IJMSOR Vol. 3, Issue. 1
January - December, 2018

Relevance of Information and Communications Technologies for Strengthening Reading Comprehension[1]

Pertinencia de las Tecnologías de la Información y la Comunicación para el Fortalecimiento de la Comprensión Lectora

DOI: https://doi.org/10.17981/ijmsor.03.01.10

Research Article - Reception Date: May 15, 2018- Acceptance Date: August 17, 2018

Glen Jiménez Ariaz , Wuilian Ortiz Severiche, Eucaris Pérez Gómez, Eduardo Romo Boneth and Luis Carlos Crespo Arévalo
Media Luna School. Manuel de Jesús Escorcia Campus, Pivijay, Magdalena (Colombia).
glen070880@hotmail.com

To reference this paper:
G. Jimpénez, W. Ortiz, E. Pérez, E. Boneth & L. Crespo "Relevance of Information and Communications Technologies for Strengthening Reading Comprehension", *IJMSOR*, vol. 3, no. 1, pp. 56-63, 2018. https://doi.org/10.17981/ijmsor.03.01.10

Abstract-- The incorporation of information and communications technologies in educational processes is important because it stimulates the teacher-student relationship. This article analyzes the relevance of virtual learning objects for mediating the learning process. The study uses a mixed methodological design. It starts out by describing and reflecting upon the results of the traditional teaching practices used at the Manuel De Jesús Escorcia School. The study population is comprised by the 5th grade students at the school. Information collection instruments were used to learn about the perceptions of teachers on the subject of the study. The results indicate that the strategy of using ICT improves the students' reading comprehension. The conclusion is that it is relevant for teachers to design didactic-pedagogical strategies, leaving the door open to use them in other fields of knowledge.

Keywords-- information and communications technologies, pedagogical act, reading comprehension.

Resumen-- La integración de las tecnologías de la información y la comunicación en los procesos educativos resulta importante por cuanto dinamiza la relación docente – estudiante. Al respecto, el presente artículo se orienta al análisis de la pertinencia de los objetos virtuales de aprendizaje en el proceso de mediación didáctica. El diseño metodológico es de tipo mixto. Se inicia a partir de un proceso descriptivo y reflexivo de los resultados de la identificación de las prácticas pedagógicas docentes que se trabajan de forma tradicional en la Institución Educativa ERM Manuel De Jesús Escorcia. La población de estudio corresponde a estudiantes del grado 5°Se aplicaron instrumentos de recolección de información a docentes para conocer sus percepciones con la temática estudiada. Los resultados indicaron que la estrategia con utilización de las TIC, mejoró la comprensión lectora en los estudiantes. Como conclusiones la pertinencia que los docentes diseñen estrategias didáctica-pedagógica. Dejando abierta la posibilidad de ser utilizada en otras áreas del saber.

Palabras clave-- tecnologías de la información y la comunicación, acto pedagógico, comprensión lectora.

1 This study is derived from the Program to Strengthen Citizenship and Democratic Culture CT+I through the IEP supported by ICT in the Department of Magdalena (CICLON).

I. Introduction

"La Avianca" is a rural district of the municipality of Pivijay in the Department of Magdalena, a small town located in the northwestern area of the Department of Magdalena. It covers an area of 1,636 Kms2, of which the urban area covers 4.5 Km2. The Municipality of Pivijay limits to the north with the municipalities of Remolino and El Retén, to the south with the Municipality of Chibolo, to the east with the Municipality of Fundación and to the west with the municipality of Salamina. Its population is highly vulnerable from a socioeconomic perspective and is currently slowly recovering from the armed conflict, during which the population was threatened by armed groups; they were not allowed to exercise the right to freely elect their political candidates; ballot boxes were burned during elections; there were confrontations between members of the guerrillas and the Autodefensas Unidas de Colombia (AUC) in this rural district; as well as homicides, torture, rape, forced disappearance, kidnapping, land dispossession, stigmatization and mass displacement.

