

Virtual university education: opportunities to respond to current changes and challenges

Educação universitária virtual: oportunidades para responder às mudanças e desafios atuais

Educación universitaria virtual: oportunidades para responder a los cambios y desafíos actuales

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Effective incorporation of virtual education demands strategic policies, technological infrastructure, and faculty development to enhance student learning outcomes and meet evolving global educational demands.

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This study contributes by highlighting the transformative role of virtual education, informing policymakers, educators, and researchers about its innovative impact on higher education.

ABSTRACT

Virtual education at the university has become a reference to undertake actions with great contributions to current higher education. In relation to this, the general objective of this study was to analyze virtual university education as an opportunity to respond to current changes. To this end, a review of a series of research works related to the subject was carried out. From the methodological point of view, content analysis was used, through a documentary-bibliographic review of studies published in recent years; however, information from previous years, considered of value for this research, was also taken into account. For the compilation of information sources, the Internet database of reliable specialized academic sites was used. The most relevant results show that virtual education in higher education is a valuable tool that offers multiple possibilities for the development of the teaching-learning process in an environment consonant with today's educational demands. It is concluded that the incorporation of the virtual university education approach as a process of learning facilitation in national universities, contributes to the necessary transformation that the current reality imposes in terms of what corresponds to the university academic formation of a quality, competent graduate, who responds to the demands of the highly changing and demanding environment.

Keywords: Virtual Education, University, Social Changes, Challenges.

RESUMO

A educação virtual na universidade tornou-se referência para a realização de ações com importantes contribuições para a educação superior atual. Em relação a isso, o objetivo geral deste estudo foi realizar uma análise da educação universitária virtual como uma oportunidade de responder às mudanças atuais. Como resultado disso, foi realizada uma revisão de uma série de trabalhos de pesquisa relacionados ao assunto. Do ponto de vista metodológico, é utilizada a análise de conteúdo, por meio de uma revisão documental-bibliográfica de estudos publicados nos últimos anos, embora também tenha sido considerada a informação de anos anteriores, considerada de valor para esta investigação. Para a coleta das fontes de informação, foi utilizada a base de dados da Internet de sites acadêmicos especializados confiáveis. Os resultados mais relevantes mostram que a educação virtual no ensino superior é uma ferramenta valiosa que oferece múltiplas possibilidades para o desenvolvimento do processo de ensino e aprendizagem em um ambiente compatível com as demandas educacionais atuais. Conclui-se que a incorporação da abordagem da educação universitária virtual como processo facilitador da aprendizagem nas universidades nacionais, apóia a necessária transformação imposta pela realidade atual em termos do que corresponde à formação acadêmica universitária de um graduado com qualidade, competente, que responde às exigências de um ambiente tão mutável e exigente.

Palavras-chave: Educação Virtual, Universidade, Mudanças Sociais, Desafios.

RESUMEN

La educación virtual en la universidad se ha convertido en referente para emprender acciones con grandes aportes a la educación superior actual. En relación con esto, el objetivo general de este estudio fue realizar un análisis sobre la educación virtual universitaria como una oportunidad para responder a los cambios actuales. En función de ello, se realizó la revisión de una serie de trabajos de investigación relacionados con la temática. Desde el punto de vista metodológico se utiliza el análisis de contenido, mediante una revisión documental-bibliográfica de estudios publicados en años recientes, no obstante, se tomó en cuenta también información de años anteriores, considerada de valor para esta indagación. Para la recopilación de las fuentes de información se utilizó la base de datos de Internet de sitios académicos especializados confiables. Los resultados más relevantes dan cuenta de que la educación virtual en la educación superior es una herramienta valiosa que ofrece múltiples posibilidades para el desarrollo del proceso de enseñanza-aprendizaje en un entorno consonó con las demandas educativas de hoy. Se concluye que la incorporación del enfoque de la educación virtual universitaria como proceso de facilitación de los aprendizajes en las universidades nacionales, coadyuva a la necesaria transformación que la realidad actual impone en cuanto a lo que corresponde a la formación académica universitaria de un egresado con calidad, competente, que responda a las exigencias del entorno altamente cambiante y exigente.

