

Conceptions About Virtual And Face-To-Face Modalities In University Students

Cesar Augusto Hernández-Suarez¹, Audin Aloiso Gamboa-Suárez², Raúl Prada-Núñez³

¹*Universidad Francisco de Paula Santander*
<https://orcid.org/0000-0002-7974-5560>
cesaraugusto@ufps.edu.co

²*Universidad Francisco de Paula Santander*
<https://orcid.org/0000-0001-9755-6408>
audingamboa@ufps.edu.co

³*Universidad Francisco de Paula Santander*
<https://orcid.org/0000-0001-6145-1786>
raulprada@ufps.edu.co

Abstract

This article shows the findings of a study that sought to describe the perceptions of students of a public university on the transition from face-to-face teaching to remote teaching mediated by digital technologies. The methodological horizon was oriented from the quantitative-descriptive paradigm with field design, the sample consisted of 503 students of the Faculty of Education, Arts and Humanities of a university in northern Santander. A questionnaire with 29 questions with several response options was used. The results determined that 84.7% of the lectures were transferred to lectures in real time; 53.7% of the students said they had watched recorded lessons. It was concluded that the transition in the educational emergency was under the concept of ICT-mediated modality to be teachable contents and to transmit information by the separation between teachers and students, but not by the knowledge, values, philosophies and pedagogical strategies that the teacher has on ICT-mediated education.

Keywords: transition, remote education, digital technologies, virtual education.

RESUMEN

El presente artículo muestra los hallazgos de un estudio que pretendió describir las percepciones de estudiantes de una universidad pública sobre la transición de la enseñanza presencial a la remota mediada por tecnologías digitales. El horizonte metodológico se orientó desde el paradigma cuantitativo - descriptivo con diseño de campo, la muestra estuvo conformada por 503 estudiantes de la Facultad de Educación, Artes y Humanidades de una universidad norte

santandereana. Se utilizó un cuestionario con 29 preguntas con varias opciones de respuesta. Los resultados determinaron que un 84,7%, de las clases magistrales se trasladaron a conferencia en tiempo real; un 53,7% de los estudiantes dijeron haber visto lecciones grabadas. Se concluyó, que la transición en la emergencia educativa fue bajo el concepto de la modalidad mediada por las TIC para ser enseñable los contenidos y para transmitir la información por la separación entre docentes y los estudiantes, más no por los conocimientos, valores, filosofías y estrategias pedagógicas

que tenga el docente sobre educación mediada por TIC.

Palabras clave: transición, educación remota, tecnologías digitales, educación virtual.

INTRODUCTION

Since March 2020, both teachers and students from all over the world and the country gathered in social networks, mobile platforms, virtual classrooms, in the cloud, among others, to carry out the continuity of teaching through various courses and distance learning, as well as remotely, online or virtual (Espinell-Rubio, Hernández-Suárez & Rojas-Suárez, 2020; Avendaño Castro et al., 2021a; Rincón et al., 2021). The World Health Organization (WHO) announced to the world the scope of the accelerated transmission of the infection caused by the COVID-19 virus, decreeing the disease as a pandemic, which set off the alarms of the different international markets, since the collapse of the economy was looming due to the generalized uncertainty (Inter-American Development Bank, 2020), to which education was no stranger, so the need arose to give continuity to the pedagogical processes through digital tools (Avendaño et al., 2021). Scholars on the subject claim that online or virtual instruction can allow flexibility in teaching and learning anywhere and anytime (Claro-Vásquez, 2017; Lassos et al., 2017; García, 2001) but the speed with which this change is expected to happen in face-to-face instruction is unprecedented.

The transition to remote teaching in a complex environment of social distancing was a great challenge, in terms of pedagogy, technological appropriation, improvisation, lack of motivation, willingness of the educational actors, among others. On the one hand, Bracho and Bracho (2020) state that “there are many

actors who do not use technology properly, ... there is an excuse for not integrating into a virtual educational activity, showing disinterest” (p.11).

In Garcia's (2021) opinion, this confinement took him out of his comfort zone:

For those who already live with the realities of digital distance education and those who used to teach and learn in face-to-face formats, the departure from that comfortable and safe space, in many cases made them lose their way. In others, they overcame and gave a very dignified response (p. 17).

It is therefore important not to be tempted to compare virtual, online, or remote ICT-mediated learning, including e-learning with face-to-face teaching in these circumstances.

The learning experiences in these well-planned contexts are significant and different from the courses that were or are offered in response to the educational emergency and post-Covid19. In this case, it is not justifying but differentiating both modalities, since the actors of the virtual teaching process have gone through different forms but currently the training is student-centered, freedom and integrity of the individual, the learning process guarantees a flexible learning sequence, agreed objectives, contents, teaching and evaluation methods and ICT support mechanisms, where a new form of teaching and learning has been establishing itself (Ortega González et al., 2019; Ortíz-Arismendi et al., 2019, Yong et al., 2017).

While, remote teaching offered by face-to-face actors in this time of pandemic, present new characteristics that “turned the face-to-face synchrony into a remote synchrony, it was

about replicating all the activity of the teacher and students in the classroom, through a synchronous connection” (García, 2021, p. 24). At the same time, the results of the research by Avendaño Castro et al. (2021b) coincide with what was stated by Miguel (2020) who highlights that within the formative process in higher education there Other studies on the subject, in particular Perez et al. (2021), who made an analysis of distance education (DE) in Covid-19 times, from the perspective of university students, confirm the translation of the face-to-face teaching model based on lectures to the remote one mediated by ICT, either asynchronously (44.3%), synchronously (15.0%) or without any type of interaction (19.0%).

