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Mobile devices on teaching-learning process for high school level

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Abstract*---The objective of the study is to describe the main characteristics and use of mobile technology as a fundamental element in the construction of knowledge, with the use of technologies the possibilities of interacting with students and teachers are increased without the obligation of physical presence, improving communication between high school students. In today's society in continuous growth, technological progress appears to give clear answers to computer advances and communications. That is why today mobile technologies appear giving way to a new social, cultural and educational model. The article creates theoretical conceptualizations in the use of mobile devices in high school, the current impact on the practice of these terminals in regular education at the Baccalaureate levels.The devices are really becoming tools available to teachers and students in order to improve their teaching practices, consult, research and access information from anywhere on the planet at any time in all sectors of society.*

Keywords*---communication, educational innovation, learning strategy, mobile devices, ICT.*

I INTRODUCTION

In a technologically globalized world, it is necessary to adapt to the changes that education demands. For this, students are now called digital natives and they are more facial to learn through technology. Jiménez (2013), says that since the scientific-technological revolution of the transistor and the development of Information and Communication Technologies (ICTs), globalization has become a driving force in the development of these technologies that have been consolidating the information age and the knowledge society. This approach implies a lot for today's society, but in a great way in the educational field especially because it allows us to use technological tools for the benefit of students.

In some educational sectors, mobile devices are not used, as some authors say, it is evident in research that these devices are underutilized in the teaching-learning process; they developed an object of mobile learning in order to enhance the development of basic skills that generate environments for interaction with students (Basantes*et al*., 2017; Suryasa*et al.,* 2018).Because in recent years, the use of mobile devices (mobile phones, portable audio players, personal digital assistants, GPS navigators, tablets, digital cameras, etc.), has increased

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considerably, it is important to have methodologies and tools that allow specific usability studies for applications developed for these types of devices (mobile applications) (Enriquez & Casas, 2014).

This speed is also observable in the labor and academic-student world, which, in constant change, demands from universities the training of autonomous professionals, who constantly update their knowledge and skills to meet the needs, also dynamic, of society (Castro& González Palta, 2016).The evolution of Information and Communication Technologies also called (ICT), has given education new educational scenarios to improve and promote the cognitive development of students adapting to the educational needs of certain students (Suryasa, 2019) states that the challenge Resides, then, in the fact that ICTs function as an impulse for incremental changes and as a catalyst for radical changes that impact the cultures of schools and subjects. However, it is necessary to establish an adequate use of ICT and encourage teachers to create their own teaching resources, based on the characteristics and needs of the student, fundamentally an adequate instructional design to generate self-learning and achieve learning achievements (Ausin*et al.*,2016).

In the educational field, Information and Communication Technologies provides a set of tools, resources, documents, formats that help improve the teaching strategies of teachers and build knowledge to students using virtual classrooms, mental games, online assessments, 3D virtual environments, in order to create innovative learning experiences, in order to improve the preparation of the educational community in general (Briede*et al.*,2015; Rinartha*et al.*, 2018).In some scenarios, strategies have been created to incorporate mobile devices into the educational process, giving responses and guidance to teachers from the planning, guiding them where and at what moments of the educational process they can be incorporated into and out of the classroom (Almeida, 2013). The use of strategies allows the teacher-student actors to understand these devices are means that support and facilitate the construction of meaningful learning.

The motivation to learn plays a fundamental role in any field of study, and the use of well-conceived mobile devices is an important contribution to the motivation for learning in the new times. The design of virtual educational environments makes the teaching-learning process focus on the student, who is the protagonist of their training, so it is necessary to contribute to the development of critical and innovative thinking and work in a collaborative environment. Using them to improve learning involves designing suitable activities such as the realization of projects or collaborative works that contribute to facilitating the student's work in a double sense: on the one hand, encouraging their individual work, and on the other, stimulating interaction with their peer's group (Fiad& Galarza, 2015).

Mobile deposits enhance language learning, not only improving the native language, but also helping to know and interact with other languages, hence strategies have been developed to achieve motivation in English language learning (Rinartha&Suryasa, 2017).ICT offers a wide range of possibilities and its nature is very varied. Virtual laboratories are framed in what is known as Virtual Learning Environments (EVA) that, taking advantage of the ICT functionalities, offer new contexts for teaching-learning, free of the restrictions imposed by time and space in face-to-face teaching and are able to ensure continuous (virtual) communication between students and teachers (Fiad& Galarza, 2015).

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This current reality and technological progress allow students to have better management and use of digital media through mobile devices. As mentioned (Chen, 2010) this device is an effective tool for cognitive change available at all times. Each specific component that is created for the students, represents and externalizes the creative capacity of the human being so that we can all access this device.

