

Chapter # 24

ONLINE EDUCATION IN LATIN AMERICAN HIGHER EDUCATION: A SYSTEMATIC REVIEW

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ABSTRACT

COVID-19 forced higher education institutions to implement virtual education activities without being prepared for it, representing a challenge for the traditional model. This has been exacerbated in Latin American institutions, as they do not have adequate resources and infrastructure. The objective of the study was to identify trends in online education research in Latin America because of the health emergency. To achieve the objective, a systematic literature review was carried out. Documents published in Scopus between 2008-2023 were analyzed using the Biblioshiny and VOSviewer software. 47 documents were found, of which 40 were published in the period 2019-2023. Keywords were analyzed according to their co-occurrence. 376 documents were found and 47 with a minimum of two co-occurrences were selected. The documents have been associated in four clusters. The results show the impact on university education during and after the pandemic in Latin America. Online education has continued after the pandemic, exploring new forms of learning. It has enabled access to higher education for sectors of the population that traditionally could not join it, due to issues such as geography and economics. Challenges are noted in creating infrastructures and processes that allow promoting this type of teaching.

Keywords: online education, virtual education, e-learning, Covid-19, Latin America, systematic review of the literature.

1. INTRODUCTION

Universities experienced an unprecedented shift from traditional face-to-face teaching and learning to online learning in response to the COVID-19 lockdown (Marinoni, Van't Land, & Jensen, 2020). The educational institutions especially in developed economies, resorted to virtual education implemented via digital learning platforms and technologies including Teams, Zoom, social media, and cloud technologies to offer virtual learning environments (VLEs) for academic teaching (Akpan, Offodile, Akpanobong, & Kobara, 2024). Particularly, many universities in Latin America are experiencing a serious lack of resources that has plunged them into a deep financial crisis and the COVID-19 pandemic has increased this calamity (Quispe-Prieto, Cavalcanti-Bandos, Caipa-Ramos, Paucar-Caceres, & Rojas-Jiménez, 2021). According to UNESCO, on April 1, 2020, schools and higher education institutions (HEIs) were closed in 185 countries, affecting 1,542,412,000 students, constituting 89.4% of total enrolled students (Bárcena & Uribe, 2020). Of them, more than 160 million were students from Latin America and the Caribbean (Bárcena & Uribe, 2020). The authorities of educational institutions initiated online learning strategies through virtual online learning environments, which has been called "emergency

remote teaching” (Barbour et al., 2020), and has been defined as “a temporary change of teaching to an alternative mode of remote teaching due to crisis circumstances” (Iglesias-Pradas, Hernández-García, Chaparro-Peláez, & Prieto, 2021). Although many higher education institutions already had virtual learning environments, which were used for face-to-face teaching, the challenge for teachers was to provide adequate teaching materials through e-learning tools that kept students highly engaged (Tadesse & Muluye, 2020). On the other hand, students also faced obstacles of the digital divide to access technology and relevant digital tools, considerably affecting learning. Access to the Internet and optimal electronic devices are just some of the challenges they faced (Litchfield, Shukla, & Greenfield, 2021). In Mexico, various phases of social confinement were announced and the institutional program “Learn at Home” was presented, highlighting deficiencies in Mexican homes, given the conditions of poverty in rural and indigenous areas, overcrowding in marginal neighborhoods in urban areas and the infrastructure in residential areas where not all the academic community has optimal conditions of access, availability, digitalization and technological literacy (López & Medina, 2021).

2. BACKGROUND

Universities have undergone a radical change in the teaching process, moving from a traditional face-to-face environment to emergency remote teaching (ERT), that is, a temporary change of instruction due to crisis circumstances (León-Cázares, Becerra-Peña, Moreno-Arellano, & Borrayo-Rodríguez, 2024). Universities increased the use of digital tools and virtual platforms not only for distance education students but also for face-to-face students (Salas-Pilco, Yang, & Zhang, 2022). However, and despite the promptness with which online education mechanisms were implemented in educational institutions, this presented some important benefits such as, for example, the development and realization of activities related to collaboration, communication and the search for information (Knopf, Stumpp, & Michelis, 2021). Motivation in the educational field is of utmost importance as it influences the teaching-learning process (Vilchez Tornero & Siguenza Campoverde, 2023). Academic motivation is the basic determinant of academic performance and is revealed as one of the best predictors of students' school adaptation (Medina Ruiz, Mera Mendoza, Montoya Zamora, Ruíz Tuarez, & Zambrano Mera, 2023). It is a process that activates, directs, and above all perseveres in a behavior to achieve a certain objective (Cahuana Cuti, Mamani-Benito, & Carranza Esteban, 2020).

