La modalidad B-learning como alternativa de un ambiente de aprendizaje innovador

Blended learning as an alternative to an innovative learning environment

O modo B-aprendizagem, alternativamente, uma ambiente de aprendizagem inovador

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Resumen

En este artículo se presenta un estudio a partir del cual se definen las características con las que cuenta la modalidad *B-Learning* situándola como una alternativa innovadora para responder a las principales necesidades de un programa educativo presencial que permitan ofrecer mejores condiciones y más oportunidades para el aprendizaje. Se constituye así un análisis descriptivo basado en técnicas cuantitativas y cualitativas, orientado a justificar la pertinencia de la propuesta de implementación de esta modalidad en un programa presencial.

En un primer momento se hace una descripción de las herramientas tecnológicas existentes para la educación a distancia, se ubicaron como algunas de las más representativas: *Claroline, Atutor, Dokeos, y Moodle.* Identificado *Moodle* como la más idónea en cuanto a las condiciones funcionales para la implementación. Se elaboró posteriormente un diagnóstico del contexto escolar en lo referente a la calidad del servicio educativo y a las necesidades y requerimientos

para la implementación de un programa académico. Encontrando que los estudiantes perciben que se les brinda un buen servicio educativo, sin embargo no se sienten del todo satisfechos con el desarrollo de la labor docente. Así también a pesar de que la institución cuenta con espacios grandes, éstos son insuficientes en cantidad, lo que ocasiona que se utilicen otros espacios como aulas improvisadas. Se manifiesta un uso desorientado que algunos profesores dan a los materiales didácticos y herramientas tecnológicas para el aprendizaje. Finalmente a partir de la descripción y el diagnóstico se definieron las características que debe conjugar el diseño de una propuesta que integre la modalidad *B-Learning* a un programa educativo, destacando las ventajas que esto podría ofrecer en lo que se refiere a la optimización en el uso de recursos y espacios, además de la posibilidad de poder ampliar la cobertura educativa.

Palabras clave: Educación a distancia, Gestor de Contenidos Educativos, B-Learning, Ambiente de Aprendizaje, Servicio Educativo.

Abstract

This article presents a study that defines the characteristics of *B-Learning* placing it as an innovative alternative to meet the main needs of a classroom education program to provide better conditions and more opportunities for learning. Thus constitutes a descriptive analysis based on quantitative and qualitative techniques, aimed to justify the relevance of the proposal's implementation of this method in a face-to-face program.

It first makes a description of the existing technological tools for distance education, some of the most representative: *Claroline*, *Atutor* and *Dokeos*, *Moodle*. Identifying Moodle as the most suitable in terms of functional conditions for implementation. It is subsequently made a diagnosis of the school context in relation to the quality of the education service and to the needs and requirements for the implementation of an academic program. Finding that students perceive that they are given a good educational service, however do not feel entirely satisfied with the development of teaching. So while the institution has large spaces, these are insufficient in quantity, what causes that they are used in other areas such as makeshift classrooms. Manifests a disoriented use that some teachers teaching materials and technological tools for learning. Finally from the description and diagnosis were defined the characteristics that must combine the design

of a proposal that integrates the mode *B-Learning* to a curriculum stressing the advantages that this could offer in regards to the optimization in the use of resources and spaces, as well as the possibility to expand educational coverage.

Key words: distance education, Educational Content Management System, B-Learning, Blended learning, learning environment, educational service.

Resumo

Este artigo apresenta um estudo a partir do qual os recursos com que conta o modo B-Learning situando-o como uma alternativa inovadora para atender às principais necessidades de um programa de educação em sala de aula que permitirão proporcionar melhores condições e mais oportunidades para definir o aprendendo. Assim, constitui uma análise descritiva com base em técnicas quantitativas e qualitativas que visam justificar a relevância da proposta de implementação desta modalidade em um programa de sala de aula.

