Perception of peruvian university students about virtual education during the COVID-19 pandemic

Percepción de los estudiantes universitarios peruanos sobre la educación virtual durante la pandemia de COVID-19

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Abstract

Since 2020, the COVID-19 pandemic has forced higher education institutions to implement the virtual teaching-learning modality in order not to interrupt the educational service, comply with the provisions of social distancing and thus avoid increasing the rate of infections. However, this disruption brought with it some unforeseen problems and limitations during its implementation. Therefore, the objective of this research was to analyze the perception of university students in the Madre de Dios region about virtual education during the COVID-19 pandemic. The approach was quantitative, the design was non-experimental, and the type was cross-sectional descriptive. The sample was made up of 302 students to whom the PAVDO-C Questionnaire was applied, an instrument with adequate levels of validity based on content and reliability. According to the results, the perception of 41.4% of the students about the virtual education that was being implemented was partially favorable, 33.4% was favorable and 25.2% was unfavorable. Likewise, it was determined that some sociodemographic and academic variables such as gender, university of origin, employment status, and area of residence were significantly associated with said perception. Finally, it was concluded that the students were characterized by having a partially favorable perception of virtual education, for which universities needed to continue developing the digital and didactic skills of teachers so that they can improve their virtual pedagogical practice and thus teaching. be more suitable.

Keywords: Virtual education, perception, students, university education, COVID-19.

Resumen

Desde el año 2020, la pandemia de COVID-19 obligó a las instituciones de educación superior a implementar la modalidad virtual de enseñanza – aprendizaje con el propósito de no interrumpir el servicio educativo, cumplir con las disposiciones de distanciamiento social y así evitar incrementar la tasa de contagios. Sin embargo, dicha disrupción trajo consigo algunos problemas y limitantes no previstas durante su implementación. Por ello, el objetivo de la presente investigación fue analizar la percepción de los estudiantes universitarios de la región Madre de Dios sobre la educación virtual durante la pandemia de COVID-19. El enfoque fue cuantitativo, el diseño fue no experimental y el tipo, descriptivo transversal. La muestra fue conformada por 302 estudiantes a quienes se les aplicó el Cuestionario PAVDO-C, instrumento con adecuados niveles de validez basada en el contenido y confiabilidad. Según los resultados, la percepción del 41,4% de los estudiantes acerca de la educación virtual que se venía implementando fue parcialmente favorable, del 33,4% fue favorable y del 25,2% fue desfavorable. Asimismo, se determinó que algunas variables sociodemográficas y académicas como el género, la universidad de procedencia, la condición laboral y la zona de residencia se asociaban de manera significativa a dicha percepción. Finalmente, se concluyó que los estudiantes se caracterizaban por tener una percepción parcialmente favorable sobre la educación virtual, por lo cual era necesario que las universidades continúen desarrollando las competencias digitales y didácticas de los docentes para que puedan mejorar su práctica pedagógica virtual y así la enseñanza sea más adecuada.

Palabras clave: Educación virtual, percepción, estudiantes, educación universitaria, COVID-19.

Introduction

Since March 2020, Peru, like other countries in the world, has been affected by COVID-19, a disease that was categorized by the World Health Organization (WHO) as a pandemic[1-3] and despite the efforts of science, the number of infections and fatalities continued to increase[4]. To face the aforementioned health emergency, the Peruvian State proposed a set of restrictive measures[5], one of the most important in the field of education being the migration of face-to-face education to the virtual modality[6].

Currently, most of the terms related to virtual education have in common the ability to use a device connected to a network, which offers the possibility of carrying out the teaching-learning process from anywhere, at any time, at any pace, and with any medium[7]. Thus, virtual education refers to a tool that can make the teaching-learning process more student-centered, more innovative, and even more flexible[8]. It is also defined as learning experiences in synchronous or asynchronous environments using different devices (for example, mobile phones, laptops, computers, etc.) with Internet access. In that sense, students can be anywhere to learn and interact with teachers and other students[9].