The COVID-19 pandemic brought about sudden changes in learning styles and environments, affecting pedagogical practices. The rapid transition from face-to-face to virtual education during periods of isolation, presented numerous challenges. These challenges included emotional adjustments, cognitive demands, exhaustion, strained student-teacher relationships, difficulties in organizing independent work and maintaining focus, and exacerbation of inequalities due to limited access to technology or digital divides (Garzon, Villamil Duarte, Velasco Forero, & Herrera Jacobo, 2024). Today's students have been impacted by their external environment requiring them to navigate a volatile and uncertain teaching and learning environment. The critical dialogic shifts in teaching and learning have created unique opportunities to think differently about the assumptions and processes that have become the norm for interaction between teachers and students on LMS platforms. The abrupt shift to remote learning in higher education institutions should allow for differentiation, but it has also precipitated a dialogic, critical and deliberative relationship of attention, as well as an ethic of care, in online teaching and the learning process involving

student and teacher (Pietersen, 2022). It has also brought us many challenges, such as guiding the route for the introduction of smart technologies that ensure the continuity of education. This wave of digital transformation brings long-term benefits and goes beyond the mere growth of distance learning. Online education opportunities, open educational resources, and other technologies can increase academic productivity. The above aspects could accelerate the pace of learning and reduce costs (Fernandez-Batanero, Montenegro-Rueda, Fernández-Cerero, & Tadeu, 2022).

As knowledge becomes a significant factor of inequality, the modern information society imposes new requirements on the institution of education. Now, the role of physical labor is reduced and the importance of intellectual labor increases, consequently increasing the importance of education. Education is updated to respond to the challenges of modern society. Although the objectives remain the same, the tools and techniques for the teaching-learning process are changing. An example of this is the rise of the implementation of online learning platforms, particularly in higher education (Begicheva, Beregovskaya, & Grishaeva, 2019). However, the causes and manifestations of the digital divide in higher education are related to the infrastructure, digital training for students and teachers, and access to technological resources. Highlighting the influence of socioeconomic and cultural contexts that impact the equitable distribution of the components of virtual education (González Ciriaco, 2024).

3. METHODS

3.1. Design

To achieve the stated research objective, a Systematic Literature Review (RSL) was carried out, which is a quantitative analysis of the documents published in an area of science and an adaptation of that proposed by Tranfield (Kraus et al., 2022; Tranfield, Denyer, & Smart, 2003).

3.2. Objectives

The objective of the study was to identify trends in research on online education in Latin America in the wake of the COVID-19 pandemic.

