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Virtual education as a training strategy in students

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Abstract*---*Education as a strategy Training consists of including in teaching processes, innovation methodologies that allow the development of access routes to education in different social environments. The present study detailed the virtual teaching methodologies or modalities applied in the training process of the students, using bibliographic and deductive-inductive research as a method of data collection. Allowing the acquisition of new knowledge through innovative themes that guarantee the quality of virtual programs, such as the incorporation of information and communication technologies. The function of each of the training-didactic principles implemented in a virtual learning environment was detailed, as well as the types and tools of each of the resources associated with these environments and the types of activities that can be used with their respective advantages for use in such virtual environments. The evaluation of a virtual learning environment is necessary to verify if the knowledge imparted is being adequately captured by the students, for this reason the types of evaluation applied in the virtual training processes were detailed.

Keywords*---*Virtual education, Training strategy, Innovation, Virtual learning environments

I. Introduction

Currently, digital tools and their technological innovation are present in aspects of everyday life (Aretio, 2019). For the educational sector, the use of these technologies provides alternatives that offer access to education from a perspective where physical limitations are not an impediment for society (Camacho, 2016). In first world countries such as the United States, England and Spain, the virtual modality is widely used in their educational methodologies, obtaining satisfactory results in the face of student demand, becoming a useful tool that offers quality and alternative education worldwide (from the North, FUC, 2005).

Internet access in a population is a service that conditions the correct development of virtual tools (Trejo, 2013). Countries like Ecuador experience shortages of technological resources for academic training as a result of factors such as their social culture, where a minority group of professionals, university students, and entrepreneurs regularly use virtual educational platforms (Torres, 2002).

In Ecuador virtual education is currently limited to higher education, offering programs with virtual modality for 2016 in 11.3% of the total coverage of this educational sector (Rama, 2016); to later show an increase of 13% in this non-face-to-face modality, according to the National Information System of Higher Education by 2018 (Undersecretary of Academic Training, 2018). Manabí is one of the provinces with institutions that offer virtual academic programs, as is

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the case of the Universidad Técnica Particular de Loja (UTPL), being the first educational institution to offer non-face-to-face studies in the country.

Because virtual education provides flexibility in teaching processes, it has become an essential method of learning (Varón, 2012), which is also subject to two important factors that determine its effectiveness: Quality of Internet service and student responsibility; generating a global problem that has gone viral today among students (Cobeña & Cedeño, 2016). The objective of this bibliographic research is to detail the methodologies and modalities used in the training process of students in virtual education.

II. Materials and Methods

For exceptional reasons such as the current worldwide health emergency, this research is only bibliographic in nature and the use of materials was nil. The bibliographic review was used, according to (Ocampo, 2017), this bibliographic or documentary research method is one that "uses texts as primary sources to obtain their data and focuses, rather, on the reflection and criticism of certain texts and the concepts raised in them". The research is characterized by obtaining already processed data such as documents, books, magazines, etc., used as a source of information to prepare this document.

The Inductive-deductive method was applied, according to (Jimenez & Jacinto, 2017), this method is based on logical reasoning strategies. Using induction, a general conclusion is reached from particular data collected, giving way to deduction as a method that allows logical conclusions to be drawn from said generalization, thus forming an enriched dialectical unit. This will allow the construction and writing of knowledge from primary sources of information.

III. Analysis and Discussion of the Results

Education as a training strategy

According to (Montoya, 2018), the function of education in the training of people is to include in the teaching processes innovation methodologies that allow the development of access routes to education in different social environments.

Innovation in education

Innovation refers to the process of creating something new that provides a significant improvement in the result. In the educational approach, this term affects making changes in the formation of teaching programs, which in turn respond to obtaining effective and quality results (Peñalvo, 2016). Innovation in educational processes is related to the changes that exist in the social scenario, such as the incorporation of information and communication technologies (ICT) (Campos, 2016). (Guzmán, 2016) Indicates that ICTs "will allow universal access to education, equality in instruction, quality learning and professional development."

It is important to emphasize that there is no guarantee that the implementation of these tools acquires and / or improves student-teacher knowledge, since the adoption of these proposes several challenges, mainly that of training in their use for the development of skills and skills that allow the professional exercise of these educational tools (Guzmán, 2016). Furthermore, the study of ICT represents only one line of investigation of virtual learning environments (VAS).

