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Virtual learning environments: Contributions to Education

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***Abstract*---*Information and Communication Technologies currently provide the knowledge society with a variety of computer tools that allow them to improve their work environments. One of these applications is e-learning platforms, which within the educational sector are becoming a complementary resource to improve educators' teaching methods. The objective of this article is to determine the degree of importance that teachers in the central part of the city of Chone give to Virtual Learning Environments as a support tool in the teaching-learning process. The present investigation started from an exhaustive bibliographic review and was complemented with the use of the descriptive method with a qualitative and quantitative approach. Likewise, a survey was applied as a data collection instrument that was designed on the Google Forms website. In addition, the inductive-deductive method was used to know the different management systems of learning most manipulated worldwide and in turn describe the advantages of using you in education. The results revealed that 50% of the surveyed teachers are using different technological learning strategies to turn their classes into interactive environments and continue with education from anywhere, thus improving educational quality.*

Keywords*---*Information and Communication Technologies, Knowledge society, e-learning platforms.

I. Introduction

This article refers to the contributions that Virtual Learning Environments (VAS) provide to education, various authors and organizations have written different investigations with different criteria on the use of digital educational resources that Information Technologies are providing and Communication (ICT) to the educational sector, for this reason, this study will cite several of them.

Some research mentions that the accelerated advance of ICT is influencing education favorably, inserting new digital tools in charge of managing online teaching processes (Segura & Gallardo, 2014). While other studies indicate that ICTs invade the educational context in a measured way, giving the teacher the opportunity to innovate and apply technological strategies that achieve the development of different skills in the students (Cedeño, 2019).

This research shows that today's society is constantly updating in any field and especially in the use of new technologies, therefore, human beings must renew their knowledge periodically since they cannot afford to wait for the heritage Initial serves for a lifetime (Delors, 1996). The teacher must carry out continuous professional training to improve their teaching-learning process and thus transform the educational system.

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According to other studies, the impact that ICTs are having on education is modifying learning objectives, online pedagogical strategies, professional profiles, and the role of the student and the teacher within pedagogical practices (Wen & Shih, 2008). For this reason, digital educational platforms manage to promote active learning in students and thus improve educational quality.

For other explorations, the technological educational resources that guarantee active learning are the EVAs, since through them the student fosters a new culture of appropriation of knowledge. In addition, they are technological strategies that the teacher uses to achieve the purpose of education, which is the training of the student (Rodríguez I., 2016).

Likewise, other authors consider that the EVAs allow the propagation of pedagogical content, achieving the development of the different skills that the student needs to function within this society (Salmerón, Rodríguez, & Gutiérrez, 2010); (Salinas, 2012); (Catillo, Rodríguez, Estrada, & Febles, 2009). Becoming a technological learning strategy to promote the inescapable changes that are emerging in pedagogical models.

However, in the investigation of the interactive network model for learning carried out in Spain, it indicates that implementing an EVA in educational processes does not guarantee innovation or the quality of teaching, so that this digital resource is a success in education. Teachers must use the different active teaching methodologies and thus be able to train creative and innovative young people capable of solving any conflict in the environment (Silva, Fernández, & A, 2016).

In another study carried out in Colombia on the use of communication tools in EVAs (Viloria & Hamburger, 2019), they recommend creating methods of continuous professional training for teachers in EVA-related topics, so that they make the most of the contributions they are making. toasting education. Likewise, in Ecuador some research describes that the use of digital educational resources is managing to break the digital gap that exists between the student and education (Toala, Cruz, Véliz, Zambrano, & Bolivar, 2017).

The EVA most used worldwide in recent times is the Modular Object-Oriented Dynamic Learning (Moodle); Reflecting 65% use in Europe, the United States and 20% in Canada compared to other digital educational platforms, its implementation allows learners to obtain their learning independently (Pedersen & Kuran, 2017).

On the other hand, in a research carried out at the National University of Chimborazo (UNACH) (Humantes, Fernández, & Jiménez, 2019), it indicates that since 2009 teachers began to implement the virtual educational platform Moodle as a support tool in their teaching process, generating a positive impact on their students, since it gives them flexibility, motivation and autonomy when it comes to forming new learning.

Continuing with the line of this research, it is shown that the EVAs provide different contributions to education and especially in these times of crisis where all countries are suffering from a health alarm caused by a new coronavirus called COVID-19 where its propagation consequences they are devastating. Due to this situation and in view of the need to continue with educational processes, governments are promoting the use of digital educational resources to strengthen education from home. (Moreno, 2020); (Condor, 2020); (Britez, 2020).