No começo uma descrição distância existente ferramentas de tecnologia da educação é feito, eles classificaram como alguns dos mais representativos: Claroline, ATutor, Dokeos e Moodle. Moodle identificado como o mais adequado em termos de condições funcionais para implementação. uma avaliação do contexto escolar é então desenvolvido em termos da qualidade da educação e as necessidades e os requisitos para a execução de um programa acadêmico. Encontrar que os alunos percebem que eles recebem um bom serviço educativo, no entanto eles não se sentem totalmente satisfeito com o desenvolvimento do ensino. Bem, mesmo que a instituição tem grandes espaços, estes são insuficientes em quantidade, causando outros espaços usados como salas de aula improvisadas. um uso desorientado alguns professores dão materiais educativos e ferramentas tecnológicas para os manifestos de aprendizagem. Finalmente a partir da descrição e dos recursos de diagnóstico que deve combinar desenhar uma proposta que integra o modo B-Learning para um programa educacional, destacando as vantagens que pode oferecer no que diz respeito à otimização definiu o uso de recursos e espaços, bem como a possibilidade de expandir a cobertura educacional.

Palavras-chave: Educação a Distância, Educação Content Manager, B-Learning, ambiente de aprendizagem, serviço educativo.

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Introduction

The challenge presented by universities today is the increase in the demand for income. The increase in students graduating from higher-level institutions causes the number of rejected students to enter a Public University to grow.

According to ANUIES (National Association of Universities and Institutions of Higher Education), in Mexico there are more than three hundred public universities (ANUIES, 2013), it should be mentioned that the universities that have affiliated to this association offer different modalities in The logic of responding to the demands of coverage.

This situation goes up year by year, more and more students are finishing higher education and have as a first option to enter a Public University to continue their studies.

The reason why this happens is because of the insufficient space and infrastructure that public institutions currently have, since without such spaces, their capacity to provide educational services to students is limited. Another condition that also affects is the insufficient financing that institutions receive, this is determinant because without sufficient budget, greater space can not be enabled or grow in infrastructure to provide a better service.

In this vein, distance education emerges as a viable alternative for intervention. This modality allows to offer learning environments through methods, techniques, strategies and means, in which the teacher and the student are physically separated and only occasionally interact face-to-face.

The use of the distance learning model in both the E-Learning mode and the B-Learning mode has been promoted in recent years with two main purposes: to offer one more option to expand the coverage so that more students have the Opportunity to continue their studies and with this decrease the number of rejected candidates; And, on the other hand, to complement the teaching and learning processes of both school and semi-collegiate programs.

Research has been carried out where this modality has been implemented, obtaining good results, such as that carried out by Mariño and Lopez (2007), where they describe the experience of having implemented the B-learning model for the subject of Models and Simulation of the degree program In Systems of the Faculty of Exact and Natural Sciences and Surveying of the National University of the Northeast in Argentina.

Although it is true that research related to the implementation of distance education modalities provides important elements for the development of an academic program, they do not address the aspect of optimization in the use of resources such as: operating costs, investment savings In infrastructure, human resources and time. This has to do with making the most of the resources available to an Institution and giving a good quality of the educational service to the students, using these resources in the best possible way, thus obtaining good results and greater benefits.

The B-Learning model is a model of teaching and learning that combines the sessions in face-to-face with non-face-to-face sessions, unlike the E-Learning mode, which is oriented primarily to non-face-to-face sessions.

The B-Learning modality is considered by several authors as a viable option for education. Fainholc (2006) considers that the B-Learning modality is "a more self-managing and autonomous training strategy on the part of the student as well as closer and pertinent to an individual and group approach in the construction of knowledge". Vera (2008) argues that it is an interesting strategy as it integrates the best pedagogical practices with the latest in technology for virtual learning environments, in addition to extending the educational offer, improving the interaction between the members of a community, and increasing the motivation of The students, among other things.

Considering the above, this article aims to show the B-Learning modality as an alternative in the selection of appropriate means for the educational need, since it is an eclectic model that is composed of methods used in face-to-face education and Functionalities of e-learning or E-Learning, seeking to improve the strengths and reduce the limitations of both modalities and encourage the participation of students as responsible for their own learning.

METHOD

For the application of the field study, students of the engineering career in computer systems of the Technological Institute of Mazatlan Unit II in the state of Sinaloa, Mexico, were taken as population segments, youngsters from 18 to 23 years of age, considering the total of The population conformed for 140 students, since the design of the proposal is oriented to the educational program that attends to that population.