The school offers up to the eighth grade of secondary education, with a relatively small population (160 students), and it is currently experiencing academic issues due to bad study habits and low academic performance. To summarize the situation, the students demonstrate a visible lack of interest in reading. Some of the factors that may be affecting this is the low level of schooling of their parents, the non-availability of libraries or books for students, who also live in remote areas with no access to resources that would enable them to carry out academic activities at home, and such lack of resources makes students unattached and uninvolved in studying.

It is also important to keep in mind that students do not find in traditional teaching practices any pedagogical contents or elements that they would find attractive or motivating, that would spark an interest in learning and appropriating knowledge. It should also be noted that nutritional aspects and the socioeconomic conditions created by the armed conflict and the condition of victims of displacement make pedagogical actions even more complex (Avendaño-Villa, Cortés-Peña, & Guerrero-Cuentas, 2015) and (Herrera 2016).

Consequently, the substantial progress made in Information and Communications Technology (ICT) tools to support educational practices offers the opportunity to carry out a project to implement ICT as a learning tool for pedagogical practice.

Using ICT as didactic tools for pedagogical practices offers benefits such as sparking the students' interest, because they open up communications possibilities and therefore strengthen the teacher–student relationship, in the direction of improving school work, and in this sense education, and playing an important role because it is conceived as a promoter of the shared values responsible for the creative and affective development of the students (UNESCO, 2008).

A Virtual Learning Object (VLO) is a tool designed for learning that is useful for those involved in the various educational modalities, including on-line learning, which is where they are most used.

Some advantages of VLOs:

- This digital tool serves the tutor as an extension to monitor the student's progress in the subject matter, enabling the tutor to assess how important and viable the material was for the students.
- The on-line tutor or teacher can continuously use, reuse and update the information included in the VLOs used in class.
- The VLO can be adapted to any LMS platform or on-line education platform.
- In ensures the effective use of Information and Communications Technology (ICT), both for the tutors and students.
- It facilitates student searches for materials to use during their virtual experience and their use of learning platforms.

The population of the study consisted of 5th grade students at the Manuel De Jesús Escorcia School, with average age of 10, residents of the municipality of Pivijay, rural district (*corregimiento*) of Avianca and surrounding areas of the Municipality of Pivijay, as well as the teaching staff at the school, consisting of 6 teachers who teach the various areas or assignments of basic and middle school.

Internationally, reference is made to the use of technical tools as a supporting element for the development of skills and/or understanding of subjects for students in basic and middle school, as described by (Arroyo, Faz de los Santos, Gasca and Orozco, 2012), who performed an education innovation project whose objective was to improve reading comprehension through a cross-cutting arrangement in Science, Spanish and Technical Education subjects, in the first and second years of secondary school. They implemented the collaborative learning strategy with the intention of facilitating the students' reading comprehension and of increasing motivation. The objective of the project was for students to acquire reading habits, intrinsically motivated by computer and internet resources.

As described by Escobar (2016), the communications needs of humans drive technical progress, the most important of which is the use of ICT, to such an extent that educational institutes, and

higher education ones in particular, must implement VLOs in their classes.

Also, as described by (Clavijo, Herrera, Rhenals and Tordecilla, 2015), one of the tools offered by ICT are the Virtual Learning Objects (VLOs), which are sets of self-contained and reusable digital resources designed for educational purposes, containing at least three internal components: Contents, learning activities and contextualization elements.

Information and communications technologies are very important for enhancing and adding dynamics to the learning activities as schools. In education, ICTs contribute to developing competencies in personal, educational, social and career development areas (Parra, Gómez and Pintor, 2014).

At the national level, research such as that by Parra, Gómez and Pintor (2014) has identified the factors that influence the use of ICT in teaching processes at a Colombian primary school, using a qualitative approach, with information gathered based on interviews, observation and documentation reviews. The study's conclusions highlight that some of the influencing factors are training, availability of resources and institutional support.