Due to the emerging situation that is being evidenced by COVID-19, teachers must use virtual tools that facilitate learning from anywhere. For this reason, it is necessary for educators to know the different contributions that the use of different learning management systems offers. Therefore, the objective of this research is to determine the degree of importance that teachers in the central part of the city of Chone give to Virtual Learning Environments as a support tool in the teaching-learning process, with the sole purpose of to improve educational quality in Ecuador.

II. Materials and methods

In this article, a bibliographic and descriptive research work was carried out with a qualitative and quantitative approach, because through the collection of data from the different sources of information, both internal and external, it allowed to examine, synthesize and compare different contents, thus managing to suggest new ideas on this line of research.

The process of exploring bibliographic references was carried out through different digital libraries (databases), whether national or international, or academic search engines based on topics related to the educational and technological field, thus selecting the content that related to the object of study.

To obtain the result, the research technique called "survey" was applied to 148 teachers who work in the central part of the city of Chone, which contained a questionnaire of eight closed questions. It was designed on the Google Forms website, this is one of the office tools that Google provides to the knowledge society that is used to organize events, send surveys online quickly and easily, and also perform the data count in real time, showing the individual a general statistical analysis of the information requested (Leyva, 2018).

The applied methods were inductive-deductive, since through them an individual analysis of the different types of learning management system most used in schools was performed, serving as a basis for determining the contributions that EVAs provide to the education.

Finally, it is stated that the materials and methods that were used in the preparation of this article were investigated in the book by (Hernández, Fernández, & Baptista, 2010), where it describes the correct way to use all these tools in any investigation.

III. Analysis and Discussion of the Results

The new educational environments provided by ICTs drive the improvement of virtual teaching (García & Seoane, 2015), becoming an alternative to improve the educational practices of educators. For this reason, before defining what an EVA is, it is necessary to carry out an analysis of the main e-learning platforms that are within the reach of the educational sector to arrive at the description of the different contributions that the use of EVAs provide to education. .

Among the EVAs most applied worldwide by educational institutions, the following are mentioned: Moodle, Google Classroom, Edmodo and Blackboard.

The Moodle Platform

The Moodle educational website comes from the acronym in English Modular Objet Oriented Dynamic Learning Environment, which means dynamic learning environments oriented to modular objects. It was designed by the pedagogue and computer scientist Martin Dougiamas in 2002. For its elaboration, it was based on the pedagogical current of constructivism, who affirms that the student must build his own knowledge through various specific tasks (Marín, Ramírez, & Sampedro, 2011).

According to the official Moodle website, this tool is one of the most used technological educational resources by educational centers (Moodle Partners, 2020), because it allows creating personalized learning environments (Valentin, 2015). This platform contains a variety of virtual modules where each of them have activities for the student to interact between the teacher and the student or between the students themselves (Mirabal, Gómez, & González, 2015).

The primary characteristic of the Moodle Learning Management System is that it allows the teacher the opportunity to introduce multimedia content, that is, upload images, videos, audios and any specific material that serves to generate motivation in the students (Contreras, 2014).

According to research, the Moodle platform has two components that allow the teacher to insert different contents, either static, called "resources" and interactive, known as "activities" (Contreras, 2014) and (Romero, Sola, & Trujillo, 2015). Table 1 and Table 2 reflect the contents of the resources and activities component.

Table 1. Contents of the Resource

Component Resource	
Name	Description
Edit a text page.	It allows the teacher to write a text.
Editing a web page	Allows the teacher to upload multimedia files (videos, audios and images) taken from the internet.
Link to a file	Allows the student to link any file (word file, pdf, slides, among others) with the teacher.
Link a web page	Allows the teacher to link any website, for the analysis of the student.

Source: (Contreras, 2014, p. 905)

Table 2. Contents of the Activities

Component	
Name	Description
Questionnaire	Allows the teacher to use different question alternatives; (multiple choice, true or false, short answers, pairing, description and essay)
Survey It	allows to carry out a survey on any topic.
Assignment	It is used to write student assignments on the same platform.
Forums	It is a collaborative activity.

Chat	It is a means of communication that allows dialogues to be established between course participants.
Glossaries	It is used to write meanings of terms elaborated by the participants of thecourse.
Wikis	It is a collaborative activity that helps to improve the tasks of the course participants.

Source: (Contreras, 2014, p. 906)

The use of this digital educational resource helps teachers especially in these times of emergency caused by COVID-19 or in any other situation. This platform provides the opportunity to continue education online, thus eliminating time and space barriers.