Now, as mentioned, the way to develop the teaching-learning process through virtuality can be synchronous and asynchronous. It is synchronous when it is structured in the sense that students attend live lectures, there are real-time interactions between teachers and students, and there is the possibility of instant feedback[10]. It is given through different video conferencing applications, such as Google Meet, Zoom, WebEx, Microsoft Teams, etc., and instant messaging applications, such as Whatsapp, Messenger, Telegram, Hangouts, etc. On the other hand, it is asynchronous when the learning content is not available in the form of lectures or live classes, but in different learning systems and forums. In that sense, instant feedback and immediate response are not possible in such an environment[11]. To provide virtual education, different platforms have been designed, such as Moodle, SWAD, Chamilo, Google Classroom, and others[12].

Now, it is necessary to point out that the abrupt process of the virtualization of education caused by the COVID-19 pandemic caused great pressure, both on teachers and students since they had to put into practice a little-known strategy for which they were not prepared[13]. Likewise, the subjects had to be redesigned, virtual classrooms were enabled, and educational actors were hurriedly trained so that the university educational service could continue[14]. In Peru, the virtualization process brought with it many challenges and difficulties to universities because many of them did not have virtual classrooms implemented, students and teachers were not familiar with digital resources and tools, and also because of the technological gap and poor connectivity that exists at the national level, and specifically, in the Madre de Dios region, where this research was developed. This caused many students not to connect in a timely and stable manner to their classes and neither do they carry out their academic activities, whether synchronous or asynchronous.

Several studies were carried out during the pandemic context to analyze the perception of students about the virtual education they had been receiving and the findings were heterogeneous, since in some cases the perception was favorable[15,16] in other cases it was moderately favorable[1721] and even came to be perceived as unfavorable[22]. Likewise, almost all the studies mentioned concluded that, from the perception of the students, virtuality was useful, timely, and necessary during the pandemic, however, they considered that the face-to-face modality was better than the virtual one due to accessibility and connectivity problems they had, especially in rural areas. Well, it must be noted that the differences found in the results would be explained due to sociodemographic aspects and the academic conditions where the data was obtained.

Based on the above, the general objective of this research was to analyze the perception of university students in the Madre de Dios region about virtual education during the COVID-19 pandemic.

Materials and methods

Project

The research was characterized by having a quantitative approach since it was based on numerical measurement to determine behavior patterns in the study sample[23]. Regarding the design, it was non-experimental, since the variable perception of virtual education was not manipulated intentionally but was observed as it occurred in its environment[24]. Regarding the type, it was descriptive - cross-sectional, since the characteristics and properties of the study variable were analyzed and the data collection was carried out in a single moment, respectively[25].

Population and sample

The study population consisted of 3,500 students enrolled in the Universities that provide educational services in the Madre de Dios region, Peru: Universidad Nacional Amazónica de Madre de Dios (UNAMAD) and the branches of the Universidad Andina del Cusco (UAC) and Universidad Nacional de San Antonio Abad del Cusco (UNSAAC). On the other hand, the sample consisted of 302 students, an amount that was determined through a non-probabilistic sampling for convenience, having as inclusion criteria the students who followed their studies virtually. Table 1 describes the sociodemographic and academic characteristics of the sample, and it can be seen that more female students participated, who were between 16 and 20 years old, whose university of origin was UNAMAD, who worked, lived in the urban area, and whose socioeconomic level was medium.

Table 1. Sociodemographic and academic characteristics of the sample.