Based on the above, a teacher can help enrich contents and motivate the class by acting as mediator, supported by ICT, in the students' activities and their educational requirements, taking into consideration the school context and its educational level. Consequently, the teacher's job is to design new learning opportunities and to propitiate classroom environments that enable the adequate and effective use of technological tools, generating competencies in the use and appropriation of such technologies to learn the school contents.

The basis of VLOs, according to Cabrera-Medina, Sánchez-Medina and Rojas-Rojas (2016) is the use of technological resources for educational and training purposes by means of significant experiences in which the students learn according to their requirements, using the technologies both in and out of the classroom. The following are some of the elements from VLO networks that we can take into consideration:

Information and communications technologies (ICT) in education are booming, and it is now necessary to be able to master contents derived from the close relationship between science and technology, which have turned IT and the work methods based on science and technology into part of everyday life, and consequently it is necessary to master them (Fondos, 2003).

This requires that whenever the subject allows it, IT contents should be introduced whose study methods are similar in form to the way science is worked on, and for this reason they are considered a basic element in educational processes. This affects participants in the educational process because they must not only have knowledge on the subject, but must also make adequate use of highly interactive IT tools that enable consolidation of the knowledge acquired from the theoretical contents. These represent an important resource to complement, support and mediate the teaching-learning process, evolving from teaching methods that focus on the teacher towards learning methods focused on the student (Cabrera-Medina, Sánchez-Medina and Rojas-Rojas, 2016).

Local development of VLOs requires conceptualization and structuring. In Colombia and the world, institutions have devoted substantial efforts to include them in their processes (Cabrera-Medina, Sánchez-Medina and Rojas-Rojas, 2016)

Based on the above elements, in order to include virtual learning objects in a school's teaching practice, the teaching staff must be able to perform conceptual and practical management of the technical tools (Vélaz and Vaillant, 2009).

One of the planned strategies on the use of ICT and making this tool available to students is to perform internet searches related to the interests and the subject matter to be worked on in class. The tool provides connectivity to internet and enables downloading contents in real time, which serve as inputs and reference for the class, while the teacher, with the support of audiovisual equipment such as a television and video-beam performs presentations of charts,

Media elements	Photos, clips, videos
IT objects	Arrangement, graph, text, audio
Learning objects	Simulator, didactic game, exercise unit with its associated instruction contents
Courses	Tutorials, competency modules, course curriculum.
Collections	By discipline, by institution
Networks	Around general issues and themes

Figure 1. **Elements of Virtual Learning Objects**

videos and multimedia information containing the conceptual elements of the contents and explanations on the subject matter being covered in class. In this sense, it becomes a fully dynamic activity in which the student becomes an active participant in researching information and knowledge (Martínez and Badillo, 2013).

II. Methodology

The methodology used for the study was of mixed type. It starts out with a descriptive and reflective process on the results produced by the traditional pedagogical practices used at the school. The population of the study consists of students from the 5th grade at the Manuel De Jesús Escorcia School, with average age of 10.

This project is a case study with a mixed approach that seeks an understanding, aimed at reviewing the transformations that the use of ICT has on teaching and learning practices in connection with reading comprehension. Hernández Sampieri and Mendoza (2008) define case studies as: "Studies that use quantitative, qualitative or mixed research processes to perform in-depth analysis of a unit to answer the posed questions, to prove hypotheses and to develop a given theory". Hernández describes mixed methods as "a set of systematic, empirical and critical research processes that involve gathering and analyzing quantitative and qualitative data, and integrating and discussing them in combination, to make inferences from the collected information (meta-inferences) and achieve a better understanding of the studied phenomena" (Hernández Sampieri and Mendoza, 2008).