The Google Classroom Platform Google Classroom

was made available to the knowledge society on August 24, 2014, is part of the educational resources of Google for Education, available in 42 languages. It is an EVA that strengthens blended education (Guevara, Magan, & Picasso, 2019)**.** Its main objective is to facilitate teaching work and strengthen virtual learning in students, it has some functions that allow the best distribution of educational material (Google Cloud, 2014).

One of the main features of Google Classroom is to simplify and distribute tasks. It allows the creation of interactive EVA, facilitating the work of the educational community (Google Cloud, 2014), that is, it serves as a means of communication between teachers, students and parents. For another author, its main function is that it allows real-time feedback (Alves & Lima, 2018).

This educational platform allows the teacher to create virtual classrooms for the students on their main screen, among its main functions is to upload educational material (videos, audios, images, pdf, slides), assign tasks (send and receive), use chat and questionnaires. Its main advantage is that it can be installed on a mobile device (Kraus, Formichella, & Aldarete, 2019). Figure 1 shows the functions of Google Classroom.

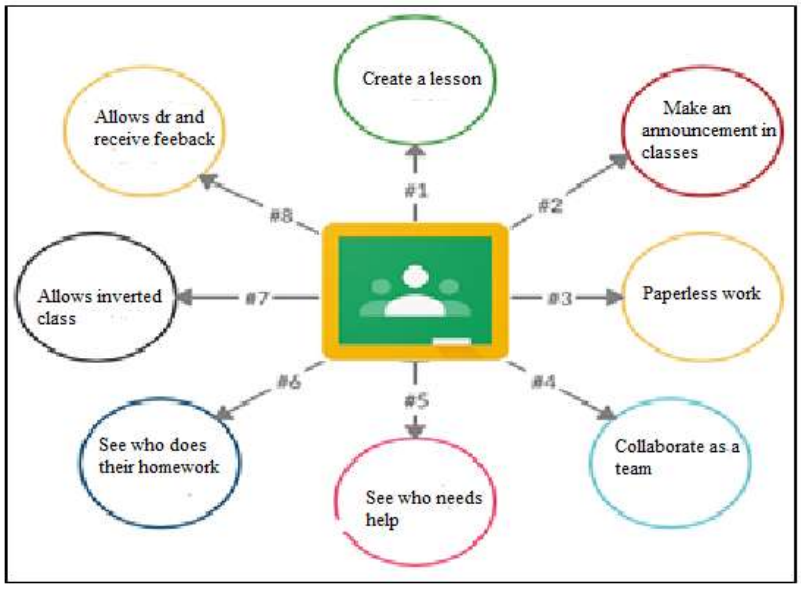

Figure 1. Google Classroom functions

Source: https://4.bp.blogspot.com/

These functions make Google Classroom an innovative strategy that serves to strengthen teaching-learning processes anywhere. It should be noted that this platform is considered as the future of education for being a collaborative tool.

The Edmodo Platform

Edmodo is a digital educational resource that enables personalized learning management (Contreras, 2014). It is a free social network that allows the design of EVA (Rodríguez & Iglesias, 2016). Furthermore, it promotes synchronous and asynchronous communication in a secure way between teachers and students (Sáez, Lorraine, & Miyata, 2013). One of the main features is the development of virtual classrooms, where you can store audio, video, image files, make comments, evaluate control procedures to students, among others (Díaz, 2017). Figure 2 shows the main features of Edmodo.

