Higher Education in Pandemic Times

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The pandemic caused by COVID-19 has generated unprecedented crises in various areas. Education was affected causing the massive closure of institutions in order to avoid and mitigate the spread and impact of COVID-19, in that sense, the adaptation of the face-to-face modality to the virtual one. This research includes the bibliographic review that seeks to analyze and organize various theoretical contributions, visualizing the impulse in the improvement of the procedures that University Education in pandemic entails. Distance education studies, virtual environments for learning, COVID-19 and higher education in pandemic were incorporated using databases such as Google Scholar, Redalyc, Dialnet, Scielo. Documents were selected between 2016 and 2021, exclusion criteria were used and the studies that responded to the concerns regarding the topic to be investigated were qualitatively analyzed. The results reveal that Virtual Education has the adequate support to continue with the educational demand; since it allows the development, interaction, construction, and socialization of knowledge by exchanging knowledge, ideas and experiences among the actors.

Keywords: higher education, pandemic, covid-19, education, challenge

INTRODUCTION

The World Health Organization declared a COVID-19 pandemic on March 11, due to the high number of cases in 112 countries outside China.

During the first months of the year, measures were taken to avoid overcrowding of people in public spaces in order to reduce the spread of COVID-19 in the world. Basic and Higher Educational Institutions were considered potential sources of massive contagion of the virus and were closed. At the beginning of April, when the highest peak in the isolation measures taken occurred, 194 countries had interrupted educational attendance. According to the UNESCO report, approximately 1.6 billion students were affected.

In the 21st century, there has never been an epidemiological situation as complex as the one produced by COVID-19, bringing with it concerns about education. Currently, digital media have become an essential tool for virtual education, many universities in the world adopted this modality with the sole purpose of keeping the learning processes strong, mostly employing remote learning based on the use of platforms and videoconferencing tools. In this sense, the distance education of the teaching-learning process generated by synchronous and/or asynchronous technological mediation, whose value of self-learning, self-directed, autonomous and self-regulated take a great impulse and possession at the moment of establishing learning goals. Therefore, the aforementioned modality proposes to be integral, since teachers must assume their self-training in order to develop their skills and abilities required by the virtual environment (Cerdas, V.

Mora, A., Salas, S., 2020). However, the massiveness and compulsive property of keeping a virtualization of face-to-face classes has encountered multiple technical-pedagogical difficulties and emerging challenges to meet the role of teachers and students in a somewhat unfavorable context (Ramón, G., 2020).

This event made face-to-face education cease to be a time bomb for the educational system, mainly in Latin America and the Caribbean. Changing the origins of the face-to-face context to virtuality, demanded the transformation of a traditional scenario to a new and inevitable virtual and/or digital context.

Then it implied introducing collaborative and participatory practices to virtual educational spaces, initially subjected to an essential exchange of information, using virtual applications as mere storage containers, however, this was for a long period of time, since the real educational interaction demanded a support called feedback.

In Peru, through a Legislative Decree in March 2020, the non-attendance modality was approved, which implied the substitution of an article of the University Law. As a result, online education was allowed, however, the basic conditions of quality and definitions that SUNEDU had established in this matter had to be fully met.

The first regular semester in public and private universities in Peru starts between March and April. At that time, this indicated that several universities had already carried out the admission processes. Many of the private universities had to postpone their admission exams and therefore the start of classes; however, as of May 15, there were 59 licensed universities that began teaching through virtual education. Of these, 26 are public and 33 are private. Likewise, 8 public universities planned to start classes using virtual classrooms between May and June.

According to the abovementioned, the purpose of this article is to analyze circumstances produced in the Higher Educational Processes in the context of COVID-19. The adaptation to a virtual educational modality to continue the teaching-learning processes, since prolonged suspension would delay the progress and continuity of university activities.

METHODOLOGICAL STRATEGIES OR MATERIALS AND METHODS

A bibliographic search of the literature was carried out both electronically and manually, which allowed us to identify relevant studies for the analysis of this article, using the following main databases: Google Scholar, Academic Google, Dialnet, Redalyc, Scielo, and Web of Science.

The search terms were: education in pandemic, higher education in times of pandemic, remote education, online education, education, pandemic and COVID-19.

The search focused on full-text articles, considering the abstracts a relevant part for the writing of this article.