A. Techniques and Instruments

According to Hernández Sampieri, mixed research of a quasi-experimental type with pre-test and post-test, involves the manipulation of at least one independent variable to observe the results and its relationship with the dependent variables; when this design applies to a single group, there is an initial point of reference (pre-test) to identify the students' reading comprehension, then the treatment is administered (Didactic Sequence mediated by ICT), and then a post-test is applied to contrast the pre-test and post-test results, and to determine whether any change was observed in the students' reading comprehension level, and in the teachers' teaching practices.

The following are the materials and technical instruments used for the implementation of the VLOs:

- Laptop computer.
- Electronic tablet.
- LCD screen television.
- Basic Office package: Microsoft Word, Microsoft Excel and Microsoft PowerPoint.
- Internet and Wi-Fi.
- Video beam.

The above equipment and tools are those the school has available and which are required in order to perform the pedagogical exercises with the support of these instruments, enabling the development of the curriculum contents in each area, based on their use as an attraction mechanism to spark the students' interest.

B. Procedure

The instrument applied to the teacher population to identify the pedagogical practices used at the school and their skills at using ICT and its implementation in the classroom is described below. The results were analyzed following application of the instrument.

III. Results

The research on the implementation of VLOs as a tool to support teaching practices and enhancing primary and middle school students' reading comprehension describes the improvement of teachers' pedagogical practices, particularly because it is motivated by the need to promote greater student interest in study habits.

This process also provided a descriptive analysis of the teachers' pedagogical practices that were traditionally used at the school, as well as a characterization of their knowledge and use of ICTs in teaching. The materialization of the experience supported by ICT was possible through a process of bibliographic referencing and experimental practice, in which the teachers put them into practice by integrating ICTs into their curriculums for academic learning and research processes, thereby impacting the educational community of the study, by promoting greater interest in learning based on the inclusion of digital contents and tools that had an impact on changing the learning dynamics, as displayed in images 1, 2 and 3. The teaching staff still requires additional training in order to achieve a greater impact on the student population.

The following are the results found during the study. Application of the instrument yielded the following results:

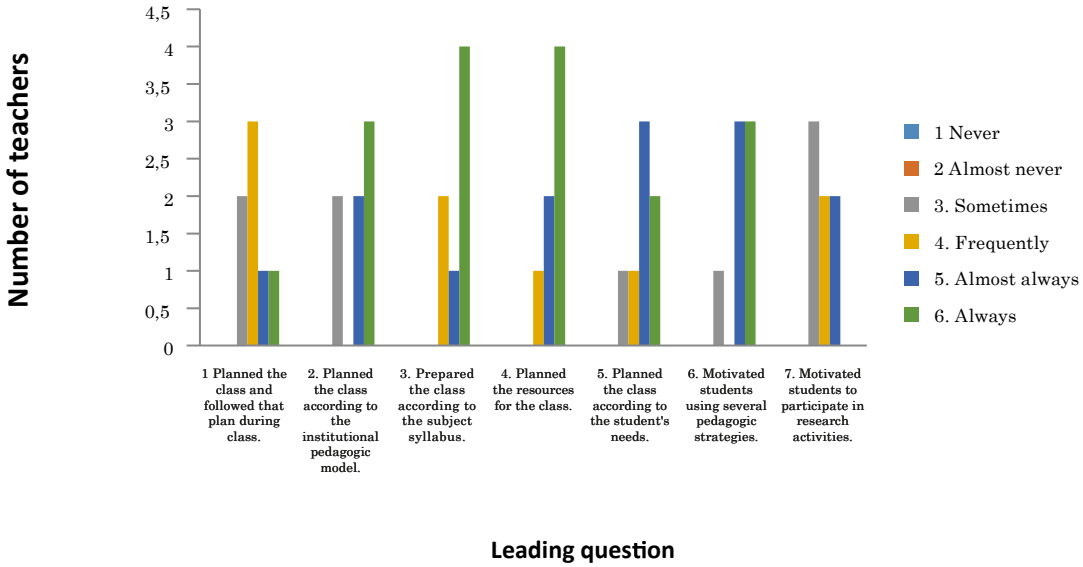

Figure 2. **Graphic representation of responses to survey questions by the 7 teachers of the school's teaching staff**

