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THE TEACHER IN THE FACE OF COVID-19 USING THE TOOLS OF INFORMATION TECHNOLOGY

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Abstract: The declaration of emergency caused by the covid-19 pandemic caused the indefinite closure of the country's educational establishments, a situation that gave rise to the use of communication and information technologies (ICT), as alternative and necessary ways to provide continuity to the academic training processes of students.

This research aims to use information and communication technology (ICT) and learning and knowledge technologies (TAC), which contributed to the development of virtual education in Higher Education, as well as taking into account the challenges that teachers faced to continue with the development of teaching classes at a higher level. The bibliographic review and analysis of experiences implemented in times of the Covid-19 pandemic were used. In this social isolation, ICT and TAC assume a fundamental role in the way classes are taught for their continuous improvement with the knowledge of good practices with the use of information and communication technologies. In this context, the fusion between information and communication technologies and learning and knowledge technologies was necessary, allowing the student to be able to solve life's problems. The methodology is qualitative documentary research.

Keywords: Technology, Covid, Teaching methods, Multimedia teaching, ICT, TAC

INTRODUCTION

Inevitably, the year 2019 became totally special in all contexts, a situation that had its origin as a result of the appearance of the pandemic caused by COVID-19, which according to the Pan American Health Organization [PAHO] (2020), is a disease caused by a virus that is imperceptible to the human eye, a characteristic that has allowed it to spread very quickly and whose main effects are on the respiratory system. Currently,

this virus is dispersed throughout the world, affecting people from all over the world. All ages.

This scenario led to mandatory isolation, a measure that was adopted by many countries for the purpose of caring for the health of citizens, this led to many educational establishments closing their doors and therefore the suspension of classes. However, the United Nations Children's Fund (UNICEF) states that education is a priority and despite the health emergency, classes must continue, even more so when the pandemic caused by covid-19 has harmed millions of students. (UNICEF, 2020)

Unquestionably, 2019 was a year of changes for education, and Information and Communication Technologies (ICT) became the protagonists of this transition, since characteristics such as interactivity and interconnection (García-Jiménez & Ruiz-de- Adana-Garrido, 2013), have allowed them to become the preferred mechanism to guarantee the continuity of educational processes between teachers and students. However, despite technological advances and the measures adopted by the countries, the virtual study modality was classified as a low-contributing process (Tejedor et al., 2020), which among other reasons mentioned a lack of dynamics in the class development, extensive readings and above all poor learning.

Information and communication technologies provide different elements to improve the teaching process and are a set of tools. They are a medium that seeks to develop spaces for improving the interaction between the teacher and the student. This set of tools contributes significantly to the student training process (Gómez, 2018). The use of ICT in the classroom has contributed to the scope of the contents that are planned, where the teacher has managed to innovate this process, through the different applications,

giving value to the teaching process. This way, the teacher generates and strengthens skills and abilities for the development of digital competencies that have allowed them to apply them according to the nature of their subject.

The contribution of these tools has been very useful in the training of students at different levels of learning. However, as a result of the Covid-19 pandemic, the use of these technologies has taken on greater importance. That is why the need has been seen to integrate the use of multiple media into the teaching processes in order to transmit the contents already planned, considering the way to develop these classes in times of social confinement as a result of the pandemic, which implies stating learning and knowledge technologies with the purpose of articulating the variables that contribute significantly to the form and manner of teaching the class, hence, there is the need to establish how the use of information technology and communication (ICT) and learning and knowledge technologies (TAC), as these variables contribute to the development of virtual education in Higher Education, through documentary review and analysis of experiences implemented during the pandemic.

The way classes are taught from in-person to virtual in some higher-level institutions due to the pandemic did not affect much, since some were already doing it, however, those who had not done it before found it a problem. According to (Miguel Roman, 2020), one of the biggest problems in the virtual modality is the internet or connectivity. Another problem that arose was the uncertainty that exists if students are efficiently assimilating the knowledge taught by of their teachers through this modality; That is why we must take into account not only making changes to the classes lightly but also creating an understandable model for each subject since

they are all different.

The use of information technologies in education is a necessary and urgent measure, due to the social isolation that we have to live among many things, the generational gap that we currently experience, providing with this use without a doubt, a significant improvement in the learning and teaching process. For (Garcia Soto, 2020), higher education is “considered as a basis for good socioeconomic development due to the formation of human capital that it allows.” That is, it is the support that is available to improve both the social and economic level of a country through training or teaching transmitted to other people that will allow them to improve the development of their skills, abilities and knowledge, benefiting society.