For data collection, a questionnaire was designed based on three main units of analysis: the use of the Web platform, the quality of the educational service and the needs of the institution. This data collection instrument was validated using the Cronbach alpha coefficient. The questionnaire consists of 19 items addressing the main attributes of the variables to be measured.

The analysis of the collected data is processed with measures of central tendency, frequency and percentages for the description of the characteristics under which the proposed modality can be implemented with efficiency and pertinence. On the other hand, we consider the needs detected for the design of a platform in the B-learning mode conducive to the optimization of resources and the improvement of learning processes.

TECHNOLOGICAL TOOLS FOR DISTANCE EDUCATION

Roquet (2006) defines distance education as "an educational system or modality in which one or more students are geographically separated from a teaching center and the teacher, ie both are not in the same physical space, That there is a spatial distance between the two, which determines that these interlocutors to communicate have to do so using means that save that distance. This situation means that flexible and autonomous learning is practiced, that there is a personalized communication and a permanent use of didactic materials, which are prepared by a group of experts supported by an institutional administration. "

Distance education has been evolving since it began with correspondence teaching, going through three stages; The first stage is characterized by the development of printed texts and manuals, which were sent by correspondence; The second stage refers to the integration of audio-visual materials, which consisted of slides, audio-cassettes, videocassettes, among others, in addition to printed materials; The third stage is the integration of the two previous ones but in a digital way,

this is where Information and Communication Technologies (ICT) enter to revolutionize distance education by integrating it into the digital age.

The use of ICTs in education has made great changes, because teaching methods are being reached by technology, since access to information is easier now than decades ago, and there is an immense amount available in network.

For Roquet (2006) the digital era in distance education is characterized by the integration of correspondence teaching and multimedia teaching through ICTs, where teaching materials are no longer delivered in a tangible way (Printed on paper, audio cassettes Videocassettes, slides, etc.) and are delivered digitally or virtually.

At this stage Garcia (2002) also defines it as virtual campus or virtual teaching, based on teaching through computer networks, where all users can interact with each other, either synchronously or asynchronously. In addition, these can have the materials of the modules available at any time, or apply an evaluation test at any time and send it electronically at that time.

This is where two modalities of distance education based on ICTs, which revolutionized the concept of distance learning and which today are the most widely used in universities, companies and corporations, are emphasized: E-Learning mode and B-Learning mode.

EXISTING PLATFORMS

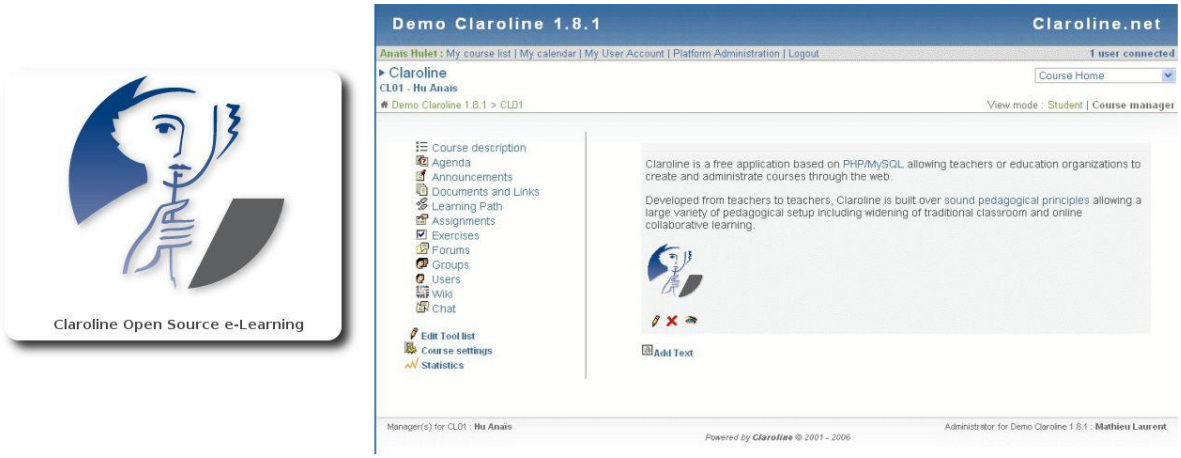
A platform can be defined as a website where users, in this case young students, can communicate with each other, offering media such as forums, chat, video conferences, file sharing, etc. Typically, to access such sites, users are required to authenticate themselves so that they can have different profiles. There are several platforms on the Internet such as Claroline, Atutor, DOKEOS and MOODLE, which are used for the creation and planning of curricular contents, as well as giving attention to the educational community on the internet.