II MATERIALS AND METHODS

The research design, which has been used, is descriptive in nature, where the keywords were established for the search of information in different indexed journals and national and international databases with the aim of demonstrating that the use of the devices mobiles contribute significantly to the teaching process of high school students (Hernández*et al.*,2010). Itconstitutes a study under the inductive - deductive method, in which bibliographic research was used to support experiences in learning with mobile technology.

III DISCUSSION

Itmay seem, a priori, that there is no correlation between ICT and technology. However, one cannot understand one without the other. Understanding the ICT phenomenon requires contemplating the three fundamental elements of its historical evolution and which we will develop throughout this section: the development, progress, and impact of technology. Each of them contains a small hermeneutic of meaning for culture (Campos Martinez, 2015).

The human being has been evolving since times ago, in those inventions that have marked history in their own learning. According to (Campos Martinez, 2015). The history of the human being is built on pillars of major technological events - milestones: the conservation of fire (790,000 BC); the language (30,000 BC); agriculture and plowing (8,500 BC); changes in agriculture and livestock and transport on animal traction and on water (7,000 BC); the treatment of metals (4,000 BC); the invention of the wheel (3,500 BC); the potter's wheel (850 BC); the invention of the first war machines (450 BC); the printing press (1,440); the incandescent lamp (1897); penicillin (1928); PAOC and contraceptive methods (1,930); the computers (1,940); and, the newest thing, Internet (1,960), to mention some of the most outstanding.

It is more evident that industry and technology have been linked since their origins go hand in hand in their evolution: *The semantic and procedural enthronement of communication in modern societies transcribes the technological contribution to a culture in which* the *industry relieves to other social institutions in the production of symbolically mediated experiences* (Aguado, 2003; Suleiman, 2017).The enduring experiences, mostly occur through technology, this constitutes a very particular feature of today's society and even more of the students.

IV MOBILE DEVICE

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Nowadays, thanks to mobile devices, you can interact, relate, spread knowledge worldwide. According to (Arroyo, 2012), he says that mobile devices are always used to be connected, iPods and MP3s to listen to music, video consoles to play and, lastly, electronic books that fit entire libraries but the size of a thin book of pocket. At present, these devices are much more operative and of smaller size but have been improved in storage capacity and in virtual environments that allow a better evaluation and use of them.

Mobile devices are useful tools for society, through this, you can message, call, browse, investigate, etc. Being an essential device for the human being, these teams were usually too large, but the technology advances, making them portable and even intelligent, that is, smaller, that fit in a person's hand. That is why the vast majority of individuals have access to these tools that make life easier (ChacasaguayChimbolema& Suarez Baque, 2017).

Since each person is dissimilar and this technology is very accessible for acquisition, each person adapts to the different models, colors, capacity and price, so this tool is important for high school students in their academic performance, even more so for teachers to Improve your learning strategies with students. Below we can visualize a graphic representation of the mobile learning model according to (Chen*et al.*,2003). In Figure 1, the mobile learning model is observed.

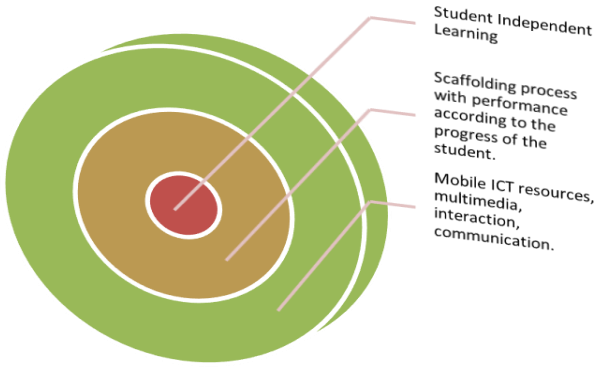

Figure 1: Representation of the mobile learning model

Source: (Chen*et al.*,2003)

Types of mobile devices

There are currently numerous mobile devices, but not all of them can be used for educational purposes since one of the main features is easy to access to the internet, among which we mention the following:

- ***Smartphone***

As of the 20th century, cell phones have presented changes in their internal structure, so today the Smartphone appears rioting the new digital era. According to Muñoz (2014), they are one of the most everyday mobile devices; since its appearance in the late 1990s, it has evolved to the current format with a clearly tactile vocation (p. 34). Now, due to the low cost, most human beings have a cell phone for personal use.

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- ***Tablet***

It is very useful computer equipment for its agility to transport, handling and interact with its programs. According to (Jurado *et al*., 2019; Muñoz, 2014) "They are light notebook-sized computers designed to be operated using a touch screen" (p.35). Sometimes these devices have a significant degree of use in primary school students because of their easy handling and connectivity in their graphic environment.