TABLE 1
SYSTEMATIZATION OF INFORMATION FOUND IN THE VARIOUS DATABASES FOR ANALYSIS

Keyword	Data Base
Education in pandemic	Google Scholar, 25 articles; DIALNET, 15 articles; REDALYC, 2 articles; Scielo, 3 articles; Web of Science, 1 article.
Higher education pandemic time	Google Scholar, 20 articles; DIALNET, 2 articles; REDALYC, 2 articles; Scielo, 3 articles; Web of Science, 2 articles.
Remote education	Google Scholar, 100 articles; REDALYC, 50 articles; DIALNET, 33 articles; REDALYC, 15 articles (Indexed).
Online education	REDALYC, 35 articles; DIALNET, 40 articles; SCIELO, 23 articles.

Education, pandemic	Google Scholar 100 articles.
COVID-19	REDALYC, 2 articles; DIALNET, 10 articles;
Education in pandemic	SCIELO, 2 articles (indexed);
	Google Scholar 50 articles

Note: Of the 532 articles found, 23 were selected.

The scientific articles found underwent exclusion criteria, selecting those whose contributions gave more precision to the research, leaving only 23 articles for analysis.

RESULTS AND DISCUSSION

Before the confinement, there were already requests from universities for the implementation of digital teaching techniques among teachers, in the period 2019 and early 2020 there was a forced process of adoption and adaptation to technologies among teachers as they assumed the existing digital possibilities that would become a form of flexibility of place and time to manage and organize information and teaching materials.

Then, the evolution of technology, predicted the application of the distance modality in a university context in times of pre-pandemic in addition to the work under the face-to-face modality (Zúñiga, et al. 2021) through the acquisition and implementation of learning platforms; modules to set the assignment and delivery of tasks; however, at the face-to-face level and its relationship with the use of technology evidenced the scarce use of technology, evidenced the poor management of teaching methods with little interaction among those involved in the process and among peers through forums and collaborative and interactive work platforms, in addition to the scarce teacher follow-up who should be responsible for providing timely support to ensure the end of the learning modules (Ruiz-Bolívar & Dávila, 2016). On the other hand, the use of mobile devices, had already gained preponderance in several researches that gave conformity that people and students around the world had adopted distance education, becoming a technological resource of great importance inside and outside the classroom (Bartolomé, et al., 2017).

With the emergence of COVID-19, the educational system was forced to rearrange its current pedagogical approach to its curricular plans in order to give persistence to the educational processes to be implemented. With the suspension of face-to-face teaching activities in all educational systems, virtualization opened a path to the use of online teaching, inviting teachers and students to reshape their performance to adapt to the new educational environments, opening the path to the incursion of the use of new tools, new strategies, new educational models and new methods (Abreu, et al., 2016; Aznar, 2020).

In that sense, the pandemic situation forced universities to adapt their face-to-face modality to the virtual one. During this period, the commitment and operations carried out have been crucial to protect the higher educational progress (Wang et al., 2020) using all its possibilities in a fast and sometimes unplanned way, leaving them for a moment with the digital resources they had, making it necessary and urgent to reprogram and adapt both teachers and students to start the new learning, housing and family scenario.

Under this context, during COVID-19, the challenges faced by universities worldwide was to have a reliable technological-educational network infrastructure to be able to migrate, adapt courses and align curricular plans, considering new assessment and interaction strategies without overlooking the possible inconveniences and/or incidents that will arise. In this sense, the repotentiation of the capacity to deploy all the pedagogical, didactic, technological and emotional competences of the teacher to assume the teaching-learning process of future professionals in the midst of adversity (Lema, 2020) played a very important role since several teachers used their own resources with the idea of maintaining the emotional connection and motivation with the student, as well as learning to use the new platforms and virtual tools implemented by the universities to upload their educational resources and interact through videoconferencing (Moreno, R., 2020) in addition to employing a flexible and resilient methodological design adapted to the context.

Thus, the health crisis was not only an internal and external challenge to the universities' response capacity or to redirect their functions at the governing level in the face of the impact of the pandemic, but also the considerations on structural issues of the educational community, one of them being the inequality

in the digital and connectivity gaps they were facing. The fact of advancing to deep transformations that contribute to the construction of wellbeing, does not detract from the fact that the higher education institution should focus attention on the problems of mastery and access to education (Canaza, 2020).