A. CLAROLINE

The Claroline project (Catholic University of Leuven) started in 2000, by the University Pedagogical Institute of Multimedia of the Catholic University of Lovain in Belgium, initiated by Thomas De Preatere, Hugues Peeters and Christophe Gesché. Claroline (see Figure 1) is a software created with open source and distributed under GPL License, allowing to implement

a platform for learning and collaboration online, allows to create spaces for courses, this software is available in several languages and can be downloaded Free and install freely. Claroline is multiplatform since it is based on PHP, MySQL and Apache, can be installed in Windows, Linux or MAC.

Figure 1. Platform "Claroline".



Fuente: Sitio web http://www.claroline.net/

The platform is easy to install and use, allows flexibility to customize and create styles according to the needs of the user, allows the teacher to provide all the tools necessary for the creation and organization of courses. The disadvantage is that you do not have the option to export the courses, it is little modifiable, it has few modules and plugins to download and its customization is somewhat difficult.

B. ATUTOR

ATutor (2002) belongs to the Learning Content Management System (LCMS) group. It is also an open source social networking environment. It is distributed free of charge as free software under GNU license, has been developed and updated in its different versions by the Adaptive Technology Resource Center (ATRC) of the University of Toronto Information Faculty.

Figure 2. Platform "ATutor".

Fuente: Sitio web http://www.atutor.ca/

ATutor has also been designed with the aim of achieving accessibility and adaptability for people with some type of disability. From a technical point of view, ATutor is based on PHP, MySQL and Apache, the system is cross-platform and works on any Linux / BSD / Unix, Windows and MAC operating system.

C. DOKEOS

Dokeos (2010) Belongs to the Educational Content Management (LMS) group. It is an E-Learning platform that allows teachers and students to have access to functionalities to develop administrative and academic activities. Dokeos gathers and integrates all the necessary components for the management, communication, evaluation and monitoring of teaching and learning activities in a virtual space.

Figure 3. Web site Dokeos.

Fuente: Sitio web https://www.dokeos.com/

Dokeos (See Figure 3) allows teachers to easily access system features, manage their documents in word processor, pdf, graphics, etc., without the need for special computer processing.

This platform allows integrating multiple sources of multimedia information: video, audio, and voice. It requires, like the others, an Internet connection that can be dial-up or dedicated. The client program is a common browser (Internet Explorer, Chrome, Firefox, etc.). The Dokeos system is developed in the PHP and HTML language, using as a MySQL database manager a multi-user operating system and an Apache Web server. Dokeos is not free software like other systems dedicated to content management for learning (Claroline, ATutor or Moodle), this offers the virtual classroom service for a cost of profitability.

D. MOODLE

Moodle (*Module Object-Oriented Dynamic Learning Environment*) (Dougiamas, 2001) Is an application that belongs also to the group of Educational Content Managers.

This platform (see Figure 4) allows the creation of courses and websites, with this an educational center, institution or company, can manage educational resources provided by teachers and organize access to these for students, also allowing communication between both.

Figure 4. Web Platform Moodle.

Fuente: Sitio web https://moodle.org/

Moodle is designed and developed based on the philosophy of learning called social constructivist pedagogy, which includes four underlying concepts: Constructivism, Constructivism, Social Constructivism, and Separate and / or Connected Learning.

Moodle is perhaps the platform that has kept the evolutionary line more consistent. This is due in large part to the growth of the user community that supports this system. (See Figure 5).

Figure 5. Moodle evolution.

Fuente: Sitio web https://moodle.org/

There are several technological tools to develop distance education. These tools are mainly focused on software platforms constituted as content management systems, particularly as far as educational content is concerned. The platforms presented in this section share functional features that make them viable options for the implementation of E-Learning and / or B-Learning modalities. According to the description of some of the basic technical characteristics of these platforms, there are conditions that must be part of the context of an educational program in terms of infrastructure and service planning provided by an institution

RESULTS.