Sociodemographic and academic characteristics		n= 302	%
Gender	Male	121	40.1
	Female	181	59.9
Age group	Between 16 and 20 years old	155	51.3
	Between 21 and 25 years old	101	33.5
	Between 26 and 30 years old	27	8.9
	From 31 to more years	19	6.3
University of origin	UNAMAD	154	51.0
	UAC	122	40.4
	UNSAAC	26	8.6
Labor condition	Works	173	57.3
	Not working	129	42.7
Residence area	Urban	225	74.5
	Rural	77	25.5
Socioeconomic level	Low	88	29.1
	Medium	182	60.3
	High	32	10.6

Technique and instruments

The technique used was the survey, while the instruments were the PAVDO-C Questionnaire[26] and the sociodemographic data sheet, which were structured in the Google Form. The aforementioned questionnaire consists of 20 Likert-type questions (totally disagree, disagree, neither agree nor disagree, agree and totally agree) and was structured in 4 dimensions: quality (items 1, 2, 3, 4, 5, and 6), characteristics (items 7, 8, 9 and 10), advantages (items 11, 12, 13, 14 and 15) and satisfaction (items 16, 17, 18, 19 and 20). Its metric properties were determined in a previous study carried out in the region of Madre de Dios, Peru[20] through the processes of validity based on content and reliability. In this sense, it was determined that the questionnaire had adequate content-based validity (Aiken's V= 0.878) and reliability (Cronbach's Alpha= 0.822). Regarding the sociodemographic record, it was made up of 6 multiple-choice items that sought to know the sociodemographic characteristics of the participants, such as gender, age group, university of origin, labor condition, area of residence, and socioeconomic level.

Procedure

For data collection, a meeting was established with the authorities of the universities focused on this research to inform them about the purpose of the research and request their respective authorization. Subsequently, the students were invited to participate, and they were sent the link to the survey where the objective of the research was explained to them, informed consent was requested, and instructions were provided so that they could develop the items. The survey lasted approximately 15 minutes and after confirming the participation of the 302 students, their access was disabled.

Analysis of data

The information obtained from the Google form was exported to a Microsoft Excel file, where the rating process was carried out considering the respective rating scale. Then, to perform the statistical analysis, the SPSS® V.25 Software was used, where the descriptive results were summarized in a table, while the inferential results were obtained through the non-parametric Chi-Square test (X^2), which allowed determine if the perception of virtual education was significantly associated with the proposed sociodemographic and academic variables.

Results

According to Table 2, the perception of 41.4% of the students about virtual education was partially favorable, 33.4% was favorable and 25.2% was unfavorable. These data indicate that the students felt that the teaching-learning process that took place through virtuality and the use of information and communication technologies (ICT) was not what was expected, which was due to the way it was implemented, the didactic and digital skills of the teachers, as well as some characteristics of the platforms where the courses were structured.

Regarding the dimensions, it is observed that in the quality dimension the partially favorable level also predominates, which indicates that the students considered that with practice they had become familiar with the virtual classroom, as well as with its structure and its accessibility, however, teachers sometimes did not organize the contents according to progress and did not always incorporate resources to complement their learning. About the characteristics dimension, it was located at the partially favorable level, that is, there was a common perception that the technical support that the virtual classroom had was not always timely and they felt that their teachers sometimes did not control the progress of their learnings. In relation to the advantages dimension, it was also located at the partially favorable level, which indicates that, although the educational community was trained by the universities on the management of the virtual classroom, there was no virtual library, nor had it been used. virtuality to have the participation of international teachers or from other universities. Finally, regarding the satisfaction dimension, the partially favorable level prevailed, which means that the students were characterized because they perceived that they were learning, however, not at the same level as in the face-to-face modality.

Table 2. Perception of virtual education and its dimensions.

Variables y dimensions	Unfavorable		Partially favorable		Favorable		Total	
	f	%	f	%	f	%	f	%
Virtual education	76	25.2	125	41.4	101	33.4	302	100.0
Quality	60	19.9	133	44.0	109	36.1	302	100.0
Characteristic	53	17.5	128	42.4	121	40.1	302	100.0
Advantage	70	23.2	120	39.7	112	37.1	302	100.0
Satisfaction	100	33.1	110	36.4	92	30.5	302	100.0

Table 3 determined that the perception of virtual education was significantly associated with some sociodemographic and academic variables such as gender, university of origin, labor condition, and area of residence ($p<0.05$). However, variables such as age group and socioeconomic level were not significantly associated with this perception ($p>0.05$). In this sense, it can be affirmed that the male students, who studied at the UAC, who worked and who lived in the urban area presented a more favorable perception of virtual education compared to the other contrast groups.