With the above described, educational centers have ceased to be the source of all knowledge and have become facilitators and managers of multiple learning resources. For this reason, they have been forced to create new study modalities by establishing innovative didactic forms to make knowledge more understandable, taking into account the diversities of the population. Users of these technologies, such as teachers, must have a positive attitude towards this new challenge and a great willingness to implement new teaching strategies supported by Information Technologies, to open more efficient and permanent communication channels. Their creative and innovative capacity will be a preponderant factor in communicating knowledge; for this, instruments must be implemented that allow for a better understanding of the topics. That is why (Bautista, 2000) points out the importance of overcoming mere technological and didactic preparation and offers some content for the training of teachers, aimed at raising awareness, compensating, reflecting and investigating what teachers do and do not do.

technologies in the genesis of inequalities and other natural and social miseries.

To do this, it is necessary to create methods for the student to learn and not for the teacher to teach; It is because technology fosters the medium and the result is virtual learning environments as a new organizational form of teaching that allows the teacher, in a pedagogical way, to manage and design content to expand their knowledge on a topic, but which also makes it possible to design activities and evaluations that provide feedback and verification of the proposed objectives (Rodríguez1, 2018). Student learning involves knowing how to listen, interpret and emit pertinent messages in various scenarios using the appropriate media, codes and tools; The proper identification and ordering of ideas allow you to reach significant information where the use of information technologies serves to effectively solve the established problem. For this, you must have access to the existing information that is contained in various sources, whether printed and/or digital, the knowledge they already have in this field allows them to recognize the elements of the graphical interface, their organization and location, the data processing through automated systems allows greater efficiency of the resources. It is essential to select and use the technological tools necessary to guide the teaching-educational process in accordance with the real context of virtual learning. Given this reality, the problem of the course is the need to manage the teaching-learning process from a subject, integrating the didactic methodology with the technological platforms and tools.

The use of ICT in higher education training provides multiple advantages in improving teaching quality, such as access from remote areas, flexibility in time and space for the development of teaching-learning activities or the possibility of interacting with the

information by the different agents involved in these activities. The use of information technologies in the teaching-learning process consists of locating innovation processes towards different environments that allow promoting the construction of more dynamic and interactive learning spaces. An example of this is the changes that have been generated around the traditional teacher-centered conception of learning, towards a student-centered perspective. (Fandos, Jiménez, & González, 2018) tell us that, in any teaching and learning process, one of the fundamental elements is communication, understood as the mechanism through which the teacher and the student share their knowledge. Currently, this is usually influenced by information technology, that is, it can make use of instruments or means that serve as a link to exchange opinions. Adding these information technologies in the teaching-learning process greatly affects the planning of this process, that is, it has to look at the characteristics, needs and interests of the student, the type of courses and, in turn, the methodology and technical means that must be used.

Reference will be made to learning environments on the internet: formal learning environments: learning objects and virtual classrooms. Socio-communicative environments: teleconferences, professional social networks, webseminars, blogs, wikis and forums. Informal learning environments: websites, social networks, online media, thematic search engines, etc. Personal learning environments: self-built by each subject. (Hernández, 2016), tells us that ICT can be relevant lines in educational research, since in recent times new technologies have been implemented in the field of education, which offer both students and teachers the opportunity to interact with each other, in the same way it offers tools and knowledge necessary to carry out tasks, increasing student

participation; this way, the opportunity to interact, share ideas, criteria and knowledge has been given; allowing this exchange to help generate new knowledge among students.

The creation related to learning styles and the transformation of empirical practice and the information received gives rise to different, creative and innovative productions in the classroom. Tools such as virtual classrooms, educational chats, videoconferences over the Internet and educational platforms, all these tools are created with the aim of making it easy for students to achieve better learning. Most of these tools work online and through the Internet, making it easier for students and teachers to give and receive classes from different places, that is, we live in the globalization of education, “Social technology as a way of designing, developing, implementing and “manage technology aimed at solving social and environmental problems, generating social and economic dynamics of social inclusion and sustainable development.” (Gonzalez, 2020)

Information and communication technologies and learning and knowledge technologies support the different techniques and forms of learning that are used by educators in the pandemic and currently. In the past, going to a library to consult information was extremely difficult due to time, distance and costs involved in carrying out this activity. Nowadays the situation has changed, because through technology, research can be carried out through the Internet, often from the comforts of our homes, and not only that, meeting before was complicated, today video conferences are Students can meet, and they can even meet with students from all over, from different cities and from different countries.

Information and communication technologies (ICT) and TAC (learning and knowledge technologies) are a set of

technologies that allow the teaching-learning process to be improved through state-of-the-art technological means. But although today there is fourth generation technology, there is still that digital divide, which means that there are people who suffer from digital illiteracy, as indicated by the technological researcher “this is how the impulse that has been given The Internet has made virtual teaching possible, for example, which has revolutionized the way teaching is taught.” (Valenzuela Zambrano, 2013)

Currently there are many educational platforms or virtual classrooms, and their use is gaining great importance and growing in the short term. An educational platform is an essential tool for the interaction and communication of courses taught in virtual mode, however, at first it may be difficult to adapt to the use of this tool because the majority of students and teachers are accustomed to the traditional model.