Palabras clave: Educación Virtual, Universidad, Cambios Sociales, Retos.

INTRODUCTION

University education has always been considered a tool to ensure and consolidate the development of nations, historically its fundamental role revolves around the production of useful knowledge for society, it is also responsible for the quality training of human resources required by the labor market to meet the needs of economic and productive development of the country.

In times of modernity, globalization and rapid scientific and technological changes, higher education proposes new paradigms of substantial transformations that aim at the formation of a competent professional, with adequate levels of academic, social and technological instruction, prepared to assume the current challenge of the social and productive sectors of the country and the globalized world, in harmony with the demands of local, regional, national and international development.

In this order of ideas, the rapid evolution experienced by the scientific and technological field in recent years has highlighted the need to institute educational strategies in higher education oriented to contemporaneity. These new demands force universities in the world, in Latin America and particularly in Ecuador, to be constantly immersed in a framework of rapidly changing technologies; to stimulate an adequate level of technological innovation through research and the progress of scientific knowledge, and to offer all students a permanent space for relevant and quality learning, as fundamental axes for higher education.

It is evident that the current reality forces universities around the world to look for new ways of functioning that can improve the systems and, in this task, a good part of the universities in developed countries have benefited from the potential offered by new technologies in the educational field, because it is an instrument to improve access, facilitate the democratization of training, and consolidate the teaching-learning processes to today's trends. From this point of view, virtual education is presented as an ideal alternative to undertake actions in line with today's educational requirements.

In tune with these approaches Pérez, Suárez, & Rosillo, (2018) state, a new paradigm is currently visualized, the change of traditional teaching where the teacher's monologue predominates versus interactive virtual teaching, which offers didactic tools, ideas and models to create our own school in any field, demonstrates that technology contributes to improve the education of learners in the present century.

Following the same orientation, Granados, (2015) outlines, virtual education contributes to the transformation of the educational process because it implies a broad and far-reaching educational process that must be controlled through different systems that account for its contribution to educational practice, it is a field that employs innovative agents for the construction of knowledge giving and providing authenticity to learning. In another contribution, Zavala, (2020) states that virtual education, also known as online education, develops the teaching-learning relationship virtually, so that teachers and students must interact without the direct face-to-face relationship between teacher and student in a virtual classroom.

As reflected in his dissertation Rama, (2013), digital education is expressed today in digital platforms, videoconferencing tele-classrooms, diversity, breadth and complexity of digital learning resources; self-learning systems through computer applications and automated learning assessment systems and new ways of accessing networked resources by digital convergence.

Now, the incorporation of the virtual education approach in Ecuador poses important challenges that start from the improvement of internet access and connection, since, according to data from the Institute of Statistics and Census, as of 2018 the percentage of households with internet access is 37.17% at the national level and drops to 16.07% in rural areas (Constante, 2020).

Likewise, Changuín, (2020) points out that in the most favored groups, it must be recognized that educational institutions capable of providing virtual classes with interactive, creative and entertaining resources are not the majority in the country; therefore, the democratization of technology is a challenge for the government.

Other challenges presented by the implementation of virtual education is aligned with the training of teachers, in this regard, Gros & Silva, (2005) state, teachers of the digital generation, face a major drawback and that is that today's society is advancing at breakneck speed. Teachers have been and are being trained with a culture and a vision of the meaning of their profession that has already changed. In the same line Reyes, (2012) states, it is essential to resize teacher training, incorporating a series of elements focused on information and communication technologies as a significant tool in the teaching and learning processes, which strengthen educators for the current and future context. In this sense, the declarations of various organizations such as OECD, UNESCO, UN and European Union, reiterate the need to promote the integration of digital technologies at all levels of the education system and in the training and development of human resources (García, 2019).

Within this framework of ideas, the general objective of this study is to analyze virtual university education as an opportunity to respond to current changes, based on a review of the literature.