Table 3. Association between the variable perception of virtual education and the sociodemographic and academic variables

Sociodemographic and academic characteristics		Perception of virtual education						p-valor
		Unfavorable		Partially favorable		Favorable		
		f	%	f	%	f	%	
Gender	Male	25	20.7	53	43.8	43	35.5	**0.012**
	Female	51	28.2	72	39.8	58	32.0	
Age group	Between 16 and 20 years old	38	24.5	63	40.7	54	34.8	0.056
	Between 21 and 25 years old	26	25.7	42	41.6	33	32.7	
	Between 26 and 30 years old	8	29.6	11	40.8	8	29.6	
	From 31 to more years	4	21.1	9	47.4	6	31.5	
University of origin	UNAMAD	45	29.2	58	37.7	51	33.1	**0.045**
	UAC	23	18.9	55	45.1	44	36.0	
	UNSAAC	8	30.8	12	46.2	6	23.0	
Labor condition	Works	36	20.8	75	43.4	62	35.8	**0.001**
	Not working	40	31.0	50	38.8	39	30.2	
Residence area	Urban	50	22.2	94	41.8	81	36.0	**0.009**
	Rural	26	33.8	31	40.3	20	25.9	
Socioeconomic level	Low	23	26.1	35	39.8	30	34.1	0.084
	Medium	44	24.2	77	42.3	61	33.5	
	High	9	28.1	13	40.6	10	31.3	

Discussion

The COVID-19 pandemic caused changes in the educational model and specifically, in the teaching-learning process. Thus, it went from being face-to-face to being virtual (synchronously or asynchronously), which required the use of ICT and didactic strategies according to this context. Therefore, this research sought to analyze the perception of university students in the Madre de Dios region about virtual education during the COVID-19 pandemic.

A first finding indicates that the students were characterized by perceiving that the virtual education that had been implemented in the universities was partially favorable, which would be explained by the poor development of the didactic and digital skills of their teachers to teach their classes under this modality. and due to the very nature of the courses, it was necessary to carry out complementary practical aspects in a person. Therefore, it is inferred that the aforementioned aspects must be optimized so that virtual classes are more effective, students learn more, and thus meet their expectations.

The results presented agree with the findings found in a study carried out in India, where the perception and preference of students towards online learning were analyzed and it was determined that the flexibility and convenience of online classes made it an option attractive and necessary during the pandemic, however, broadband connectivity issues in rural areas made it challenging for students to make use of such initiatives[18]. Similarly, it is consistent with what was reported in an investigation carried out in Peru, where the perception of students from the Faculty of Engineering of a Peruvian public university about virtual education during the COVID-19 pandemic was analyzed and it was determined that this perception was moderately favorable. Likewise, it was determined that some variables such as gender, age, and employment status were significantly associated with the perception they had about the aforementioned teaching-learning modality[20]. On the other hand, it is related to what was found in a study carried out in Portugal, where they evaluated the perception of students regarding distance courses during the COVID-19 pandemic. Among the main findings, they identified that students showed an ambivalent position regarding virtual classes, that is, they considered it to be important and beneficial and highlighted its flexibility, since it allowed them to continue with their studies, however, aspects such as logistics, the preparation of the universities to offer this teaching modality and the overload of work were aspects valued as unfavorable[27].

Currently, trends point to people studying in flexible environments, therefore, virtual undergraduate education plays an important role in meeting this demand[28]. However, for this experience to be successful, universities have the responsibility to develop a study plan that adapts to strategies, methodologies, and activities and that responds effectively to virtuality. In addition, it is necessary to promote more participatory classes, based on experience and with reflective content, capable of generating greater learning in students[29].