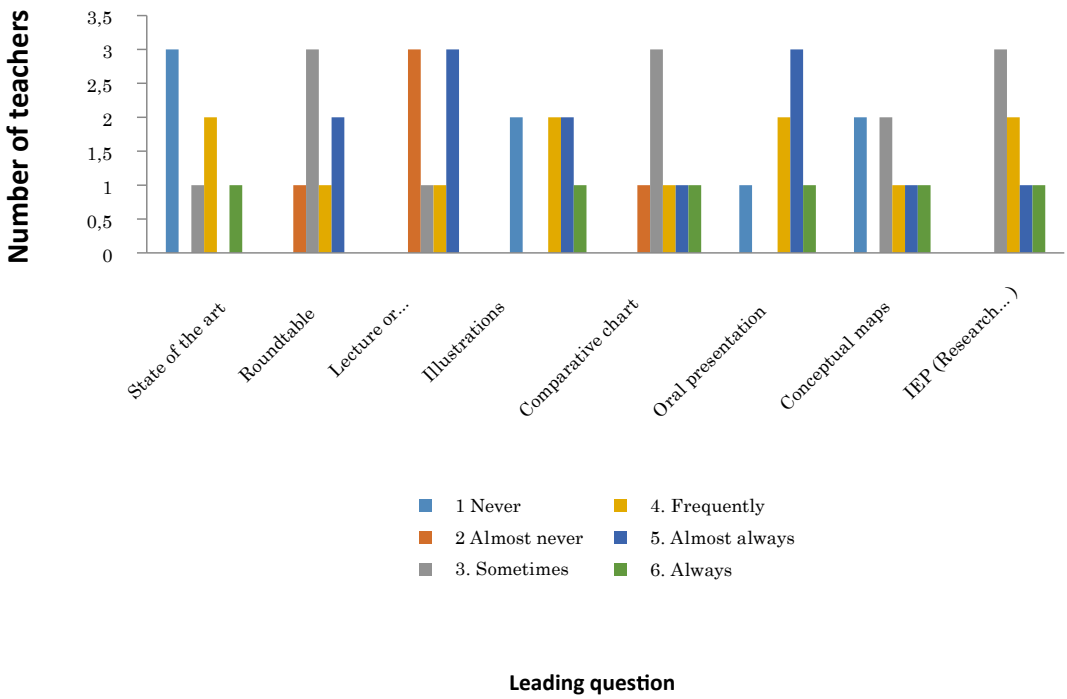

Figure 3. **Graphic representation of the most common pedagogical strategies implemented at the school**