Virtual learning environments (EVA)

(Padial, 2013), defines EVA as "a website that has tools to support face-to-face educational activities or as the main strategy in the organization and implementation of online courses".

Formative-didactic principles in an EVA

The didactic principles are those used in the virtual teaching-learning process, which serve as a support to the education system and are detailed in figure 1.

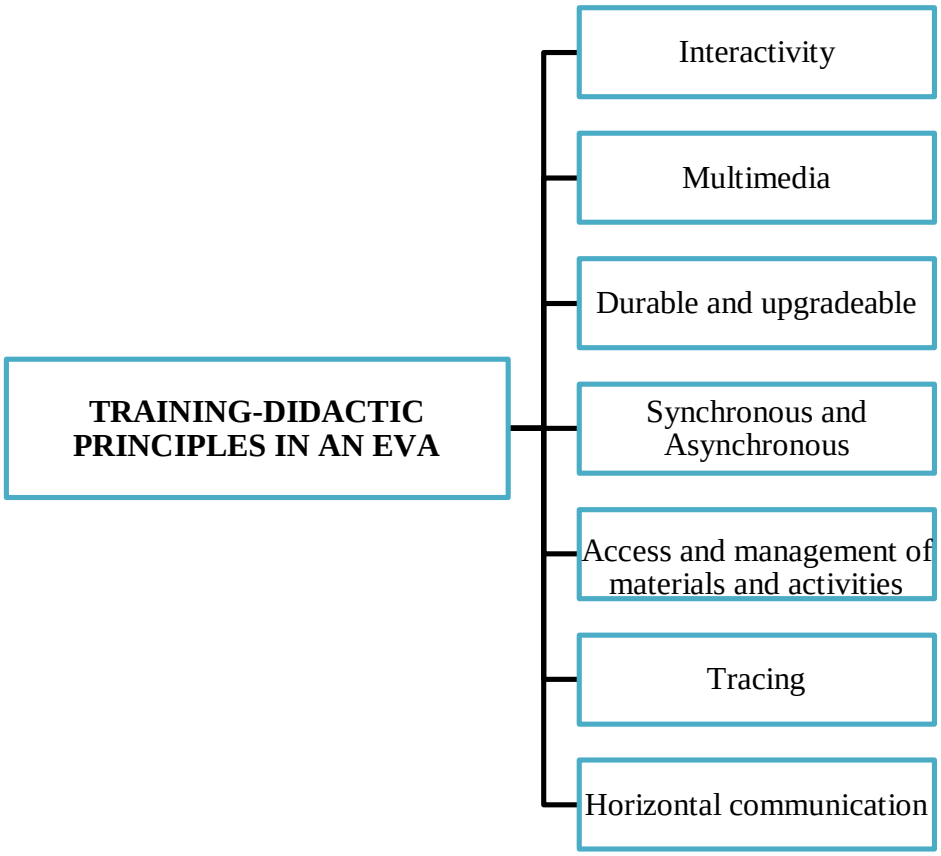

Figure 1. Teaching principles in an EVA

Source: (Casal, 2004)

These training principles have evolved from the use of ICT, using sound, visual and interactive resources, which are strategically included in virtual courses (Cuevas, 2018).

Resources associated with an EVA

The resources present within a virtual learning environment are those essential materials in educational platforms for virtual teaching in Figure 2.

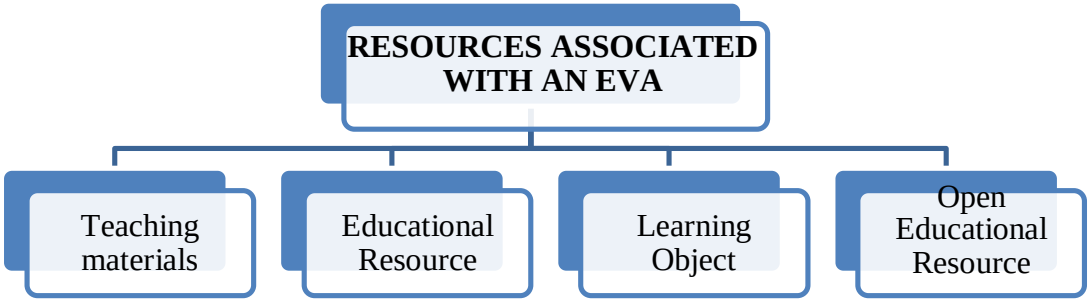

Figure 2. Resources associated with a Virtual Learning Environment (EVA)

Source: (Prado & Doria, 2015)

Design of learning activities Learning

Activities are used in order to acquire or build knowledge through the use of the contents of one or more topics, in the different virtual, face-to-face and bimodal learning modalities. The design of these activities in virtual media is an essential part of acquiring skills in order to create knowledge in the student, especially in a design focused on learning (Belloch, 2010).