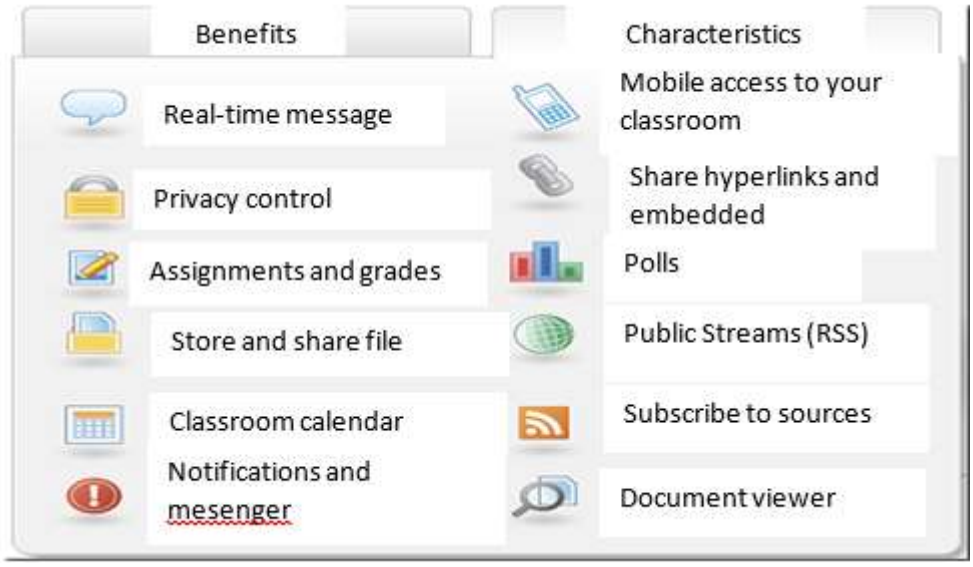

Figure 2. Features of the Blackboard Platform

Source: http://edmodo.antoniogarrido.es/introduccin.html

All these features make this social network an interactive EVA. Allowing communication and the exchange of educational material between the teacher and the student at any time, it also serves to develop the skills and abilities of the students.

The Blackboard Platform the Blackboard

Virtual tool is a commercial digital educational platform, based on the constructivist model. It is an application that enables EVA to be formed that promotes collaboration and communication among its users through its various functions (chat, calendars, forums and feedback) (Ferreiro, Garambullo, & Laredo, 2013). The use of this resource within educational processes manages to improve student learning. Blackboard promotes collaborative communication between its users and provides three fundamental characteristics (Montenegro, 2016). Figure 3 shows the characteristics of the Blackboard platform.

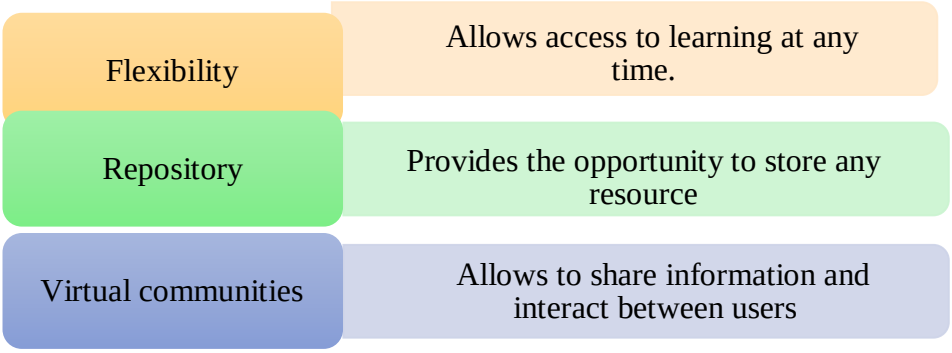

Figure 3. Characteristics of the Blackboard Platform

Source: (Montenegro, 2016)

According to another study, Blackboard is a technological application for tele-training, which allows you to manage online courses, share information and monitor students. Figure 4 shows the tools that the Blackboard website has (Morales, Reyes, & Ortigoza, 2019).

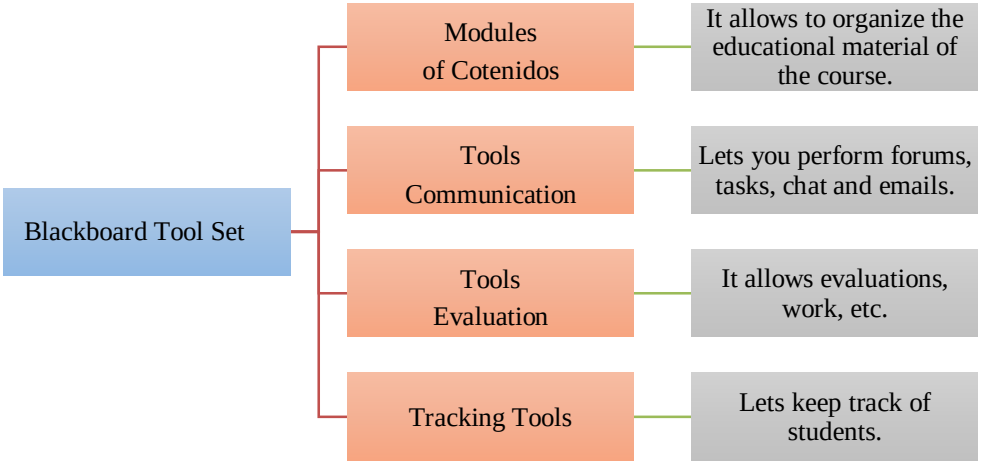

Figure 4. Characteristics of the Blackboard Platform

Source: (Morales, Reyes, & Ortigoza, 2019)

All these tools make this EVA an interactive educational platform that generates collaborative environments among its users (teacher - student). However, this research mentions that despite being a commercial-type technological platform, it is also used by certain educational centers because it enables the teaching-learning process to be strengthened.