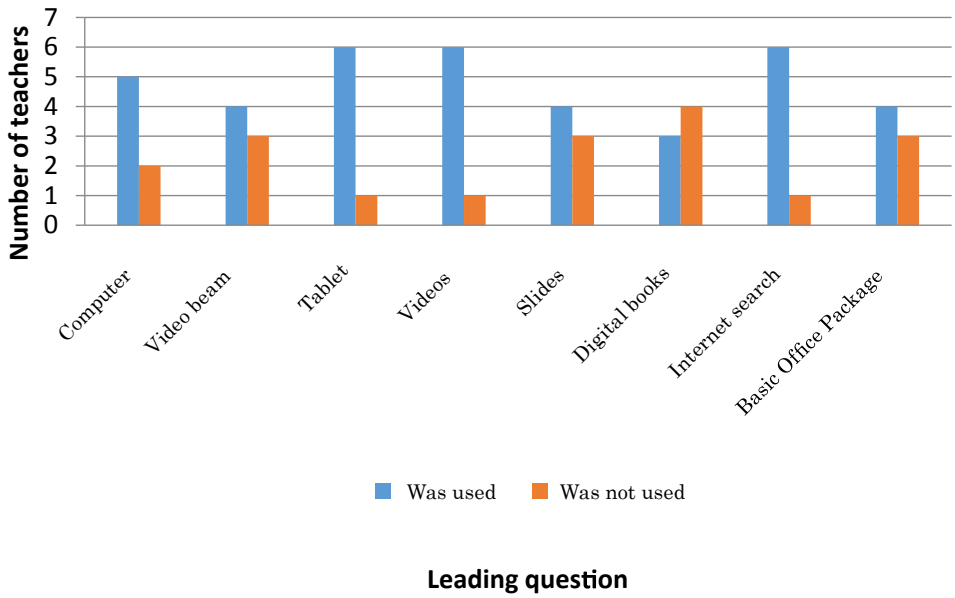

Figure 4. **Graphic representation of personal knowledge on the use of electronic equipment and digital tools**

It was found that most teachers always agree that their classes are planned according to the curriculum of each area, and on planning of resources to teach their classes. However, the most frequent response to the question on creating seedbeds for research with the students in their class was "sometimes".

Here it was found that three of the surveyed teachers never use the state of the art as a strategy, they almost never do lectures, and in most cases use roundtables, oral presentations and conceptual maps.

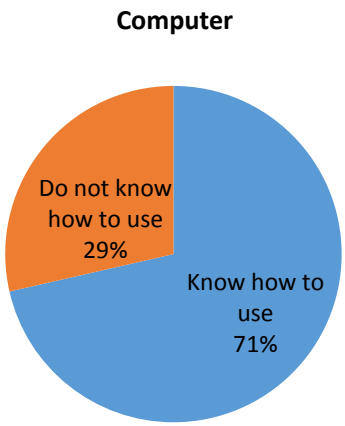

Figure 5. **Percent of total on use of computers**

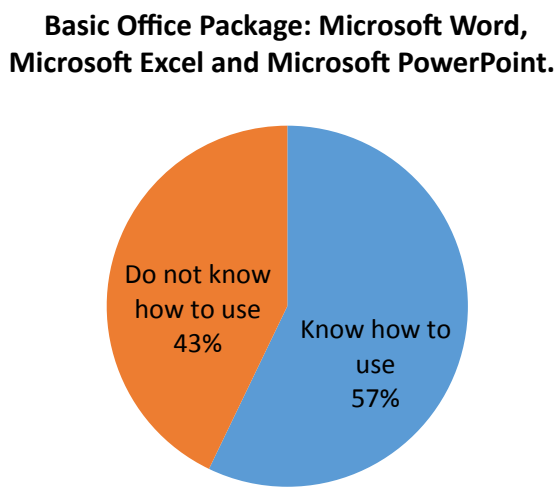

Figure 6. **Percent of total on use of basic digital programs**

Figures 4, 5 and 6 display the teachers' personal knowledge and use of technological tools, finding that 29% do not yet know how to use a computer, and not all those who do know how to use the basic Office package: Microsoft Word, Microsoft Excel and Microsoft PowerPoint, with 43% who do not know how to use it.