CONTEXT OF THE EDUCATIONAL PROGRAM

For an innovative approach to learning to be successful, it requires a series of conditions that change the perspective of traditional education, where the closed and linear control schemes of school administration are broken. For Malbernat (2008) educational institutions must rethink the moments in the classroom, the technological infrastructure they make available to teachers, and the educational resources that are delivered to stimulate students. Casas Armengol (2005) mentions that the problem lies in the rigid and centralized structures that generate difficulties for the implementation of the innovating changes. It is important to take into account the student profile that shows in the results a certain level of digital domain in the use of web platforms and the ease of access to a computer and / or mobile device with internet connection. In this regard, as shown in Table 1, there is acceptable disposition and experience in the management of the platforms as well as access to a computer or mobile device.

Table 1. Ease of access to digital media.

Item	N	Mínimo	Máximo	Media	Xx	Ls	Li
Fácil acceso a una computadora y/o dispositivo móvil	140	3	10	9.23	8.93	9.32	8.55
Facilidad de acceso a internet	140	1	10	8.70			
Uso de la computadora para trabajos escolares	140	1	10	9.05			
Navegación en internet	140	1	10	9.30			

Fuente: Elaboración propia

According to the results, considering the values of Xx and its respective lower and upper limits, it is inferred that students are given access to a computer and / or mobile device, in addition to giving the appropriate use for the realization School jobs and surf the internet, but they have difficulty accessing a connection.

That is, there is a willingness on the part of the student to enter into the use of digital strategies as learning tools, however they do not have all the conditions for their use.

The implementation of innovative proposals such as distance education requires that we face the skepticism generated by the lack of trust due to the lack of knowledge of the advantages offered

by the technological tools that can be used, but for this to be generated The appropriate conditions that include adaptations that go from the educational model, through the physical and technological infrastructure, until arriving at a coordination with the administrative services; Since the lack of congruence between the requirements of this type of proposals and the services offered, which can generate dissatisfaction that results in the demerit of the quality of the educational service.

The quality of the educational service involves aspects such as: availability of teachers, which can be reflected in other aspects such as the satisfaction of students with respect to their performance and the relationships established with it and that allow to improve learning for the achievement of Competencies. According to the above, it is shown in the results obtained in Table 2, that there are some variables that refer to the characteristics of the school context that are above Xx, in this way it is observed that the young person declares to receive good quality in the Educational service offered by the institution, students also feel satisfied with the level of learning achieved and feel that the achievements in the development of the competencies established in the program have increased. However, there is little availability on the part of the teachers for advice or tutorials, besides making little use of the didactic materials available for the students' learning, causing them not to be totally satisfied with the development of the teaching practice in the Which refers to the use of digital media.

Table 2. Quality in the Educational Service of the Institution.

Item	N	Mínimo	Máximo	Media	Xx	Ls	Li
Calidad del Servicio Educativo	140	1	10	8.30	7.91	8.14	7.68
Disponibilidad de los maestros	140	1	10	7.83			
Uso adecuado de los materiales didácticos para el aprendizaje	140	1	10	7.76			
Satisfacción con el personal docente	140	1	10	7.74			
Satisfacción con el desarrollo del aprendizaje	140	1	10	7.96			
Interacción maestro-alumno a través del uso de una plataforma	140	1	10	7.68			
Aumento del nivel de aprendizaje conforme las competencias establecidas en el programa	140	1	10	8.11			

Fuente: Elaboración propia

Another important aspect that was included to be considered as part of a diagnosis refers to the needs of the institution. In this sense, as shown in Table 3, there are variables that are above Xx, taking into account the respective upper and lower limits, it is observed that the services and resources offered by the institution are acceptable and access to the different Sources of information are good, but some of the spaces show little acceptance to be used as classrooms.

Table 3. Survey on the needs of the institution.