The dynamics of change in the modern educational context

The dynamics of change that characterize the current times has substantially permeated the environment of higher education, pointing the way to the insertion of interactive ways to impart and share knowledge that serves student communities remotely as a way to overcome the obstacle of geographical location, thus making possible the principle of democratization, flexibility, relevance and adequacy demanded by education in the technological era.

In this idea, Zavala, (2020) emphasizes that teaching and learning processes must always be modified, by updating knowledge, by evolution of pedagogy, by improvement of teaching and learning methodologies, by different forms of relationship between students and teachers, by a better integration of the disciplines of study and their contents, by new forms of relationship between teachers and parents, and, mainly, by the noble purposes that a country wants to achieve in time for its next generations (Zavala, 2020).

On this basis, the incorporation of virtual education in higher education has become an option that seeks a change towards the achievement of the objectives that education has to fulfill, of access for all, that brings the student community closer to learning, without distance and time being an impediment to the achievement of the educational mission. In this purpose, Escalante, Castillo, & Mena, (2011) propose that, for university education institutions, virtual education, in addition to using ICT as motivating elements, allows participants to achieve significant learning that can be adapted to their pace of understanding and time availability. Likewise, Agreda & Constasi, (2019) refer, this technological incursion favors not only communication and interaction between teachers and students or between students-students, but also encourages independent study, collaborative study (between the study group and the context) and meaningful learning.

All of the above implies that in order to guarantee an education with a focus on virtual education, universities must have academic quality policies, which include having the appropriate technological conditions, standards and structures, in addition to the existence of a high performance teaching staff with pedagogical, communicative, technological and didactic competencies in virtual learning environments.

Thus, in terms of public policies, the Ecuadorian government should devote efforts to democratize access to technology and enable digital solutions for education, if it is considered that at this time the management of technology is no longer an alternative, but a social imperative (Changuín, 2020).

Virtual University Education: Challenges

In the contemporary environment where the knowledge society, globalization, ICTs and multiculturalism come together, conventional education systems are unable to meet the demand for this service, much more so if we think of education throughout life (Chaves, 2017).

In this sense, education faces great challenges in terms of coverage, quality, incorporation of ICT, updating of pedagogical and curricular approaches that require an analysis of the paradigms with which it has been working and of the relationships of education with other areas of science and technology (Chaves, 2017).

In this sense, the virtual environment emerges as a formula that helps to transform the training processes in the university, in order to face the pedagogical problems that may arise in its context. Thus, virtual educational-interactive model, as estimated by Pérez, Suárez, & Rosillo, (2018) is a platform that provides students with multiple knowledge, on any parcel of knowledge and varied resources, affordable for their own learning. From this point of view, a virtual environment encourages initiative and learning so that the student advances according to their possibilities and interests and provides them with information about the successes and errors of their actions, while providing them with all kinds of actions to reinforce their knowledge or help to achieve it.

Thus, the use of technological resources or digital media make possible the interaction between the student, the teacher and the contents at any time and in any geographical space. Global trends not only mark the guidelines of a virtual education, but the multiple "emerging" and personalized methodologies of Higher Education Institutions (HEIs), which have a level of maturity and development in this modality (Avila, 2018). In this regard, virtual education methodologies are implemented in HEIs, in the need to change institutional structures towards models consistent with the knowledge society

(Avila, 2018).

However, in the process of virtual education, there are environmental, administrative, structural, academic challenges, such as, for example, the transition of students and teachers in this type of methodology (Avila, 2018).

Likewise, the level of skills required to enter into this learning and teaching modality must be taken into account; the training of teachers to appropriate the role of tutor; which consists of being a tutor:

1. Facilitator, tutor, moderator, monitor, guide.
2. Motivational.
3. Researcher.
4. Developer of skills for the use of ICTs.
5. High level of adaptation.
6. Follow-up.
7. Work schedule management.