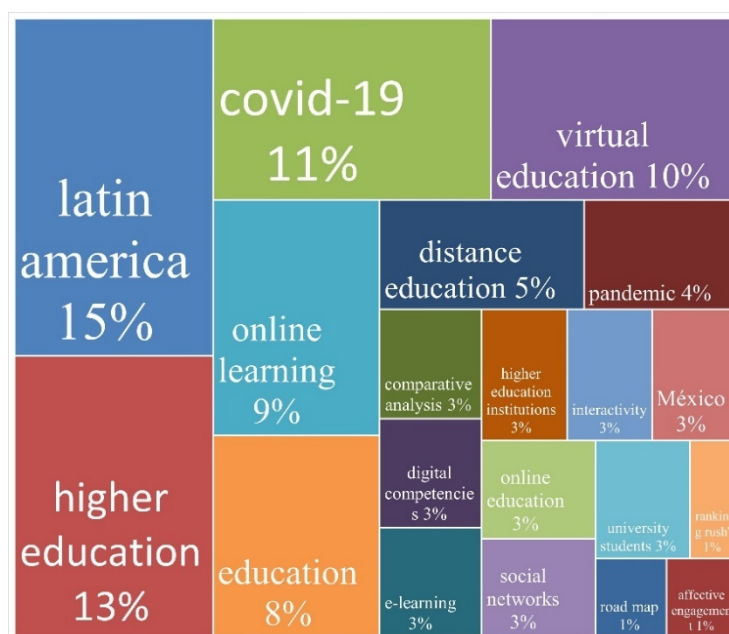
3.3. Methods

The period 2008-2023 was analyzed. The search was carried out in the Elsevier Scopus database, due to the quality of the documents it houses (Espinoza-Torres & Segarra-Oña, 2022). The review was limited to articles, review articles and book chapters already published. 47 documents were found that met the stated requirements. The Biblioshiny and VosWier programs were used to analyze the collected documents. The search term was: ((TITLE-ABS-KEY (“online learning”) OR TITLE-ABS-KEY (elearning) OR TITLE-ABS-KEY (“virtual education”) AND TITLE-ABS-KEY (“latin america”) OR TITLE-ABS-KEY (latam)) AND (LIMIT-TO (DOCTYPE, “ar”) OR LIMIT-TO (DOCTYPE, “re”) OR LIMIT-TO (DOCTYPE, “ch”)) AND (LIMIT -TO (PUBSTAGE, “end”)).

4. RESULTS

Forty-seven documents have been found, of which 40 were published in the period 2019-2023. When analyzing the 20 keywords most used by the authors, “Covid-19” stands out with 11.0% (Figure 1). This indicates the transformation that the pandemic had in online education, forcing teaching to be transformed due to the restrictions generated. Likewise, the keyword “digital competences” emerges as a variable to consider. This is manifested in the evolution that both teachers and students must have for adequate virtual education.

*Figure 1.
Word cloud.*



The most relevant article according to the total number of citations is the one prepared by Salas-Pilco et al. (2022), with a total of 109 citations (Table 1). This is despite being the most recent document in this analysis. The commitment of university students, as well as their motivation with online education, are priority approaches in research. The second most cited document is the one prepared by Friedrichsdorf et al., (2019), with 39 citations. This one, together with the one prepared by Chary and Rohloff (2014), are in the area of medicine, showing the relevance of online education in this area.

Table 1.
Most cited documents.