Item	N	Mínimo	Máximo	Media	Xx	Ls	Li
Espacios adecuados para las clases	140	1	10	7.93	8.11	8.29	7.93
Recursos y servicios en tecnología de la información que ofrece la institución	140	1	10	8.13			
Acceso a las distintas fuentes de información	140	1	10	8.28			

Fuente: Elaboración propia

Based on the information obtained, it is concluded that although the institution has large spaces, these are insufficient, which causes others to be used that are not necessarily the most suitable to be used as classrooms.

On the other hand, although students have easy access to the use of mobile devices or a computer with an internet connection and have some knowledge in the use of virtual platforms for teaching, the disoriented use given by some teachers to the Didactic materials and technological tools for learning causes a gap in the empathic communication between teacher-student for the construction of knowledge.

REQUIREMENTS FOR THE DESIGN OF AN INTEGRATING PROPOSAL

In the E-Learning mode, planning is a fundamental requirement to ensure the implementation of a fully-fledged educational program. The nature of this modality requires a systematic and rigorous organization that guarantees the achievement of objectives. The experiences, growth and diversification of options in different educational centers are an example of the acceptance and functionality that has guaranteed, opening up more possibilities of training, training and updating. In the case of the B-Learning mode, a more complex scenario is presented, since it is necessary to combine the characteristics of the context of a face-to-face program with those of a distance program, where the roles are different, but seek to amalgamate to facilitate incorporation of the students.

The semipresencial character requires from the planning in the elaboration of the design, starting from a frame coherent with an educational model and a pedagogical approach that allows the institutionalization and avoid the dispersed management and the misuse of the tools, it also requires a qualified teacher tutor Which can serve as an accompaniment to the student both in use and in the sense that technology is given as part of its training process. It also requires an adaptation to the vision that plays the teacher-student relationship within these spaces.

The educational policies of an institution that offers a face-to-face education program should include, in a timely manner, the guarantee of an adequate infrastructure that guarantees the necessary connectivity and efficient access to technological resources that favor the design of collaborative work strategies within Of the school context.

On the other hand, considering some of the options of integrated learning environments platforms such as Dokeos or educational content managers such as ATutor or Moodle, or any other that could be identified, should make a selection that is relevant and in accordance with the demands of the Educational program that allows the formation of the student considering the competencies required in his exit profile. The didactic or learning strategies contained in the design of the chosen platform should be the product of an educational model and a current pedagogical approach focused on learning where the student assumes the main role to be endowed with the necessary means for autonomous learning And metacognition, where he finally plans and controls his own process as a cognitive subject.

HARDWARE AND SOFTWARE RESOURCES USED

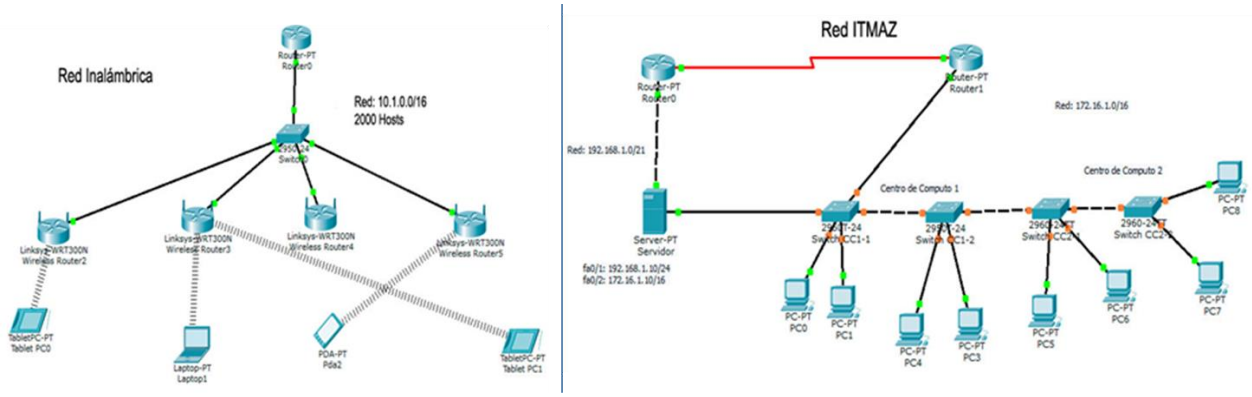
As hardware resources, an HP ProLiant ML350 G6 server was used to develop this proposal with the following characteristics:

- 2 Procesadores Intel Xeon (2.40 Ghz/6 Core).
- 24 GB de memoria RAM y HDD de 3 TB.
- Windows Server 2008 R2.