It is also important, the monitoring and control of the student's process in this modality that require, discipline, self-learning, autonomous learning techniques, written expression, among others; and a modification in the way of evaluating focused on the particular performance and pace of work (Avila, 2018).

Overcoming these difficulties, among the many challenges and needs faced by the current virtual university education in the country, can produce substantial educational changes in the search for new ways to teach and learn, essential in this system of social and technological changes that requires the formation of the current professional.

Virtual university education as an opportunity to respond to change

Contemporary society increasingly poses new challenges to educational systems and to the actors involved in the lifelong learning process and, in particular, to higher education, since they must necessarily respond in a pertinent manner and with formative quality to the emerging contexts. In this scenario, virtual education is established as a decisive viable response to successfully adapt to the changing dynamics of today's world.

In this sense, Fajardo & Cervantes, (2020) emphasize that it is appropriate to recognize the relationship between education and the technological revolution of communication and information, based on the analysis and emergence of the new transformations that have occurred in traditional patterns and all the factors that have enhanced access to information, generating greater welfare and progress in the social conglomerate. Likewise, Fajardo & Cervantes, (2020), state that new technologies must be at the service of education to dissipate the social gaps that have been generated by the lack of economic, logistic and digital culture resources. Technology opens a new door to knowledge and to the ease of access to the knowledge of the history of nations, as well as to the knowledge of different areas.

In the same direction Loaiza, (2002), Manzano et al., (2023) denotes, virtual education frames the use of new technologies, towards the development of alternative methodologies for the learning of students of special populations that are limited by their geographic location, the quality of teaching and the time available. In this perspective, virtual education provides the opportunity for all interested parties to access training according to the needs and requirements of the learners, thus becoming a space for inclusion and democratization of education, so that the incorporation of the virtual education approach as a process of learning facilitation becomes an excellent resource, in line with the current international educational scenario.

Given this scenario, virtual education in higher education plays an important role, since it is not necessary for the student to travel to the presence of the teacher or to the educational center to receive instruction on the learning process, since, as Agreda & Constasi, (2019) point out, the teaching process is carried out not only by the guiding hand of the teacher, but it is supported by the use of technology, from its most common resource to the most modern one. Thus, virtual education facilitates the transmission of knowledge, based on communication processes that, under the modality of online tutoring, assumes the synchrony and asynchrony of the relationship between the teacher and the students. According to Chirinos, Hinojosa, & González, (2010), "virtual education is characterized by combining face-to-face instruction with the use

of a wide variety of easily accessible Internet-based communication resources and modalities.

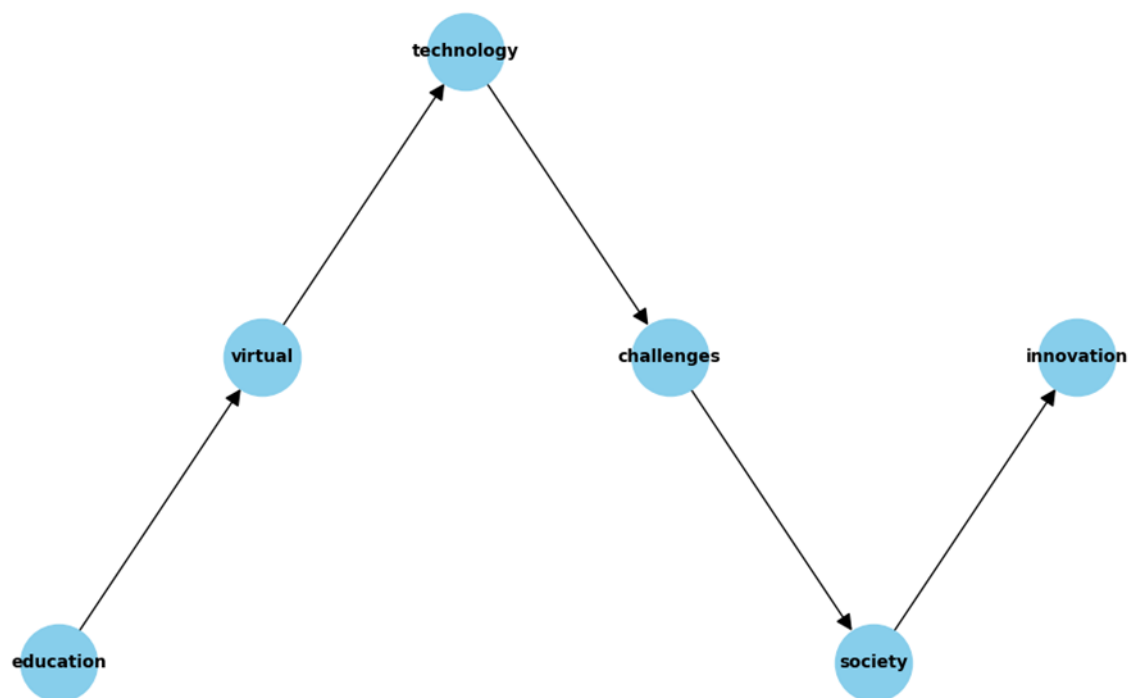
In terms of global modernization, education plays a fundamental role and ICTs are tools that favor teaching and learning processes. Government systems have to promote a healthy budget in order to invest in virtual platforms that favor the education of people without exclusion, but on the contrary, providing the best resources to optimize educational processes and results (Fajardo & Cervantes, 2020). Today, the constant evolution of science, technology and innovation pose constant challenges to the educational environment, which must overcome obstacles in order to respond appropriately to society's demands.