- ***Laptop***

Computer equipment of greater advantage over other equipment, currently its use is prioritized in all social fields. According to (Iglesias, 2017), he mentions that a laptop or laptop is a PC designed to be used in more than one place, that is, mobile. This is achieved thanks to a battery that is recharged using electric current. The consumption of each of its components or programs is very important since this determines the autonomy and its correct handling for better functioning.

The use of ICT in education

The world is global in terms of technology and education has to go hand in hand with it, these tools help us in the teaching strategies so that the teaching-learning process is in a dynamic, harmonious way that students feel identified with these tools since they coexist with daily technology and take advantage of it in a meaningful way. It can be established that the Information and Communication Technologies (ICT), are a set of developed technologies that are available to people, with the intention of improving the quality of life allowing different managements with the information we handle or that we have access, so that in addition to managing it (receiving-issuing-processing it), we can store it, retrieve and manipulate it, that is, add content, etc., in terms of actions (López, 2013). Below is a diagram of the FRAME model, according to (Ally &Samaka, 2013). In figure 2, the diagram of the FRAME model is observed.

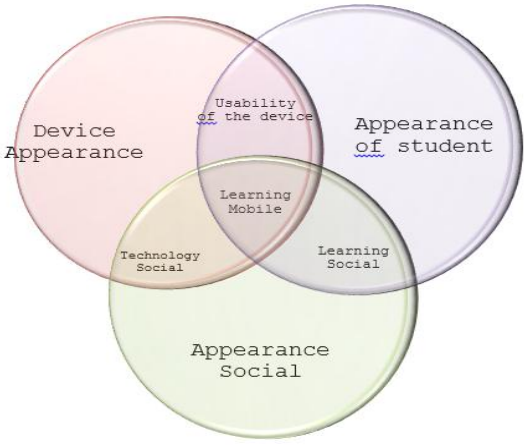

Figure 2: Frame Model Diagram

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Source: (Ally &Samaka, 2013)

Types of teaching learning strategies

Teaching learning strategies allow and facilitate teaching work, it helps us to have clear objectives regarding the teaching-learning process for this we have here two types of teaching-learning strategies.Two main lines of work initiated since the 1970s can be identified here: the approach imposed that consists in making modifications or arrangements in the content or structure of the learning material; and the induced approach that focuses on training the apprentices in the direct management and by themselves of procedures that allow them to learn successfully autonomously (Díaz & Hernández, 2002).

The first one that is the approach imposed can be defined as aids that are provided to the apprentice to intentionally facilitate deeper processing of the knowledge acquired with the help of the teacher.The second, which is the induced approach, includes a series of tools that the teacher gives to his students so that they produce their own knowledge, both strategies are good since they seek meaningful learning.

Innovation

The concept of innovation, according to (Zaltman*et al.*,1973), refers to three interrelated uses. Innovation in relation to "an invention", that is, the creative process by which two or more existing concepts or entities are combined in a novel way, to produce a previously unknown configuration. Secondly, innovation is described as the process by which an existing innovation becomes part of a user's cognitive state and behavioral repertoire. And finally, innovation is an idea, a practice or a material artifact that has been invented or is considered as a novelty, regardless of its adoption or non-adoption. From a broad perspective. (Carbonell, 2001; Gamez*et al.*, 2019), defines innovation as a series of interventions, decisions and processes, with a certain degree of intentionality and systematization that try to modify attitudes, ideas, cultures, contents, models and pedagogical practices.

Different classifications of innovations have been made according to their content when they have been associated with educational changes. Following (Elmore, 1990), we can distinguish between structural changes: they affect the entire education system or the configuration of the different levels; curricular changes: related to the design and development of the curriculum, with the teaching strategies, with the components of the curriculum (changes in curricular materials, use of new teaching approaches); professional changes related to the training, selection and professional development of teachers: social political changes: they affect the distribution of power in education and the relationship of social agents with school education.

Research on the use of mobile devices in the teaching-learning process

Of course, there is research on the use of mobile devices in the teaching-learning process, given this virtue (Cataldi*et al.*,2012) in questionnaires made to teachers and students obtained answers such as 60% of teachers use the basic functions of the cell phone and that it is an object of daily use and that the level of knowledge is quite acceptable.The main reason why they use the cell phone 92% indicated that it is for work reasons, but also 62% use it to check their daily agenda via email.

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These devices use wireless connections that facilitate access to information as well as other configurations that are used by students. According to (ChacasaguayChimbolema& Suarez Baque, 2017) in their survey of students about the use of mobile devices, types, and browsing of the internet and how often it is used, it was determined that students currently at 87.28 % have a mobile device in their homes, and the type of device most used are the Smartphone and Laptop at 57.80% and 14, 91% where the other minority have other mobile devices in their possession.