ICT TOOLS

1.- Com8s- collaborative tool

Platform that allows improving communication between students and teachers, Com8s is available in English, Portuguese and Spanish, more than enough to enhance a more global and enriching experience.

2.- Lectrio

According to (Del Prete, 2019), currently virtual platforms represent an important instrument within the educational field, because they have the ability to provide students with personalized learning. This is the case of the Lectrio virtual environment, which is a platform that allows teachers to manage different courses, contact their students, impart knowledge, materials and other multiple functions available for

any type of device, thus taking advantage of the technological increase to develop new advances in education, since virtual platforms “are being considered by teachers as technological tools with strong potential for incorporation into teaching.”

3- Udemy

According to (Sanchez-Palacios, 2020), currently, within the educational sector worldwide, there has been a great boom regarding the use of virtual environments for academic teaching, this is due to constant technological advancement and new trends; A clear example is the Udemy platform, which is a virtual learning environment, whose function is to allow users to create courses, post videos and other educational content, which is promoted in order to obtain profitability in return, this is very important. helps for students, since “using virtual classrooms in student learning helps them build their own knowledge based on prior knowledge.”

4.- Moodle

Moodle is a very versatile platform that allows the development of classes within a virtual learning environment, in which the activities to be carried out by the students are managed. It is one of the most used virtual learning platforms, as it is free access, content can be generated and has copyright. Its environment allows you to configure and has TAC objects such as activities, wiki forums, messaging, among others.

5.- Classroom

It is a very friendly tool that is part of the Google Suite, its dynamism has encouraged many Higher Education institutions to use its applications, it is very easy to work with and only requires an account within Gmail to have access.

CT TOOLS

They are tools that contribute to the fulfillment of the objectives within the teaching-learning process, establishing emphasis on learning tasks and new knowledge (Orcera Exposito, 2017). In addition, they favor the creation of learning objects through the use of digital repositories and the interaction of flexible methods of communication and interaction between the teacher and the student.

TACs are an opportunity to provoke the qualitative leap in educational systems necessary to satisfy the needs of society, which increasingly demands professionals capable of promoting the constant transformations that the development of science and technology itself generates. This requires, without a doubt, the urgent review of the organization, curricula and methodologies of educational processes (Moriya, 2016), particularly those related to teacher training, since this professional is in charge of the education of the new generations. responsible for the continuity of the development of nations.

In any training process, the methodology is vitally important for achieving the objectives of the programs; The design of innovative methodological strategies is essential in the transformation of learning and training processes, since it contributes to ensuring students' understanding of the world in which they live (Matos, 2016). Such strategies, when contextualized and designed in accordance with The learning needs of future teachers cannot avoid the use of TAC as didactic means to achieve meaningful learning.

1.-ShowMe

It allows both students and teachers to create and share content in video format in an intuitive, practical and very visual way. The application provides users with a blank virtual whiteboard with which they can record

drawings, stories, comics, photos, illustrations, and diagrams. Also offering the possibility of including the appropriate explanations in real time, via audio.

2.-FlipaClip

It is a digital educational resource, designed to be used from a tablet and with a pencil, with which to draw comics with animation, frame by frame. Its objective is to generate in digital format the old animated comics that started from a drawing and were given movement when turning the page. To do this, it gives the possibility of making animations, stories, sketches and includes numerous basic tools for their execution such as, for example, pencils with different thicknesses, brushes, erasers, colors, geometric shapes or do and undo buttons.

3.-Rec Studio

This application for creating voice podcasts accompanied by music and sound effects transforms the classroom into a real radio studio with just an electronic device (Tablet, computer or mobile phone). Its purpose is to promote students' oral expression work through the creation of live or delayed radio programs.

MATERIALS AND METHODS

A qualitative and documentary perspective is presented, where the study variables are identified as information and communication technologies, and learning technologies in their contribution to the learning process and teaching in Higher Education institutions in times of COVID-19. through the search for relevant information for epistemological argumentation.

When developing the theoretical characterization with the bibliographic sources and their relationship with the objective of the study, the tools in information

and communication technology and the learning and knowledge technologies used by the higher educational institution were identified, which were previously analyzed by each one of its authors and proposals to respond to the situation that occurred in times of pandemic, this made it possible to determine the experiences obtained in the institution, to become the baseline of the research carried out.

The investigation of the different platforms allowed us to establish the importance of the use of these technologies to determine their usefulness and application, in times of pandemic in the learning and teaching process in the Higher Education institution, allowing us to respond to the stated objective.

RESULTS AND DISCUSSION

The results show a series of applications of technological tools as a support resource to respond to the scenario presented as a result of the COVID-19 pandemic. Therefore, the applications implemented and suggested from the bibliographic review are evident, as shown in table 1.