Figure 1 shows a conceptual scheme of the disruptive cycle that begins in educational dynamics and the inertial tendency to change. It can be seen that the virtual is digested as an engine that drives changes in the technological sense, since it allows the reduction of many limitations in the traditional teaching model, mainly in the concrete sense of the teacher-student, institution-participants experience, since it revolutionizes the way, intensity and rhythm in which information is transmitted. However, technology for its part generates new challenges, especially those related to the so-called digital divide. These challenges appear clearly in society in the face of any new political, economic and/or social scenario and all the complex interactions that this amalgam of determining factors implies.

It is precisely in this gap opened by the challenges imposed by new technologies that society has the opportunity to resume cycles of expansion and positive growth in the sense of innovation. New ways of doing things better appear concomitantly, until the cycle is broken again. This analytical scheme can be useful for future studies aiming to understand, in a modular and "staged" way, the cycle of rupture between changes, technology and innovation in the educational context.

Figure 1 Dynamics of change towards educational innovation

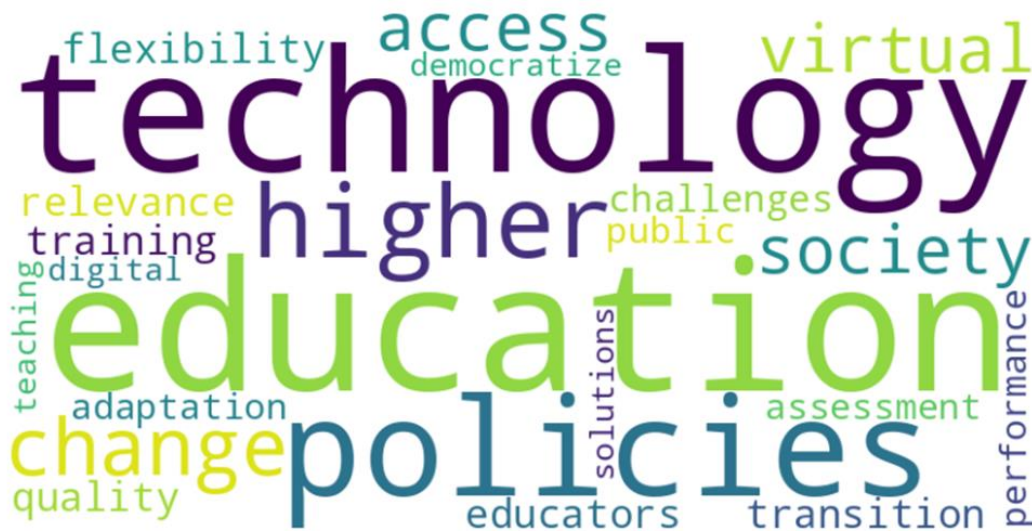
Path to educational innovation: perspective from the addressed literature