It also considers the use of an additional equipment enabled as a server to save the database of the platform.

Figure 6 shows the proposed network structure both wired and wireless that provides the internet service and connectivity to the server to access the platform.

Figure 6. Proposal of network structure for the implementation of the B-Learning modality.



Fuente: Elaboración propia

As software tools, the VMware Workstation version 10 virtual machine manager was used to reserve space and resources exclusively for the platform. The operating system that was installed on the virtual machine was Linux Fedora 2.0 for reasons of stability and security. Apache and MySQL were additionally installed as database web servers respectively.

For the elaboration of the user interface of the web server through which the platform is accessed, the content manager JOOMLA 3.3.6 was used. It was configured according to the needs and standards of the institution. As an educational content manager, Moodle was used to build the virtual platform to concretize the implementation of the B-Learning mode.

DISCUSSION

The B-Learning modality has emerged as an alternative to generate innovative learning environments where the role of students and teachers is combined in a context that is complemented by the autonomous action of students in their learning process. Monsalve and Amaya (2014) call it mixed learning environments, however, as shown in the results, the level of achievement in technological skills requires substantial modification of teaching practice, which represents a real challenge as this leads to the design of strategies and Routes more in line with these new innovation contexts; Both the teacher and the student must think of a learning based on

interactivity, and the administrative conditions must also regulate new forms of school management that prioritize the granting of conditions in terms of spaces and learning times that are adapted to the new profiles.

Barberá (2008) Points out certain basic components that configure the use of digital strategies, among which emphasizes planning, information accessibility, interaction tools and performance monitoring as pedagogical requirements to consider when integrating the set of technological tools. Although this study is limited to a specific population, it shows the access and familiarity with which young people adapt and expect from their teachers greater results in the use of virtual modalities. The design of this proposal opens up areas of opportunity since on the one hand it represents a strategy through which the coverage is extended while optimizing resources in the management of the educational service.

However, introducing the technologies in the field of education requires the formation of a pedagogical principle that must be constantly changing, as it demands in the accelerated era of information in which the student is evidently involved, Then of meaningful and autonomous learning as the main objective of curricular demand. Turpo (2013) talks about the convergence in B-learning to refer to a conjunction of pedagogical and technological mediations where resources converge to interact both in face-to-face scenarios and in virtual scenarios for the achievement of the same function or objective.

It requires from this point of view a change of scenarios where the student can freely access and autonomous access to information, where physical spaces are no longer seen as the only alternative to the interaction required by the learning process , Where a new form of literacy is assumed to have its starting point in access to the devices available to young people, and knowledge is understood as a process of social construction based on collaboration.

CONCLUSIONS

The digital era in distance education is characterized by the integration of correspondence teaching and multimedia education through information and communication technologies, where the materials or didactic resources are digitally provided, allowing greater coverage of Attention and greater reach for the user.

The young students have easy access to a device or computer with internet connection, have also developed some ability to use virtual platforms so they are aware of the benefit that can represent as a learning tool, however demand from their teachers Greater orientation in the use of these tools and technological modalities, which causes that it does not potentiate the pedagogical interaction between teacher and student.

The characteristics of the B-Learning mode offer an area of opportunity to help improve educational quality, they also offer the possibility to optimize the infrastructure resources that an Institution has and reduce operational costs, making it more feasible The objectives of an educational model and program.

There is a great diversity of platforms that can serve as means in the construction of the learning, among them ATutor, Claroline, Dokeos or Moodle, the criteria of selection of some of them by an institution must go beyond the technical specifications or Even the level of sophistication they can provide. However, these criteria should consider an alignment between institutional policies, physical and technological infrastructure capacities, and the level of empowerment for both access and use by the community that is part of an educational program. It should have a clear and objective diagnosis of the real conditions of an institution to identify the areas of opportunity that serve as reference points to define and establish measures that help to leverage the use of technological tools in increasing capacities to generate Innovative learning environments.

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