As can be seen in table 1, Higher Education institutions have implemented the use of different ICT tools, which are identified with the use of virtual learning platforms, and for the development of the class the use of TAC tools, in such In this sense, its applications are disaggregated, as shown in table 2.

The results show that the use of information and communication technologies, and learning technologies have made it possible to reduce the impact of the COVID-19 pandemic in Higher Education institutions, in this sense it is necessary to enhance the skills of university teachers. In order to be able to implement the use of technologies in the teaching-learning process, in the same way it is necessary for each teacher to strengthen their digital skills, for which higher education institutions must

| Author | Used tools: | Note |
|--|---|---|
| Vite, 2020 | ICT Teaching platform: Classroom TAC Technological tools google suite Drive, documents, Spreadsheet, Presentations. | The pandemic generated an unfavorable scenario for the start of classes in several institutions, however, after an analysis process, the planning and organization for the development of classes was established through technological tools as support for the start of classes, which was developed in Ecuador |
| Organización de las naciones unidas para la educación. La ciencia y la cultura, 2020 | ICT Teaching platform: Streaming platforms, Its framework establishes planning, supporting, reopening, redesigning, recovering and restructuring. | In its May 2020 report, it identifies the need to establish mechanisms for the use and implementation of streaming platforms in order to virtualize academic activities and continue with the training of professionals. |
| Inocente-Díaz & Díaz-Pizan, 2020 | ICT Teaching platform: Classroom TAC Technological tools google suite Drive, documents, Spreadsheet, Presentations. | The applied teaching model adapts to Flipped Learning Online where the student develops his knowledge within the framework of asynchronous work, which was developed in Peru. |
| Archer & De Gracia, 2020 | ICT Teaching platform: Universities have identified timely access platforms such as Edmodo. TAC Technological tools: WhatsApp | The inequality of access to technology identified the need to continue activities in this sense, digitalization allows them to transform their way of teaching and therefore the tools that incorporate it, which is developed in Panama. |
| Iglesias, et al., 2020 | TAC Technological tools: WhatsApp groups, email, phone call, digital portfolio. | In Cuba, the Doctoral school implemented technological strategies for the training of its doctoral students, generating favorable results so far. |
| Martínez-Garcés & Garcés-Fuenmayor, 2020 | TAC Technological tools: Tools that allow you to create, edit and control teaching processes synchronously. | In Colombia, the digital competencies of teachers were identified, analyzing their current levels to project them through training processes |

Table 1. Technological tools used in times of pandemic.

| Detail | Technologies | Application |
|-------------------------------------|--|--|
| Virtual teaching-learning platforms | ICT: Moodle, Blackboard, Edmodo, teams TAC: Tasks, forums, Wikis, questionnaires, evaluation. | They are used as a content manager to store the tasks and activities planned by the teacher. |
| Technological tools | TAC: Video conferencing platforms, zoom, Google Meet, Teams, Kahoot, Quizzes, Peadlet | They are computer applications applied to the teaching and learning process. |

Table 2. ICT - TAC tools used.

project actions that contribute to the training and strengthening of the use of digital media.

Information and communication technologies, and learning technologies applied to the teaching-learning process, have become the main basis for the development of academic activities in higher education institutions in times of pandemic, for this reason, each university According to his work team, he has identified the tools that, according to the needs of the students, subject and each context, benefit their activity. It is for this reason that their correct implementation and application must be analyzed, in order to obtain favorable results. and provide continuity to the educational process, with the aim of achieving quality, efficiency and educational relevance in higher education.

In the same way, he proposed (Vite, 2020) in his research, in which he highlights the use of technology as a contribution to the teaching and learning process, but it must be carried hand in hand with supporting processes, in order to generate spaces of feedback to the teacher and the student. In the same way (Martinez-Garces, 2020), it contemplates mediating the use of technology through prior analysis to identify the one that best adapts to institutional needs, for which it is essential to generate a priority matrix that identifies the most necessary of according to the educational environment.

CONCLUSIONS

Information and Communication Technologies (ICT) and learning and knowledge technologies (TAC) have taken center stage in these times of pandemic, given that these technological tools with the tools that contribute to the fulfillment of the objectives within the process of Teaching-learning has allowed continuity to the teaching-learning processes of students since they provide support and allow maintaining good school administration and promoting distance education. For its part, didactics has felt the effect of technological incursion, thanks to this, the resources presented by teachers are much more striking, dynamic and interactive.

The success of the application of new technologies in the educational field will depend, to a large extent, on the attitude and skills of the teacher in technological matters, the minimum skills that they must have and emphasize the mastery of office automation, use of peripherals, multimedia materials and social networks. The teacher will become a cyberteacher in the globalized village, where he applies all his ingenuity through the technological advances that he can dispose of.

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