Source: created by authors based on literature review (2023)

However, the process of educational change is neither neutral nor linear. In any society where people interact, there are natural tendencies to conflicts, interests and dynamics of contestation related to power. In Figure 1, using content analysis of the literature with Python software, it was possible to understand which are the main words that appear with greater intensity in the specialized literature consulted. It is possible to observe, in addition to physical and material means, that elements related to power such as politics, adaptation, change and public appear amalgamated as relevant factors in the discussions. In this sense, any substantive change and/or transformation will have its constitutive character of politics and also its performative character of human interactions. Therefore, it can be said that the literature reaffirms a non-neutral view of what has been discussed throughout this article.

Figure 2 Content and frequency analysis of the specialized literature on innovation and change in the educational context



Source: created by authors based on literature review (2023)

Finally, this suggested research agenda outlines key variables for future studies, emphasizing the relationship between the adoption of virtual education in higher education institutions, the state's efforts in educational adaptation, and their impact on academic excellence, competency development, and innovative approaches. The context is framed within the national landscape, considering the evolving demands of the contemporary workforce and the necessity for educational institutions to align with these changes. Researchers may explore the effectiveness of virtual education in fostering academic excellence, the role of state initiatives in driving technological adaptation, and the implications of competency development on meeting the dynamic requirements of the labor market.

Table 1 Proposed agenda research for future applied research

Dependent Variable	Explanatory Variable	Context
Academic Excellence	Virtual Education	National Level
Competency Development	Technological Adaptation	Higher Education Institutions
Innovative Approaches	State Initiatives	Educational Policies
Talent Formation	Societal and Labor Market Demands	Contemporary Work Environment
Skill and Competency Alignment	Efforts by the Ecuadorian State	Changing Workforce Requirements

Source: created by authors based on gaps in literature review (2023)

FINAL CONSIDERATIONS

At the national level, the challenges imposed by the new reality of change pose processes of renewal of the teaching process within the country's higher education institutions, so that they can adapt to current global requirements.

In this recognition, the Ecuadorian State has been making important efforts to face the challenges required to adapt the training of human talent for the present century, since it is well known that university educational organizations, as social institutions, are responsible for training human resources of excellence to join a social and labor environment that demands innovative approaches, development of skills and basic and specific competencies to meet the demands of the new needs of the labor market.

In addition, a research agenda was proposed based on the main causal relationships observed in the literature and a possible approach to the impact relationship between these variables.

In this regard, throughout this document we have been offering a vision of the importance of the incorporation of the university virtual education approach as a process of learning facilitation in national universities, which contributes to the necessary transformation that the current reality imposes in terms of what corresponds to the university academic training of a quality, competent graduate, who responds to the demands of the highly changing and demanding environment.