Virtual Learning Environments in Education

Currently, ICT places technological tools within the reach of the educational system that make it possible to create EVAs, to continue with the online training of students from anywhere (Aguilar, Ayala, & Lugo, 2014), these applications help teachers to innovate their teaching-learning process allowing to increase the level of production and flexibility of the student (Morales, Reyes, & Ortigoza, 2019).

The EVAs are also known as Virtual Learning Environments (AVA), e-learning Platform, Controlled Learning Environments (ACA) or Learning Management System. All of these names refer to the same meaning (Fernández & Rivero, 2014). In other words, they are educational web platforms that allow, through virtual environments, to generate asynchronous and synchronous communication between the teacher and the student. Figure 5 reflects the elements involved in an EVA (Peláez, Morales, Lara, & Mariela, 2018).

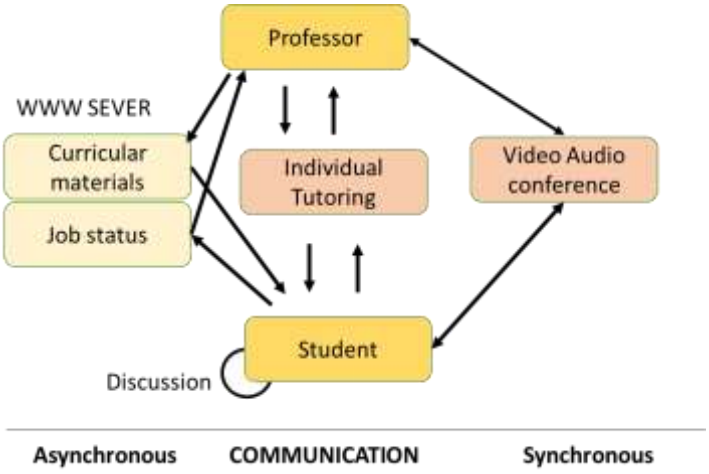

Figure 5. Elements involved in an EVA

Source: (Peláez, Morales, Lara, & Mariela, 2018)

EVAs are also considered to be digital educational resources, made up of a set of technological strategies that are available 24 hours a day for users, which allow didactic interaction (Hilera & Rubén, 2010). They become virtual classrooms that generate personalized learning (Rainolter, Garmendia, & Malvassi, 2015). In other words, they are computer tools that educators use in their pedagogical practices to create active and personalized learning for learners.

Characteristics of Virtual Learning Environments

EVAs provide four elementary characteristics to their users. (Belloch, 2012) among these, the following are mentioned: Interactivity that allows users to be aware that they are the protagonists of their learning; the flexibility that helps the user easily adapt to the application they are using; the scalability that works with multiple users (connected together) and the standardization that provides format course (SCORM) its initials in English are Shareable Content Object Reference Model in Figure 6 shows the characteristics of the EVA.

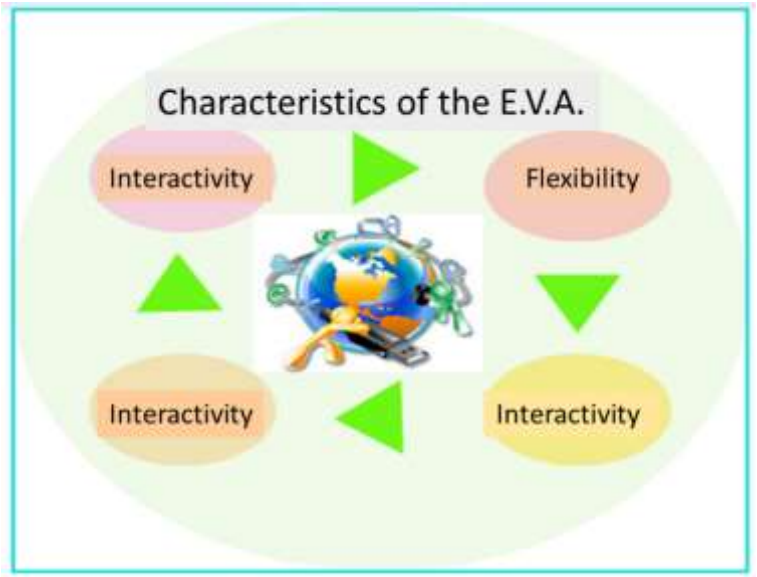

Figure 6. Characteristics of Virtual Learning Environments

Other authors state that the main characteristic of EVA is interactivity, since it allows communication between teachers, students and learning materials. Figure 7 shows the main function of the EVAs (Cedeño, 2019).