Types of activities that can be used in an EVA

For the development of activities in learning environments, you must first choose the content that is considered relevant, functional and applicable. Then you should assess what type of learning activity ideal for such content. Figure 3 shows some activities that can be used in virtual learning environments, in order to generate new knowledge in the participants and reinforce what they already have (Universidad Técnica Nacional UTN, 2015).

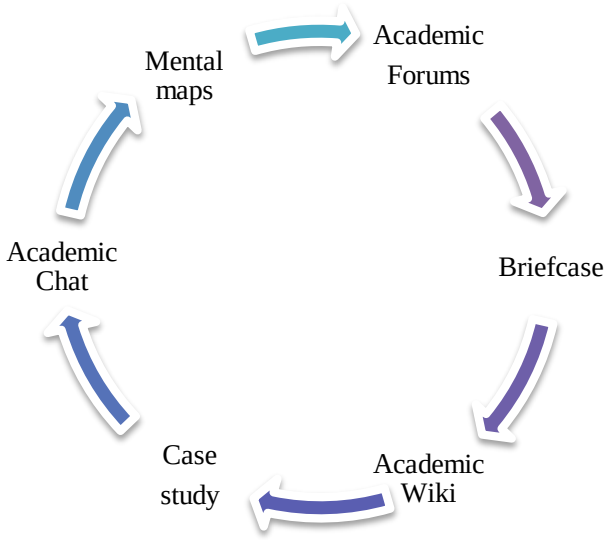

Figure 3. Types of activities in an EVA

Source: (Belloch, 2010)

Evaluation of a Learning Environment

In order to verify the learning methodologies applied in an EVA, it is necessary to implement an evaluation system focused on the student. In this way, various evaluation proposals have been integrated into the virtual modality, those detailed in Figure 4 (Garcia & Ramirez, 2017).

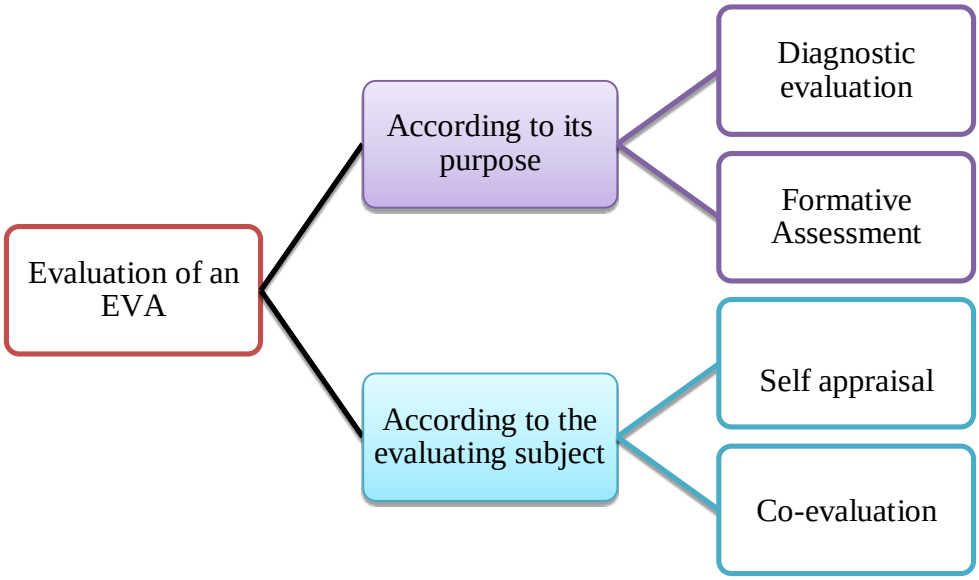

Figure 4. Types of evaluation in an EVA

Source: (Gracia & Ramírez, 2017)

Training-teaching principles in an EVA

To facilitate learning in virtual environments, it is important to implement the following training principles that manage to guide participants in the execution of virtual educational programs (Padial, 2013). Some are detailed in table 1.