The systematic deployment of LMS platforms to continue students' learning and promote the execution of interactive and collaborative activities by electronic means of asynchronous communication (Juca, F., 2016) provided universities with the easy migration of all face-to-face academic activities to virtual environments quickly and effectively. In addition, they had to opt for the adoption of mobile learning or m-learning, which offered support to educational work using mobile devices, such as smartphones, tablets, as well as electronic books (e-books). This represented a new learning modality for the educational community (Briede, et al., 2015), whose benefit lies in the flexibility to access information from anywhere, development of autonomous learning, teamwork and the creation of learning networks, promoting active and effective communication in a synchronous and asynchronous manner, leading to meaningful learning (Basantes, et al., 2017). Then it is mentioned that these could be the next links in the progressive pace of technology in the educational field at the higher level and that in honor of the emerging complicity between mobile technology and e-learning, it responds to the demands of a society that is becoming increasingly dynamic and requires a particularly individual, permanent and autonomous education (Pozo-Sánchez, et al., 2020).

On the other hand, universities had to fight against another of the great challenges such as the inequality of access to digital platforms due to problems of internet access or connectivity that increasingly increased the existing cracks for the search for information and generation of knowledge, hindering not only the promotion of virtual or remote education but also socialization and inclusion in general. Understanding the cracks from a multidimensional perspective, it is not only a difference of access to technological equipment, but also the set of skills and abilities needed to take advantage of the opportunity, which are unequal among students, teachers and those responsible for the intervention in this learning process that today is carried out from home.

Access to Internet connection carries multiple emotions due to the difficulties it presents, in Mexico and Panama, the socioeconomic and cultural cracks are smaller. The role played by mobile connectivity expands opportunities. Therefore internet accesses are diverse and complex, however, it is not only a matter of having it, since not always all modalities offer the same opportunities for use and exploitation, as these also depend to a great extent on the quality of the connection and the type of device (Trucco and Palma, 2020). Indeed, it is essential to strengthen the existing access of disadvantaged localities, since many times the access to mobile Internet is through prepaid plans that provide few minutes available to navigate or use the platforms, learning tools and other methods that are being used for the continuity of the studies.

Peru is no exception to this challenge of Internet access. Huanca, et al. (2020) in their research found that, according to interviews with students from public and private universities, 55% have access to the Internet and 45% do not. However, if we only consider the participation of students from public universities in Lima and the provinces, 68% report that they do not have access to the Internet and 32% do have access. Regarding the coverage and support of technology in remote classes, 70% of students from public universities stated that they do not have adequate coverage and support capacity in access to Internet technology for the development of virtual education sessions; while 69% of students from private universities claimed to have sufficient coverage and support capacity to develop virtual education sessions. On the other hand, in terms of ICT management, 38% of students from public universities stated that their teachers are at a fair level, 36% of students are at a good level and 26% responded that their teachers have a poor management of technology. However, in the private sector, 71% said that the capacity to manage ICTs as academic applications is good, 21% said it was fair and 08% acknowledged that their teachers have a poor handling of ICTs.

To curb the uncertainty caused by the pandemic and virtual classrooms in search of educational continuity in order to train professionals.

Since then, both the public and private sectors have made great efforts to ease the difficulties encountered in distance learning and virtual-remote work. For their part, telecommunication companies have played a role in the development of the fundamental in expanding access to connectivity and digital

educational resources. Throughout the region, new initiatives have been implemented to address these challenges. Some telephone companies improved the quality of their services at no additional cost to their customers and others created alliances with the ministries of education in the region to launch platforms that do not require a stable Internet connection. Universities, for their part, opted for an analysis to support the university educational community, providing internet kits that ensured connectivity in virtual classes through the Zoom, Google meet, Cisco Webex, Skype, etc. platforms.

In summary, the apogee of the new digital tools and media that imply facing in pandemic time higher education, is assumed as ubiquitous learning with the beginning of a new educational model in whose proposal learning is developed in multiple scenarios and will allow students to obtain a formal education with curricular and extracurricular activities applied in different time and space (home, university or public transportation) (Sevillano, et al., 2016).

Education in a context of social isolation requires tools that contribute to teaching and learning processes that cross the thresholds of face-to-face classrooms to be successfully transferred to virtual spaces. These tools, besides being virtual and digital, should fulfill the function of establishing interactions for the development of competences in students, generating collaborative work and harmonizing autonomy; in the case of teachers, facilitating the application of learning methods considering the learning needs of their students.