Figure 7. Characteristics of Virtual Learning Environments

The Role of the Teacher and the Student versus a Virtual Learning Environment

In traditional education, the teacher is the one who comes to the classroom and imparts the knowledge, while the student is the one who Observe, listen and repeat the content as the educator teaches it. However, this traditional teaching has been changing over time, currently teachers can implement virtual learning tools in their pedagogical practices that allow them to guide the student on the path of building their own knowledge. Figure 8 shows the role of the teacher according to the educational approach.

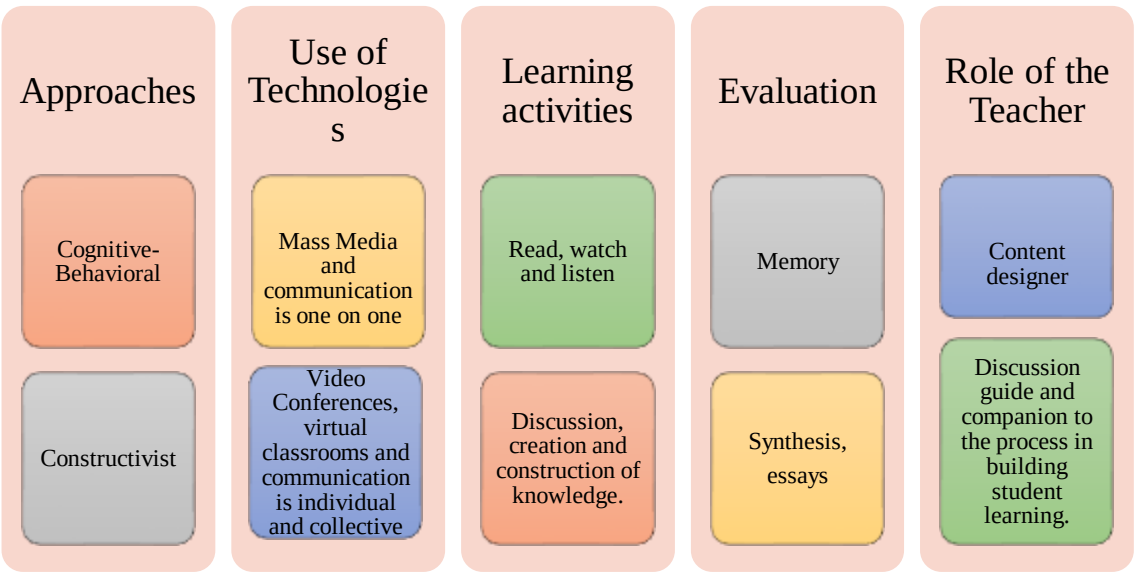

Figure 8. Role of the Teacher according to the type of educational approach.

Source: (García & Pineda, 2011)

According to the book Teaching in a Digital Age, the educator must implement ICT to innovate their teaching methodologies and learning strategies in students (Bates, 2015). Therefore, the use of EVAs in educational practices allow the role of the teacher and the student to be modified.

However, it is necessary to emphasize in this research that the figure of the teacher is not that it totally disappears in the teaching-learning process, on the contrary for the professor to achieve the learning objectives set out in his planning, the student needs the educator to be guide in the development of their autonomous work to advise them when they have any problems (Hernández, González, & Muñoz, 2015).

IV. Discussion of Results

In this research, the survey was used as a research technique, it is used to collect data through the use of a questionnaire with open or closed questions, which can be distributed online or in person (Orler, 2010). This strategy was designed through the application of Google Forms (online forms), they belong to the Google Drive family, it is free, it is quick to distribute, it allows tabulation of data in real time and it is available to all of society of knowledge. (García, 2018).

The survey contains a questionnaire of eight closed questions, applied to 148 educators. With the results obtained, a statistical and interpretative analysis of the results was prepared, to determine the degree and the degree of importance that teachers of the central part of the city of Chone give to Virtual Learning Environments as a support tool in the process teaching-learning.