Table 1. Function of teaching principles in an EVA

TRAINING-TEACHING PRINCIPLES IN AN EVA	
PRINCIPLE	FUNCTION
Interactivity It	Allows participants to be more active and engage in their own learning, this is achieved through effective design of tools that ensure the exchange of information, experiences and knowledge.

Multimedia	Incorporate resources such as texts, images, videos, websites, among others, into the content to be produced.
Durable and upgradeable	The important update of the information issued by the mediator within the virtual environment.
Synchronous and asynchronous	Adapt the virtual environment to the needs of the participants when carrying out the tasks and activities, either at the same time and anywhere (synchronous), or in the time that they choose (asynchronous).
Access and management of materials and activities	Availability of activities and materials through the network.
Follow-up	Establish delivery times so that the participant can carry out their tasks and the mediator can accompany the processes
Horizontal communication	Have a space of equality between student-mediator.

Source: (Casal, 2004)

Resources associated with an EVA

Teaching materials are commonly used in the educational environment to facilitate the acquisition of concepts, abilities, attitudes and skills that facilitate teaching and learning, fulfilling the following functions (Muñoz, 2012):

- ✓ Provide information that motivates, promote and generate interest in the content to study.
- ✓ Guide the learning process through the development and exercise of skills in those involved.
- ✓ Assess knowledge.

Table 2 shows the types and tools of a Didactic Material

Table 2. Types and Tools of a Didactic

	Types	Purpose	Tools
Material MATERIAL DIDACTIC	Presentations, text documents, videos, animations, multimedia, digital notebooks, websites, concept maps and mental.	Show students the content of a specific and complete subject using the mentioned resources.	Slideshare, Power Point, Prezi, Word and PDF documents, Power Point, Concept and mind maps, Images, Websites, Portfolio

Source: (Muñoz, 2012)

Educational resource according (Rabajoli, 2012), mentions that they are those materials implemented for the development of educational activities, in order to provide support and motivate the student during the learning process. According to (Delgado, 2019), the creation of educational resources in the form of a "learning object", are shown in table 3, these allow for their standardization, facilitating their use and reuse, the set of digital resources being self-contained and reusable for educational purposes. It is also made up of three elements:

✓ Contents: Different materials such as texts, videos and images can be used to complement the elaboration of the themes of a virtual educational model.

✓ Learning activities: They serve to help the student with the content learned, through activities such as self-assessment questions and practical activities related to the same learning object.

✓ Contextualization elements: They allow the student to have a guide that facilitates the search and selection of anlearning element appropriateto supply a given educational need. Some are detailed below:

- Summary
- Questions or hypotheses
- Credits / copyrights
- Introduction
- Objective

Table 3. Types and Tools of a Learning Object

	Types	Purpose	Tools
LEARNING OBJECT	Packages with elements such as text, image, videos, assessment exercises	Projecting to Students complete and updated information on a specific topic	ExeLearning, Cuadernia, Edilim

Source: (Delgado, 2019)

Open Educational Resource (REA) They are didactic, learning and research elements of free public access or with an open license in different media, they also provide a strategic opportunity to improve educational quality, exchange of knowledge and increase capacities (UNESCO, 2018).

Table 4 shows the different types and tools of Open Educational Resources (OER).

Table 4. Types and Tools of a REA

	Types	Purpose	Tools
OPEN EDUCATIONAL RESOURCES (REA)	Presentations, text documents, videos, animations, images, multimedia, movies, blogs, website.	Provide various resources that encourage the development of a theme and that is applied for an educational purpose	YouTube, Slideshare, blogs, websites

Source: (Universidad de la República Uruguay, 2018)

Types of activities that can be used in an EVA

Academic Forum, (Pepa, 2006), defines it as "a virtual communication scenario used to promote debate, agreement and consensus of ideas". It also positions technological elements, through appropriate procedures that favor the establishment of spaces in order to promote learning and critical knowledge through the agreement and construction of virtual education.

Advantages:

- Allows students to exchange ideas and knowledge at any time.
- It allows remote communication in any period of time (asynchronous).
- They allow a greater degree of reflection than that provided by the other participants.