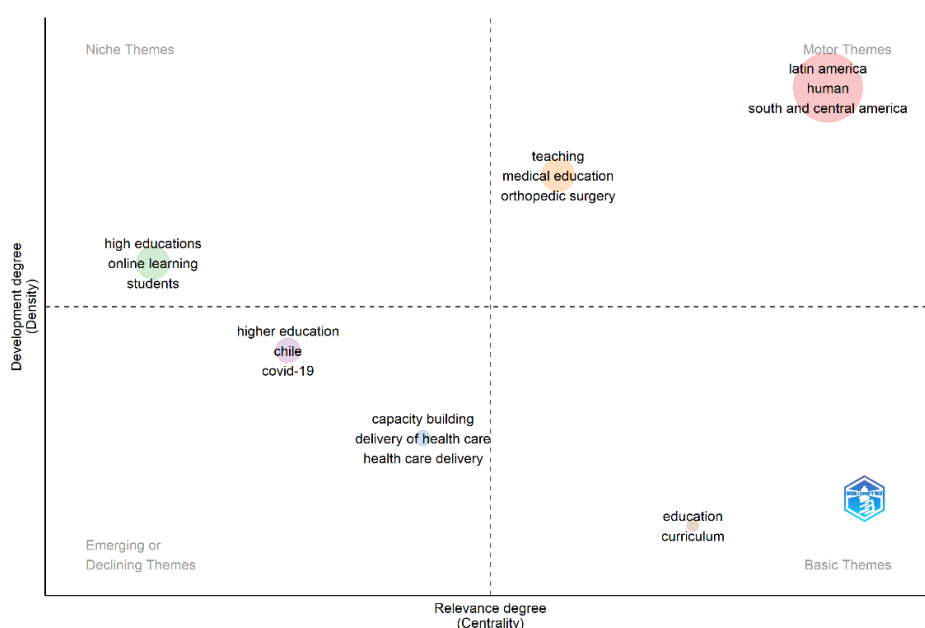
Autor	Document	Journal	Year	Total Citations
Salas-Pilco S.Z.; Yang Y.; Zhang Z.	Student engagement in online learning in Latin American higher education during the COVID-19 pandemic: A systematic review	British Journal of Educational Technology	2022	109
Friedrichsdorf S.J.; Remke S.; Hauser J.; Foster L.; Postier A.; Kolste A.; Wolfe J.SJ,	Development of a Pediatric Palliative Care Curriculum and Dissemination Model: Education in Palliative and End-of-Life Care (EPEC) Pediatrics	Journal of Pain and Symptom Management	2019	39
Sekli G.F.M.; De La Vega I.	Adoption of big data analytics and its impact on organizational performance in higher education mediated by knowledge management	Journal of Open Innovation: Technology, Market, and Complexity	2021	24
Chary A.N.; Rohloff P.J.	Major challenges to scale up of visual inspection-based cervical cancer prevention programs: The experience of Guatemalan NGOs	Global Health Science and Practice	2014	21
Quispe-Prieto S.; Cavalcanti-Bandos M.F.; Caipa-Ramos M.; Paucar-Caceres A.; Rojas-Jiménez H.H.	A systemic framework to evaluate student satisfaction in Latin American universities under the covid-19 pandemic	Systems	2021	18
Suárez L.M.C.; Núñez-Valdés K.; Alpera S.Q.Y.	A systemic perspective for understanding digital transformation in higher education: Overview and subregional context in Latin America as evidence	Sustainability	2021	15
Soria-Barreto K.; Ruiz-Campo S.; Al-Adwan A.S.; Zuniga-Jara S.	University students intention to continue using online learning tools and technologies: An international comparison	Sustainability	2021	13
Medina-Guillen L.F.; Quintanilla-Ferrufino G.J.; Palma-Vallejo M.; Guillen M.F.M.	Workload in a group of Latin American teachers during the covid-19 pandemic	AERA Open	2021	12
Cellini S.R.; Grueso H.	Student Learning in Online College Programs	AERA Open	2021	12
Scagnoli N.	A review of online learning and its evolution in latin America	Policy Futures in Education	2009	11

It is the Sustainability journal, based in Switzerland, where researchers prefer to publish their research with a total of 4 (Table 2). There are three journals in the United Kingdom, followed by the United States. The journal Ciencia da Informacao, based in Brazil, with an interdisciplinary focus, is the only journal based in Latin America that published a relevant article. Although the journal Academia Revista Latinoamericana de Administracion seems to be based in Latin America, it is published by the publisher Emerald Publishing, based in the United Kingdom.

Table 2.
Most relevant sources.

Sources	Country	Articles
Sustainability	Suiza	4
Academia Revista Latinoamericana De Administracion	United Kingdom	1
Aera Open	United States	1
Bmc Women's Health	United Kingdom	1
British Journal of Educational Technology	United Kingdom	1
Cancer Epidemiology	Netherlands	1
Ciencia da Informacao	Brazil	1
Croatian Journal of Education	Croatia	1
Developments in Marketing Science: Proceedings of the Academy of Marketing Science	United States	1
Digital Education Review	Spain	1