Of which the most important are detailed:

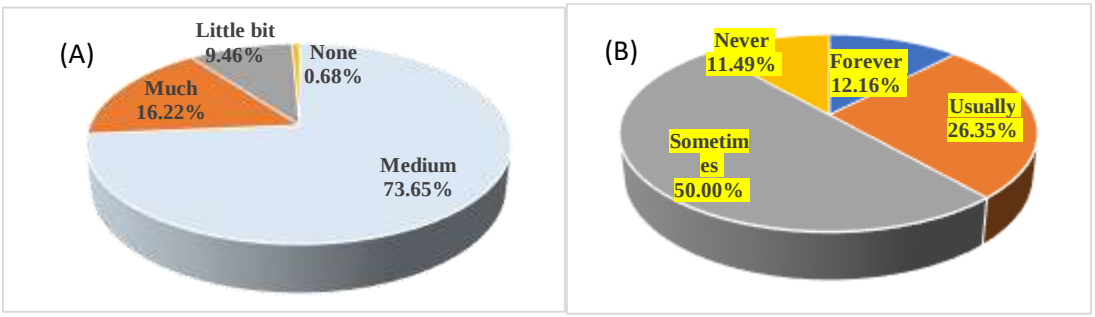

Figure 9. In (A), qualitative assessment of the EVA and in (B), if they are applied in pedagogical practices

Of the 148 educators surveyed, it was determined in figure 9 (A) that the 73.65% of the surveyed teachers moderately know the meaning of the EVA. While in figure 9 (B), it reflects that 50% of teachers sometimes apply these virtual tools in their pedagogical practices. This result determined that a high percentage of teachers have knowledge of e-learning platforms and that they are being used within their pedagogical practices to strengthen the teaching-learning process.

In figure 10, the results of the survey are shown, in figure 10 (A), which teachers know about digital educational platforms Google Classroom 25.68%, Moodle 12.16%, Edmodo 12.16%, while that 34.46% of educators indicated that they know of other types of virtual tools, among them they mentioned: social networks (WhatsApp and Facebook), Zoom, Quizizz, Nearpod and Microsoft Teams.

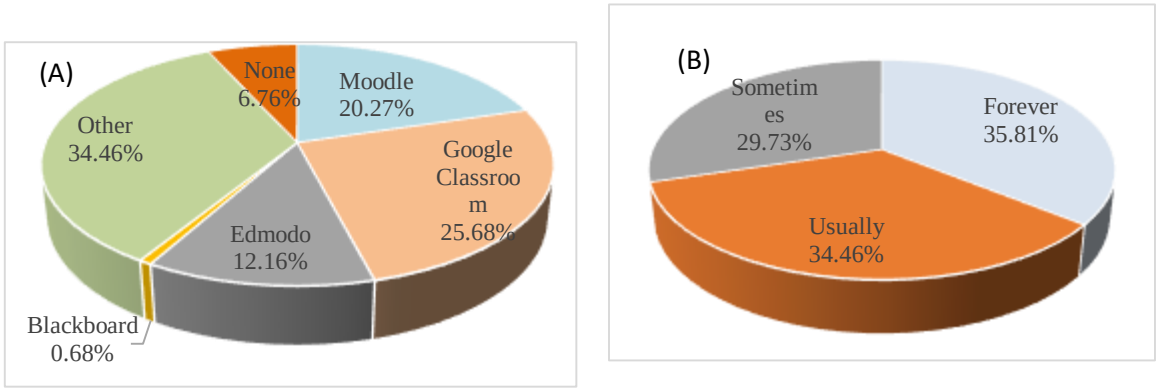

Figure 10. In (A) the type of virtual environment you know, and in (B) if they can be used from anywhere

On the other hand, figure 10 (B) reflects that 70.27% of the professors consider that applying EVAs in education allows teaching to continue from anywhere. This result is satisfactory because teachers consider that by using the different digital educational resources that ICT provides to the educational sector, they will be able to strengthen the student's teaching-learning process. Likewise, they highlight that in a high percentage these tools allow continuity with education regardless of time and space, thus achieving optimizing the student's academic performance.

Other results achieved in the use of the research technique reflect that teachers consider that EVAs help to continue education virtually, in these times of health alarm caused by COVID-19. In addition, this study found that educators like to strengthen their knowledge through courses related to this topic of study. Which serves to improve the quality of teaching in educational institutions.

All these results confirm that the use of ICTs and EVAs are transforming educational systems, these digital educational resources allow innovating education. For an investigation, the integration of these technological tools in the teaching-learning process is achieving that students learn to work as a team asynchronously or synchronously (San Andrés, Pazmiño, Mero, & Pinargote, 2019). Thus achieving the modernization of the traditional educational model (Lezcano & Vilanoca, 2017). Giving rise to new innovative learning spaces to strengthen the quality of teaching.

New technologies have designed digital educational resources that are allowing interaction between the teacher and the student through virtual classrooms, regardless of time or space, among the most widely used platforms worldwide are described; Moodle, Google Classroom, Edmodo that are open source and Blackboard with a commercial license (Díaz, 2017). All these types of EVA, provide flexibility to education in time, personalization of resources when creating virtual classrooms, promote the development of digital skills in the student and the educator; They will also generate autonomy in the learning-learning process for the student.