Regarding the sociodemographic variables, it was determined that the gender of the students was significantly associated with the perception they had about virtual education ($p<0.05$), that is, it was the males who had a more favorable perception of virtual education than women. The result described is consistent with some studies carried out in the context of a pandemic, where it was found that men had a greater development of their digital skills, knowledge, and attitudes towards ICT[30,31] and a better perception and attitude towards virtual education[20]. This way, men, having important prerequisites to adapt to virtuality, had a slightly more favorable perception compared to women.

Another finding indicates that the students' university of origin was also significantly associated with their perception of virtual education ($p<0.05$). In this sense, the students of the

UAC (private university) valued more favorably how virtual education was being implemented in their university compared to the students of the UNAMAD and UNSAAC (state universities). This advantage occurred from the beginning of the pandemic since resources were made available in the UAC in the short term to face virtual education in the context of the health crisis, such as the adaptation of the virtual classroom, teachers were trained and students about the use of the said platform and some courses and workshops were developed for teachers about the didactic skills to face the new teaching modality. On the other hand, in the state universities, the policies to adopt the virtual modality implied complex adaptation processes due to the bureaucracy and the fact that there were not enough technical and support personnel to train the educational actors, enable and adapt the virtual classroom, which led to a delay in the start of classes. On the other hand, currently in private universities teachers are constantly monitored and accompanied to properly develop their learning sessions and are constantly trained, aspects that are not given in a timely manner in the state university.

On the other hand, it was determined that the labor condition of the students was significantly associated with their perception of virtual education ($p<0.05$), that is, the students who worked, as planned, presented a perception more favorable toward virtual education than students who only dedicated themselves to studying. A possible explanation would be because many students who worked could participate in the synchronous sessions from their work centers and those who did not access during the established class schedules could see the recordings that were saved in the virtual classroom and carry out the proposed activities normally. A similar result was reported in Peru, where better perceptions about virtuality were also reported by students who studied and worked at the same time[20].

Finally, the existence of a statistically significant association was found between the student's area of residence and their perception of virtual education ($p<0.05$). In this sense, the students who lived in the urban area had a more favorable perception of virtuality than the students in the rural area. As previously described, connectivity and accessibility problems are aspects that would negatively affect the students' perception. In this regard, an empirical study carried out in Peru coincides with what was reported in stating that virtual education in Peruvian universities was destined to fail due to the lack of certain skills of those who impart knowledge and the lack of internet access by students from of the peripheral spaces that represent the excluded majority of a country with serious economic, social, and political deficiencies[32].

This research was not exempt from limitations, such as the disproportion of the sample with respect to the number of students according to the university of origin, the type of sampling, and the characteristics of the instrument (being self-completed), which does not allow significant generalizations and could generate social desirability biases or subjective assessments by students. For this reason, it is suggested that in future research the sample be increased, including more UNSAAC students, and complementary data collection techniques and instruments are used that allow giving much more objectivity to the process in question.

Conclusion

Although virtual education is a modality that has many advantages, such as greater coverage, flexibility in schedules, and the integration of ICT in the teaching-learning process, in Peru, the virtualization process brought with it many challenges and difficulties. Since many universities did not have virtual classrooms implemented, students and teachers were not familiar with digital resources and tools, as well as the technological gap and the poor connectivity that exists in urban areas and especially in rural areas. This caused many students not to connect in a timely and stable manner to their classes and neither do they carry out their academic activities, whether synchronous or asynchronous.

In the present investigation, it was concluded that Peruvian university students were characterized by having a partially favorable perception of virtual education. Likewise, the dimensions of quality, characteristics, advantages, and satisfaction were also valued as partially favorable. On the other hand, it was determined that some sociodemographic and academic variables such as gender, university of origin, labor condition, and area of residence were significantly associated with said perception. In this sense, universities must continue developing the digital and didactic skills of teachers so that they can improve their virtual pedagogical practice and thus teach more appropriately.

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