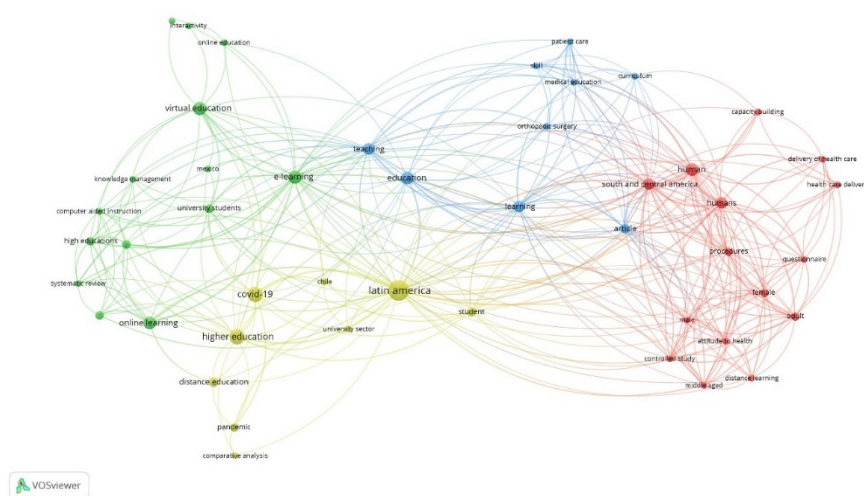
Figure 2.
Thematic map.



The thematic map shows us the degree of relevance of the keywords according to their degree of development, expressing it in a matrix with four quadrants (Figure 2). The driving keywords are Latin America, Human and South and Central America. This shows congruence with those implemented in the search engine. The basic themes in the analyzed research are education and curriculum. This is also in line with the research being focused on university education. The emerging themes are capacity building and health care delivery, which show the areas of research that can set the tone for the future.

The co-occurrence analysis of the author's keywords was performed with at least two co-occurrences (Figure 2). A total of 47 keywords resulted from the analysis, which were grouped into 4 clusters.

Figure 3.
Formation of keywords in clusters.



5. DISCUSSION

In the first cluster, keywords focused on people's health are identified, such as “attitude to health”, “delivery of health care”, “health care delivery”; as well as “human”, “humans”, “female” and “male”. The online education implemented during the pandemic had the main purpose of caring for people, leaving education itself as a secondary objective (Chary & Rohloff, 2014; Feliu et al., 2023; Friedrichsdorf et al., 2019; Hughes, Ferreira De Azeredo-Da-Silva, & Hincapie, 2019; Lewandrowski et al., 2023; Reyna et al., 2022).

The second cluster grouped together the keywords referring to online education, such as “e-learning”, “online education”, “online learning” and “virtual education”. Virtual education explains the variety of teaching or learning formats where the instructors collaborate or interface with learners through electronically mediated platforms (Akpan et al., 2024), otherwise known Learning Management System (LMS). These words were in conjunction with those focused on university education, “high educations”, “higher education institution” and “university students”. Research on online education has focused mainly on university education, due to the virtual modalities that higher education institutions have

carried out to incorporate students who cannot access traditional education (Almaraz-Rivera, 2023; Falavigna et al., 2015; Maintz, 2008; Stanley & Rocio Montero Fortunato, 2022). It is in Mexico where it is identified in a greater proportion due to the geographical and sociodemographic characteristics of the country (Silva, 2019).

The medical area uses the benefits of online education, seeking constant updating (Idris et al., 2021; Peloso et al., 2020; Salas-Pilco et al., 2022). Thus, the words “medical education”, “orthopedic surgery” and “patient care” are grouped together. It is then the updating of skills through education that contribute to the curriculum of professionals in the sector.

The last grouping shows the comparative analyzes that have been carried out because of the pandemic in online education (Soria-Barreto, Ruiz-Campo, Al-Adwan, & Zuniga-Jara, 2021). In this way, online education in the university sector in Latin America is analyzed (Cerdá Suárez, Núñez-Valdés, & Quirós y Alpera, 2021).

6. CONCLUSIONS

The objective of the research was to identify trends in research on online education in Latin America in the wake of the COVID-19 pandemic. To achieve this, an RSL was carried out. The results showed the impact on university education during and after the pandemic in Latin America.

Although there were already universities that had online education in the region, the pandemic forced it to be implemented in all universities and educational programs. Online higher education has continued after the pandemic, allowing other forms of learning to be exploited. This is mainly found in regions that do not have the physical infrastructure for in-person education, as well as where geographical and demographic conditions are adverse, such as in Latin America. This needs to be considered to promote university education in the region.

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