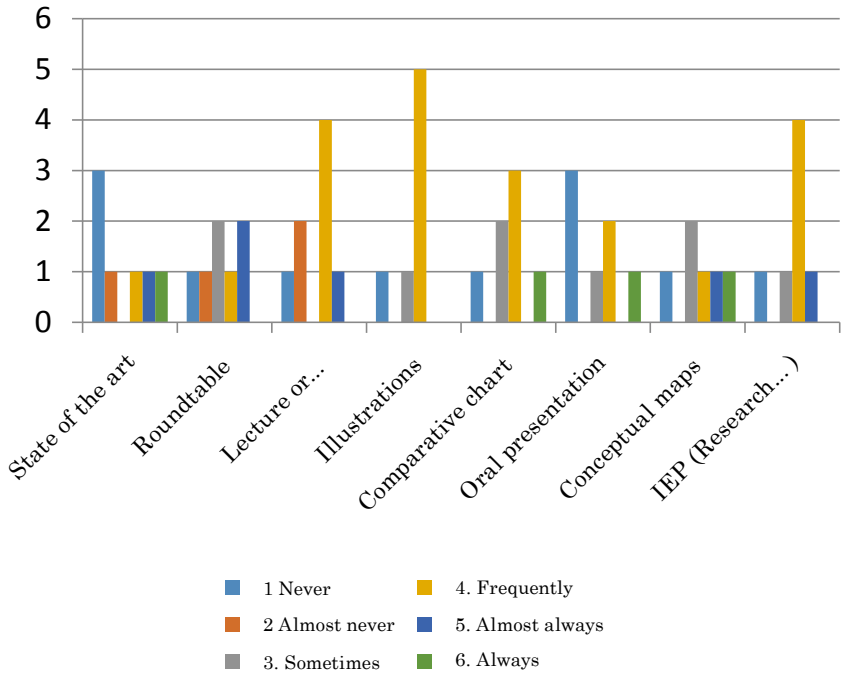

Figure 7. **Graphic representation of application of ICTs in pedagogical strategies**

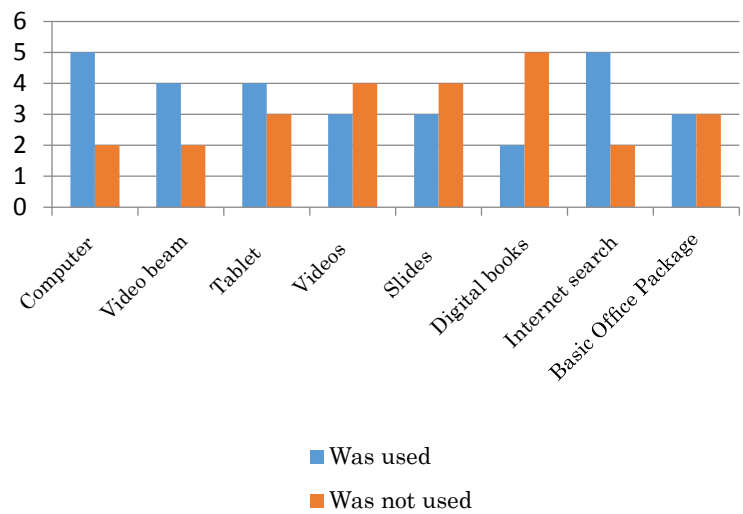

Figure 8. **Graphic representation of the implementation of digital tools and programs in teacher pedagogical practices**

It was found that the most frequent use given by teachers to ICT in their pedagogical practices was for lectures, illustrations and research as a pedagogical strategy, and the least frequent uses was for conceptual maps, state of the art and oral presentations.

According to these results, computers, videobeams and tablets are used primarily as support tools for teaching. The use of digital books, slides and the Office package are less frequently implemented by the studied population.

IV. Conclusions

From the study, it was inferred that technological strategies can be implemented as teaching tools to enhance students' attention and enable them to take on an active role to strengthen learning and to make it more dynamic. The school's teachers must acquire skills on the use of information and communications technology tools (Montenegro, Blanco & Cortés, 2013) and (Cortés-Peña, Pinto-Santos and Atrio, 2015).

The social appropriation of knowledge events are described as an experience for this study through the participative activities in the events "it is the teacher's turn to speak", during which the research experience was shared with the teachers at an inter-institutional level, thereby reinforcing and receiving feedback on the process. It is important to highlight that dissemination activities must be performed with the local community, which will be undertaken shortly.

The discussion should display a critical analysis of the results obtained and provide ideas for performance of new studies. Review grammar and spelling.