REFERENCES

- Agreda, A., & Constasi, J. (2019). Educación universitaria a distancia en Venezuela: miradas a la calidad del sistema. *Revista Atlante: Cuadernos de Educación y Desarrollo*. <https://www.eumed.net/rev/atlante/2019/12/educacion-universitaria-venezuela.html>.
- Ávila, A. (2018). Metodología Para la Implementación de Educación Virtual en Instituciones de Educación Superior. *Universidad Militar Nueva Granada. Colombia. Trabajo de Maestría*. <https://repository.unimilitar.edu.co/bitstream/handle/10654/18092/AvilaOrjuelaAlejandraCatalina2018.pdf?sequence=2&isAllowed=y>, pp.231.
- Changuín, A. (2020). El reto de la educación virtual en Ecuador. <https://criteriosdigital.com/debate/achanguin/el-reto-de-la-educacion-virtual-en-ecuador/>.
- Chaves, A. (2017). La educación a distancia como respuesta a las necesidades educativas del siglo XXI. *Revista Academia & Virtualidad* 10(1). <http://dx.doi.org/10.18359/ravi.2241>, pp.23-41.
- Chirinos, N., Hinojosa, L., & González, R. (2010). La educación virtual como apoyo instruccional durante el proceso de aprendizaje en la educación superior de Venezuela. *Congreso Iberoamericano de Educación. Metas 2021. Buenos Aires, Argentina*, pp.13.
- Constante, S. (2020). Ecuador: la educación online desde casa es imposible e injusta. https://elpais.com/elpais/2020/06/12/planeta_futuro/1591955314_376413.html.
- Escalante, Z., Castillo, A., & Mena, D. (2011). El Aprendizaje Afectivo en la Educación Universitaria Virtual Venezolana. *Universidad Nacional Experimental Rafael María Baralt, Venezuela*.
- Fajardo, E., & Cervantes, L. (2020). Modernización de la educación virtual y su incidencia en el contexto de las Tecnologías de la Información y la Comunicación (TIC). *Academia y virtualidad*. DOI: 10.18359/ravi.4724. <https://revistas.unimilitar.edu.co/index.php/ravi/article/view/4724/4399>.
- García, A. (2019). Lo digital y el cambio ¿también en la educación? (Ponencia). *Congreso Iberoamericano "La educación ante el nuevo entorno digital". Madrid, España*.
- Granados, A. (2015). Las TIC en la enseñanza de los métodos numéricos. *Sophia Educación, Vol. 11, N° 2*, <https://dialnet.unirioja.es/servlet/articulo?codigo=5163708>, pp. 143-154.
- Gros, B., & Silva, J. (2005). La formación del profesorado como docentes en los espacios virtuales de aprendizaje . *Revista Iberoamericana de Educación, n.º 36 (1)*, http://www.campus-oei.org/revista/tec_edu32.htm.
- Loaiza, R. (2002). Facilitación y Capacitación Virtual en América Latina. *Revista Quaderns Digitals N° 28. Colombia*, pp. 85 - 154.
- Manzano Pérez, R. S. ., López Pérez, T. E. ., Manzano Pérez, R. J. ., & Pérez López, M. V. . (2023). Technological innovation and education: a brief review of the literature. *Ibero-American Journal of Education & Society Research*, 3(1), 25–30. <https://doi.org/10.56183/iberoeds.v3i1.596>
- Pérez , C., Suárez, R., & Rosillo, N. (2018). La educación virtual interactiva, el paradigma del futuro. *Atenas, vol. 4, núm. 44, pp.* <https://www.redalyc.org/journal/4780/478055154009/html/>, pp.144-157.
- Rama, C. (2013). La nueva modalidad de educación virtual: la educación digital empaquetada de los MOOCs y las nuevas globouniversidades. En CALED, & UTPL, *La educación a distancia y virtual en Ecuador. Una nueva realidad universitaria* (pág. pp.203). Loja – Ecuador: Secretaría Ejecutiva del CALED/Universidad Técnica Particular de Loja/Observatorio de la Educación Virtual en América Latina y el Caribe. Primera edición. ISBN-978-9942-08-497-2.
- Reyes, N. (2012). La formación docente en entornos virtuales. <https://recursos.educoas.org/publicaciones/la-formaci-n-docente-en-entornos-virtuales>.
- Zavala, S. (2020). La educación virtual. <https://www.eltelegrafo.com.ec/noticias/columnistas/15/la-educacion-virtual>.

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Task	% of contribution of each author				
	A1	A2	A3	A4	A5
A. theoretical and conceptual foundations and problematization:	20%	20%	20%	20%	20%
B. data research and statistical analysis:	20%	20%	20%	20%	20%
C. elaboration of figures and tables:	20%	20%	20%	20%	20%
D. drafting, reviewing and writing of the text:	20%	20%	20%	20%	20%
E. selection of bibliographical references	20%	20%	20%	20%	20%
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