This meaning agrees with an investigation carried out at the “General Santander” educational institution in Colombia, where it is indicated that the Edmodo platform allows the easy creation of a virtual classroom, reflecting in this study that 66.6% of students have improved their academic performance by implementing this technological resource in their learning process (Díaz, 2017). Thus, becoming an easy to use educational and interactive social network, which provides various resources that allow the student to build their own knowledge. In another study carried out to give control to the modules taught at the Faculty of Public Accounting of the University of Puebla, they use the EVA Blackboard, in which it was shown that this educational platform serves to give Tele-training, providing the individual with resources

and activities that allow the teacher to act as a guide in the student's own learning process (Morales, Reyes, & Ortigoza, 2019).

However, other research shows that the best technological strategy that teachers are using for the best understanding and construction of student learning is the Google Classroom tool, this application allows creating interactive learning environments, causes motivation for wanting to learn in the students for the different resources and activities it contains, it supports synchronous, synchronous communication and the most important one provides feedback to students in real time (Kraus, Formichella, & Aldarete, 2019). While in Mexico, in a study carried out in Oaxaca, it is described that the Moodle platform is the only one that allows improving the academic performance of the students, they consider that this platform has a focus related to the theory of constructivism and is the one with the most Similarity with an academic model because it allows to combine learning contents that provide epistemic levels for the solution of any problem, whether fictional or real (Montagud & Gandía, 2014).

In other research carried out at the National University of La Plata in Argentina, they concluded that the users who make the most use of EVA in their pedagogical practices are university teachers, using it as a support element to give continuity of learning from anywhere (Nóbile & Enrique, 2015). This study allowed observing that more than 60% of the university student population have improved their academic performance, which is an important factor in optimizing the educational quality of this country. According to another study focused on conducting an analysis of the "Strategic Plan for Research, Development and Innovation for ICTs in Ecuador", it describes that this state was recognized as a country that applies public policies to extend access to new technologies in institutions and the general population in the 2014-2018 period, with the sole purpose of improving educational quality (Erazo, Morales, & Guevara, 2018).

On the other hand, it is necessary to mention in this study that currently the educational system of some countries has been affected by the health crisis caused by COVID-19. According to (Guitart, 2020), 90% of the student population are suffering the temporary closure of educational institutions to avoid massive contagion among students. For this reason, La (UNESCO, 2020) suggests that governments implement the use of ICTs (web platforms and social networks) to create EVA and continue virtual distance education. In this same line of research, it is pointed out that Ecuador is one of the countries of South America that is affected by the COVID-19 pandemic, currently educational institutions throughout the Ecuadorian territory are closed and education is continuing online form. This situation has caused concern in some of the educators by not knowing the right virtual environment to continue teaching from home.

For this reason and due to the health alert of COVID-19, the government together with the Ministry of Education has established that all educational units use the Microsoft Teams virtual platform as a support tool in the teaching-learning process to have communication with students synchronously and asynchronously. Despite the fact that the virtual Microsoft Teams tool allows generating interactive communication between members of the educational community (teacher, students, parents and other educational managers) not all students have computer resources, which affects the continuity and Quality of education.

Therefore, it is necessary that the state invest and provide the student population with computer resources with internet access so that students can interact in the midst of this health alarm in the virtual classrooms created by educators, thus ensuring interactive communication. between the teacher and the student and virtual teaching will be strengthened. Teachers should not forget, that the objective of the educational system is to train solidarity, innovative and fair young people, which is the ideal profile of the bachelor of the Republic of Ecuador indicated in the National Education Curriculum (MINIEDUC, 2016), for this For this reason, educators must innovate teaching processes with different virtual

educational tools that help to better understand learning, thus achieving the complete transformation of the educational model.

V. Conclusions

ICTs have become a fundamental element in the daily life of people, thus transforming various scenarios and especially that of education. The implementation of new technologies in pedagogical practices allows teachers to innovate their teaching process with different digital educational resources that serve for the full development of all dimensions of being in the learner.

The EVAs are digital educational tools that ICTs provide to education, they serve to reinforce distance learning techniques through the design of virtual classrooms, thus achieving synchronous and asynchronous communication between the student and the educator, thus managing to break temporary space barriers.

The use of EVAs in education is having a positive impact on the educational sector, through them it is possible to obtain interactive communication between members of the educational community; In addition, these virtual learning environments provide education with flexibility in time, responsibility and personalization in the construction of student learning; Furthermore, it allows teachers to optimize their pedagogical practices, which guarantees innovation in teaching.

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