References

[1] Arroyo, M., Faz de los Santos, L., Gasca, G., y Orozco, R. (2012). Mejoramiento de la comprensión de lectura basada en el aprendizaje colaborativo en la enseñanza media básica. *Apertura, 2 (2),* 36-47. Recuperado de: http://www.udgvirtual.udg.mx/apertura/index.php/apertura/article/view/140/157

[2] Avendaño-Villa, I., Cortés-Peña, O. F., & Guerrero-Cuentas, H. (2015). Competencias sociales y tecnologías de informática y comunicaciones como factores asociados al desempeño en estudiantes de básica primaria con experiencia de desplazamiento forzado. Diversitas: Perspectivas En Psicología, 11(1), 13–36.

[3] Cabrera-Medina, J., Sánchez-Medina, I., y Rojas-Rojas, F. (2016). Uso de objetos virtuales de aprendizaje ovas como estrategia de enseñanza – aprendizaje inclusivo y complementario a los cursos teóricos – prácticos. *Revista Educación En Ingeniería, 11(22)*, 4–12.

[4] Clavijo, Y., Herrera, A., Rhenals, J., y Tordecilla, R. (2015). Implementación de un objeto virtual de aprendizaje (Ova) para apoyar el proceso educativo en los estudiantes de grado cuarto de primaria de la Institución Educativa Alfonso Spath Spath (Tesis de pregrado). Recuperado de: http://repository.libertadores.edu.co/handle/11371/947

[5] Cortés-Peña OF, Pinto-Santos AR, Atrio SI. (2015). E-portafolio como herramienta construccionista del aprendizaje activo en tecnología educativa. *Revista Lasallista de Investigación,12*(2),36-44.

[6] Escobar, F. (2016).*El uso de las TIC como herramienta pedagógica para la motivación de los docentes en el proceso de aprendizaje y enseñanza en la asignatura de inglés* (Tesis de maestría). Recuperado de: https://repository.upb.edu.co/bitstream/handle/20.500.11912/2762/TESIS__MTIC_FLOR_ESCOBAR%20-%20FINAL%20%281%29.pdf?sequence=1

[7] Fandos, M. (2003). *Formación basada en las Tecnologías de la Información y Comunicación: Análisis didáctico del proceso de enseñanza-aprendizaje* (Tesis doctoral). Recuperado de: http://www.tdx.cat/bitstream/handle/10803/8909/Etesis_1.pdf

[8] Hernández Sampieri, R., C. Fernández Collado y P. Baptista Lucio 1995 *Metodología de la Investigación*. McGraw-Hill, Colombia.

[9] Martínez, M., y Badillo, A. (2013). *Estrategias para el fortalecimiento de las TIC en las instituciones educativas oficiales de Colombia*. Barranquilla, Colombia: Colombia digital.

[10] Montenegro, M., Blanco, P., & Cortés, O. (2013). Papel de las habilidades metalingüísticas en los procesos de lectura y escritura en la educación superior. *Escenarios, 11*(2), 82-86.

[11] Parra, S., Gómez, M., y Pintor, M. (2014). Factores que inciden en la implementación de las TIC en los procesos de enseñanza-aprendizaje en 5o de Primaria en Colombia.*Revista Complutense de Educación, 26 Núm. Especial*, 197-213.

[12] UNESCO. (2008). *Estándares de competencia en TIC para docentes*. París: Unesco.

[13] Vélaz, C., y Vaillant, D. (2009). *Aprendizaje y desarrollo profesional docente*. España: Fundación Santillana.

[14] J. Jiménez Serpa y M. Salas Rondón, Aplicación de modelos econométricos para estimar la aceptabilidad de una tasa por congestión vehicular, INGE CUC, vol. 13, n.º 2, pp. 60-78, jul. 2017

[15] A. R. Romero-Conrado, L. J. Castro-Bolaño, J. R. Montoya-Torres, and M. Á. Jiménez Barros, "Operations research as a decision-making tool in the health sector: A state of the art," DYNA, vol. 84, no. 201, p. 129, May 2017.