Technology-mediated resources

Virtual environments are the educational relevance of the moment because it allows you to interact with others without having physical contact. According to (Ramirez Montoya, 2009) these technological resources are being integrated into distance learning, multimodal, combined or *learning environments*. The use and possibilities that may occur are directly related to their learning and promotion, using creativity and the design of the graphic environment of the platform so that students are friendly and reliable.

Various studies have analyzed the use of technologies by students even more in the Baccalaureate. According to (Molina Gómez*et a.,* 2015) in 2003 Naval, Sádaba and Bringué conducted an investigation in this regard and found that the main reason that young people give their parents to have a computer and the Internet is the usefulness of the study. However, the main use is linked to leisure and parents know it. In this study, fathers and mothers said that computers and the Internet are a useful tool for the studies of their children, but they see that their sons and daughters do not take advantage of these advantages and use it more - or only-as leisure. They believe that "the Internet does their jobs and they really don't learn." One aspect that negatively influences the family's vision, regarding the use of the mobile phone, is the terminology used in the messages, the SMS language has abbreviations, which increase the number of misspellings.

Advantages of mobile devices

With access to mobile devices, students have access to information from all over the world, this technological tool must be implemented in order to obtain information and create meaningful global learning, according to (Basantes*et al.*, 2017) “The growth of the use of mobile devices is a reality that must be used for learning in order to respond to the educational demand of the 21st Century” (p.2). It is a tool that will be of great help to the teacher because the educators of now handle it well and can take advantage of it in the field of research or when addressing any topic.

Disadvantages of mobile devices

Students are in full development and in a stage of curiosity, of manipulating, of learning beyond what they already know because of this according to (Díaz, 2017) “The teacher cannot assume that students alone will use appropriate way this technology, so you must model ”(p.69). This means that students take mobile devices not to get information since they misuse it and this instead of helping in knowledge serves as a distraction in the

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teaching-learning process. Another disadvantage is that not everyone has access to the internet since the internet is not widespread in society. Then, with what was analyzed, a graph with the advantages and disadvantages of the use of mobile devices was prepared, which is shown in Figure 3.

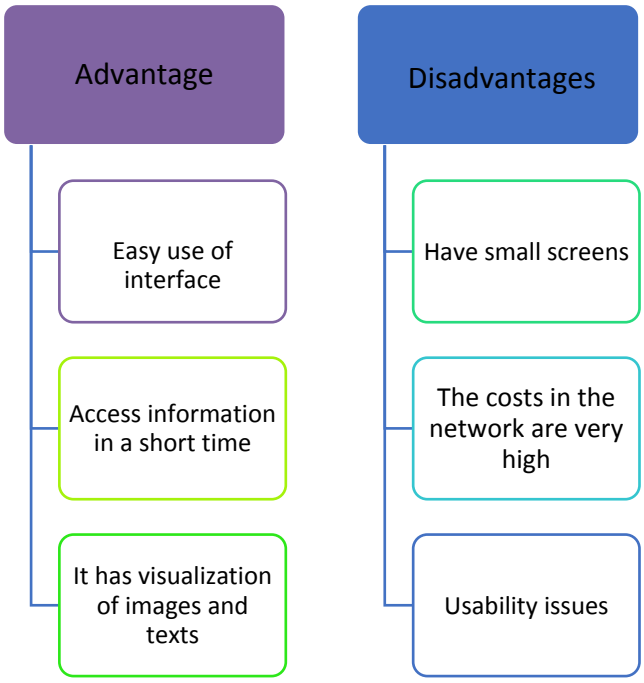

Figure 3: Advantages and Disadvantages of mobile devices

It can be said that the use of a mobile device is a tool that helps in the teaching-learning process since it is a strategy to which teachers must adapt because we are in the digital age and this allows the development of skills, abilities and attitudes in teachers and students, this motivates students as the classes are more dynamic and interactive where the main objective is for students to learn with the tools they handle and learning is significant.

Human beings learn in different ways, which is why teachers must implement different methodological strategies that allow students' cognitive development. A strategy is the set of activities, techniques, and means that are planned according to the needs of the environment and today our environment is digitized, in each place where we go we can visualize that each person has a mobile device, which we can take advantage of to the maximum as a learning tool in students.

V CONCLUSION

Teachers and students are in a process of transformation in the educational process and are looking for ways to adapt to the demands of today's world, where students are digital natives and have a knowledge of information in their hands that they should take advantage of; without wasting technology always with the guidance of the teacher and parents, so that they can produce true scientific knowledge.

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