tend not to express ideas, they clearly have difficulties to reflect, write, deduce, synthesize a topic with formed criteria.

## **MATERIALS AND METHODS**

In this research the feasible and convenience methodological design was applied for the three fiscal emblematic establishments of the district 09D22 zone 5 of the Playas Canton in the year 2020, with the students of eighth, ninth and tenth year of the following Educational Units: "U.E. Rashid Torbay"; "U.E. Comunitaria Intercultural Bilingüe Cacique Tumbalá" and "U.E. Playas de Villamil", located in the province of Guayas, in the Playas Canton, zone 5, district 09D22, in the school year 2020 - 2021. Playas de Villamil", located in the province of Guayas, in the Playas Canton, zone 5, district 09D22, in the school year 2020 - 2021; that in its diagnosis the research observed that the students presented a low level in the performance of reading comprehension, through ethnographic, bibliographic research, relying on research methods such as: inductive and deductive, additionally we proceeded to perform the analysis of the results obtained from the surveys applied to students and teachers of General Basic Education.

The deductive method, the research applied for the search of relevant information from the frequent to the individual with the help of argumentations, This is how it was necessary the use of this research, identifying the causes of the restricted meaningful learning, likewise



it has been possible to verify the conclusions of using strategies that favor a correct reading comprehension.

The development of the subject of this research is elaborated with a focus on the inductive method, since it allows establishing general conclusions from particular indications and thus formulating the respective theories. In addition, the research has detailed the population and sample, the techniques and instruments of the research that were used for the information of the present work will also be described, and at the same time conclusions and rational and required recommendations will be given to solve the problem.

The approach of this research is categorized as mixed, since it implies combining and integrating the qualitative and quantitative data obtained in this research. Based on the general objective of the research to provide evidence of the effect that the use of ICT could have on reading, it will be developed with quali-quantifiable data, which establishes a quali-quantitative approach in the data processing techniques to groups of students at the proposed level, which will facilitate its analysis.

Through the mixed approach, it was possible to collect information through the questionnaire and then the respective interpretation of the results, which allowed to determine different aspects of the use of ICT in this research it was possible to obtain statistical data that allow to draw concrete conclusions about our problem. The types of research that were applied are: descriptive, correlational and bibliographic.

The population is presented below:

**Table 1.** *Population*

<b>Population</b>	<b>Quantity</b>
<b>Managers</b>	3
<b>Teachers</b>	17
<b>Students</b>	1285
<b>TOTAL</b>	1305

Source: District 09D22 zone 5 canton Playas

## **RESULTS**

By means of the instruments applied to identify the level of use of Information and Communication Technologies, the main cause of the research problem is the little knowledge of the use of information and communication technologies, as well as the scarce interaction with



technological tools, and the little use of technological media that produces a low development of students' skills and competences.

We sought to establish a comparative study of the degree of reading comprehension with the use of technologies in classroom activities in students of 8th, 9th and 10th years of Higher Basic Education of the canton Playas, presented results of little knowledge about tools to create digital audio content, autonomous technical work and digital tools supported by ICT, 28.09% and 13.48% respectively agree and strongly agree, about the application of digital tools, and 21.35% are indifferent to the use of technology, a considerable percentage 10.11% and 2.25% disagree because not all teachers request activities by this means, but students use resources such as applications and search engines, it is shown in this regard as they are limited in knowing new technological ways to perform their tasks.

Based on the results obtained, it is proposed to determine the strategy through the use of techno-educational tools for the improvement of reading comprehension performance in students of Higher Basic Education. 94.12% strongly agree with this being the resource of technological applications that would improve reading comprehension.

eXelearning promotes the creation and dissemination of open educational resources since, being free, open and multiplatform, it allows any user to access the tool and to create, modify and redistribute content created with it, promoting shared knowledge.

The impact that the use of the program will generate will be quite positive in terms of acceptance and effectiveness in the students, because it will contribute to considerably improve motivation and performance in the area of language and specifically in reading comprehension, changing their attitude towards classes, participation and interest in reading.

Likewise, the inclusion of an ICT resource will greatly motivate many of the young people, bringing more transversality and dynamics to the area. Since the students found in the use of the eXelearning tool not only a way to learn in an easy and entertaining way, but also, it will make them feel empowered of their own knowledge creating confidence and skills in the handling of an ICT tool.

At the same time, the use of the program does not require the continuous use of the Internet, giving an advantage to the students of the educational institution who often have connectivity problems. On the other hand, the use of technological tools will serve as an element that will raise new pedagogical expectations for teachers of other

areas of knowledge and subjects, as well as for parents who will surely observe the good results of their children, noticing great skill in the use of ICT, This will be reassuring for them, since parents themselves say they do not feel prepared to help their children with their homework because they do not have knowledge in the use of technological tools since they do not have computers, some parents are illiterate and few of them have smartphones.

### **CONCLUSIONS**

In this part of the research, it is necessary to highlight how we have worked with teachers and students, from the beginning making an exhaustive review and relationship, lesson plans, didactic unit plans (PUD), programming in the subjects of Language and Literature of the Ministry of Education, as well as the contents, resources, form of evaluation, and policy of the three institutions. In this way, we sought to clearly establish relevant aspects of the impact of ICT on the exercise of reading comprehension, and in this way determined the procedures in the research.

With the teachers, it was possible to determine general definitions of didactics in learning, allowing to differentiate on the principles and categories of didactics, in the same way the relationship between objective, content, method and means of teaching and with the students the use of information and communication technologies. In the area of ICT, content searches were carried out on the web to identify the use of techno-educational tools for the improvement of reading comprehension performance, with the results of literary podcasts and the eXeLearning tool.

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