As mentioned in the previous texts, universities were also equipped with learning management systems (LMS) covering didactic activities and resources, offering a diversity of ways of meaningful interaction between university actors (Cedeño &Murillo, 2019) such as Zoom, Skype, Cisco Webex, Google Meet, etc.

In summary, Aquino, C. (2020) mentions that virtual education emerges as an option to replace face-to-face teaching in times of pandemic. Such approaches may not only be necessary to address the issue of education during a pandemic, but also to provide a better understanding of the crisis, but will also provide a basis for future foundations for teaching in health emergency and/or pandemic contexts (Aquino & Medina, 2020).

It is worth pointing out that, in spite of the adversities, this period of change has helped us to discover a number of digital and ICT tools that will undoubtedly be useful when face-to-face classes are resumed. The enhancement of traditional teaching in a traditional classroom, through digital resources, will facilitate the teaching process in higher education.

In addition, in the context of pandemic, the teaching work is more complex, as well as the transition to virtual education allowed them to develop various competencies and digital tools to represent valuable learning, indicating that the gaps in access to ICT have been marked. On the other hand, students highlight gains at a personal level, such as greater self-discipline, better time management, responsibility, resilience, autonomy and flexibility (Lovón, et al., 2020; Portillo, et al., 2020; Rosario-Rodríguez et al., 2020; Román, 2020).

For all these reasons, setting an agenda of transformations for both public and private universities become a deep reflection on the different digital mechanisms and pedagogical models used during the pandemic. Likewise, once the weaknesses, strengths, threats and opportunities of distance, virtual and/or blended learning education with intensive use of technological resources have been identified, it will be necessary to propose the establishment of new virtual teaching-learning processes and hybrid systems for teaching and students. It will then be essential to repair the damage caused by the pandemic and make amends for past mistakes, taking into consideration educational inequality, social exclusion, etc., in addition to overcoming pedagogical, infrastructure, research, etc. deficiencies.

CONCLUSION OR FINAL CONSIDERATIONS

The findings of the review and the support of the different research studies lead to the affirmation that there is a clear relationship between the technological infrastructure of universities and the resilience to emergency situations that requires physical social isolation, as well as the level of satisfaction and resilience of students and teachers with virtual education. Likewise, we can state that Virtual Education provides the adequate support to give continuity to the educational processes; since it allows the development,

construction, interaction and socialization of knowledge from an exchange of knowledge, experiences and ideas of the protagonists. In addition, virtual environments in times of pandemic, are very good and indispensable for the application of didactic methods, since, it implies the implementation of varied resources that respond to the multiple needs and styles of learning from the use of diverse forms of interactive learning that allows to achieve autonomy and collaborative work.

Despite the adversities generated by the pandemic, learning and development opportunities were generated for the university community. According to the various research studies analyzed, they conclude that the crisis generated in higher education by COVID-19 was the breaking point that education systems needed to rethink the ways of managing learning from a reflective, authentic and transparent retrospective view, assuming and understanding the errors and omissions and continuing with a clear, open, inclusive, reconstructive and non-repairing perspective, of support and not of assistance to establish the legal, social, technological, didactic and architectural framework that seeks a solid and non-fragmented higher education service, with an organization and an educational framework that favors internal cohesion.

The situation arising from the pandemic poses significant challenges for all public and private universities, as well as the social contexts of the countries, which must act in a coordinated manner. It also leaves lessons on decision making and priorities required for community life. Taking this into consideration, we can infer that today we have the possibility of rethinking the purpose of higher education and its role in the maintenance of life and human dignity with the aim of the continuity of all its participants. That is to say, while the various countries are evaluating the best way to address the perplexities and reopen their educational institutions under safe conditions, the crisis provides an opportunity to increase the resilience of national educational systems and transform them into systems of higher education, equitable and inclusive, which favor the fulfillment of the collective commitment assumed in the 2030 Agenda for Sustainable Development.

Lastly, although positive points of this period are highlighted, it is also important to take into consideration the wear and tear generated by the challenges that remote education implies. Therefore, it is necessary to continue researching the impact of these changes in order to propose solutions that contribute to the prevention of problems that may affect the health and well-being of students and teachers.

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