Academic Chat, (Piquer, 2012), mentions that an academic chat is that “useful and dynamic means that allows us to implement it in any type of approach, technique or method” and that works synchronously, allowing participants to discuss and understand the topic debating in real time on the Internet; The way to use with respect to the forums is different, since interacting and responding in real time means that the participants are steeped in the subject to be debated.

Advantages:

- It has the same virtual space and time frame (synchronous).
- It promotes the development of creativity and communication skills.
- Encourage virtual group work and collaborative learning.

Academic Wiki

For (Jiménez, 2014) "It is a form of website where it is accepted that users create, edit, delete or modify the content of a web page, interactively, easily and quickly", having as fundamental use the benefit and create websites quickly and efficiently, showing ample free will to the user through a very simple interface. There is currently a wide range of tools for academic wikis, using them as a basis for collaboration, documentation and data collection; Wikipedia is a clear example.

Advantages:

- It has a more dynamic learning method, where it exposes normal or moving images, with sounds, voice and texts in different ways.
- It allows to improve and create pages quickly, facilitating the user's work through a very simple interface.
- It works very quickly in updating content.

Portfolio, defined by (Quiroz, Ramírez, Nava, & Rodríguez, 2018), as "A strategy that incorporates elements and activities in order to know and evaluate the needs of the real world and promote skills for solving problems". In virtual mode, it is an integrating resource of the teaching-learning method based on ICT, whose purpose is to contribute to the development of educational innovation.

Advantages:

- Promote creative thinking based on learning processes, incorporated in the development of virtual educational skills.
- It guides the evolutionary process of students in the field of knowledge throughout all their lived learning.
- It allows to combine the student's informal learning on the web with respect to their formal learning activities, creating bridges between both contexts.

Case study, according to (García, 2014), is a case study as an educational tool facing complex circumstances created in real problems and close to it, developing the analysis of a problem and generating solutions from the student perspective.

Advantages:

- Search for optimal solutions for the student, regardless of whether or not it is the appropriate response to the case under study.
- Study the initial questions of the case, scenarios, facts and alternatives in a way that encourages the different options to solve it.

Mind Maps, these seen by (Rojas, Vargas, & Burneo, 2014), are those learning strategies that make it possible to graphically organize and represent knowledge based on different educational environments, since they create reflection and research processes for the student, achieving thus stimulating their active learning.

Advantages

- Provide a complete overview to the user, from a more practical perspective for exploration or navigation.

- They develop skills such as concentration, logic, creativity, imagination, association of ideas, and memory.
- It offers the possibility of including various knowledge spaces through the generation of maps called "knowledge models".

Evaluation of a Learning Environment

According to its purpose:

Diagnostic Evaluation:

This type of evaluation aims to determine the knowledge and skills of students as well as the degree of use of technologies, since it is carried out at the beginning of the learning processes. learning (Larroulet & Tononi, 2020).

- Formative Assessment; It is developed throughout the entire educational program and its main objective is to support the student in their learning process, since this type of evaluation shows the deficiencies and errors that the student acquires during the process and that it is important to correct them to achieve the quality in virtual mode (Lezcano & Vilanova, 2017).

According to the evaluating subject: evaluation

- Self-; This class of evaluation is applied by the student himself and helps to verify the type and degree of learning with respect to the objectives set for the training program, through the set of self-correcting activities that provide the necessary solutions to the mistakes that the student has. The self-evaluation in an EVA is carried out by means of a software module with access to a database that stores all the information of the training programs that have been taught (García-Beltrán, Martínez, Jaén, & Tapia., 2006).

Co-evaluation; Co-evaluation is defined as the mutual evaluation between students or other people; In virtual environments it is known as the collaboration of the student attached to the evaluation carried out by the teacher through significant learning processes, which values the performance and quality of the knowledge acquired, as well as the level of achievement achieved based on the learning objectives (Prieto & Ballestero, 2012). The objective of the learning activities is to build knowledge through the use of the contents of one or more topics, in the different learning modalities. Assessment systems are necessary to keep track of students, and thus be able to verify that the learning methodologies applied in an EVA are being properly received.

IV. Conclusions

Virtual education has become an essential method of learning and its effectiveness depends on two important factors: quality of internet service and student responsibility. Innovation in educational processes is related to the incorporation of ICTs, which are part of virtual learning environments. The EVA have tools or resources that become the main strategy in the organization and implementation of online courses, achieving that the training-didactic principles have improved from the implementation of ICT in the training processes and serve to facilitate learning in virtual environments.

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