On the other hand, Audran et al. (2021) describe that the transition from face-to-face to online education was expected to be extremely demanding, as the responses indicate personal difficulties in mastering digital tools during this period, although most teachers remain quite optimistic about their ability to perform.

Meanwhile, Avendaño-Castro et al. (2021) consider that, in the face of the academic emergency, adaptation is an opportunity for the teacher to use ICT to teach regularly and could generate skills to teach in this context, in addition, they argue that they could become more skilled and that all virtual teaching could work more efficiently. In fact, the use of Information and Communication Technologies has pedagogical value in these times of crisis (Avendaño-Castro et al., 2021). Therefore, they propitiate a teaching mediation through the integration between didactic transposition and information and communication technologies that transcends outside the classroom with the use of these technological tools.

were “some of the disagreements of students with this change lies in the poor communication with teachers; classes are based on loads of tasks, without prior explanation or feedback; in some cases, connectivity represented a problem” (p.25).

Therefore, this research provides an advance on the scientific field of virtual education in the transition from face-to-face to remote teaching mediated by ICT during Covid-19, and in turn, deepen on these issues. In this regard, Amador et al. (2016) point out that it is necessary to investigate how higher education institutions and their teachers have carried out the didactic transition processes when incorporating these changes that include technological tools (Medina Romero et al, 2021).

In practical terms, to examine the transition that has been taking place, due to the problems faced by Higher Education Institutions, since virtual, e-learning or online, remote teaching mediated by ICT, is not a copy of offline classrooms. Only starting from the characteristics and rules of online education, the transformation of educational patterns caused in ICT can be promoted; therefore, it is necessary to verify the processes of didactic transposition of knowledge with the use of technologies (Ferreira et al., 2019) and that has been imposed on students by social distancing and educational emergency. Hence, the objective of this research is to describe the perceptions of students at the Faculty of Education, Arts and Humanities of the Universidad Francisco de Paula Santander Cúcuta, Colombia, after the transition from face-to-face to remote teaching mediated by ICT.

THE TRANSITION FROM FACE-TO-FACE TO ICT-MEDIATED REMOTE TEACHING

Didactic transposition, in the words of (Chevallard, 1998) is considered when there is a “set of situations in the didactic creation (of objects of knowledge and teaching at the same time) that are made necessary by the demands of didactic functioning” (p.18). This process makes the objects (such as text, images) of knowledge to be transformed into knowledge to be taught, from the planning and knowledge of the teacher. However, nowadays, knowing what and how is not enough, because, in the digital era and the information and knowledge society, it is also essential to know where and who are more important.

Cardelli (2004) affirms that didactic transposition is a process and not an individual practice, furthermore, he argues that although it is carried out in pedagogical praxis this does not exhaust it, since it is necessary to distinguish knowledge in relation to the objects produced by the culture and in turn, by the knowledge to be taught in that culture because knowledge may reside in non-human objects or devices (distributed cognition). In other words, there is the “organization of cognitive systems... Beyond the individual to encompass interactions among people and with the resources and materials of the environment” (Hollan et al., 2000, p. 175), i.e., distributed cognition.

Within this perspective, Garonce and Lacerda (2012), when considering Chevallard's postulates, point out that the human and technological factors, which are present in a context within which the didactic transposition of educational actions from the conventional classroom to the virtual classroom takes place, can be inserted as a second-order didactic

transposition, since it is not epistemological but methodological. Thus, the concept elaborated by Chevallard (1985) refers to a change of epistemological character, related to knowledge, which was previously scientific, or wise, and becomes didactic, teachable.

Therefore, it is not possible to make a transition from face-to-face to remote teaching mediated by ICT, without considering the evolutionary and methodological processes of the modality (distance and virtual), since considering the approaches of Garcia (2003; 2009), distance education has evolved along four major stages or generations of technological innovation, ranging from teaching by: (a) correspondence based on print technology; that is, teaching without virtual environments; (b) multimedia based on print, audio and video technologies; refers to distance learning with virtual environments; (c) tele-learning, based on applications of technologies and synchronous communication opportunities with ICT and content delivery; accounts for teaching in dual or bimodal environments: and; (d) flexible learning based on online delivery through the Internet; with open educational resources (widely uses Web 2.0). In other words, E-Learning. In addition, high degree of autonomy of time, space and commitment of educational actors, as well as, in the teaching guidance given in the design and in the choice of appropriate means for tutorials (Padula, 2001).

Thus, within the perspective of the educational emergency by Covid-19 adopted here, there are four terms related to non-face-to-face education that are worth distinguishing with their own characteristics and differences between distance, virtual, online and the current remote emergency education (Ibáñez, 2020; Peña 2021). It could even be expanded

with what is proposed by García (2003; 2009)
(See Table 1).

Table 1. Characteristics and differences between distance, virtual, online and remote emergency education.

	Notions of the modality	Disadvantage
Distance and virtual education	<p>Presential (traditional): it is centered on the teacher and his teaching, the roles are presented as an active teacher and a passive student, where presentiality is required and the interaction between teacher-student is scarce. The material is printed and audiovisual. The resources: television, radio, therefore, it is the means of communication (first generations of distance education).</p>	<p>Flexibility: Students' personal time for time management and school organization.</p>
	<p>Virtual: This model is centered on student learning. Roles for students: active; and for teachers, Guidance and learning mediators to give feedback. It requires a lot of interaction between teacher-student and student-student educational actors. The materials are electronic and interactive. Communication is fluid through chat, forums, electronic messaging, e-mail. It requires virtual classrooms as a space for learning.</p>	<p>Flexibility and accessibility: Time for school and personal management and organization. Not everyone has the socioeconomic levels and appropriation of technological resources required for the classes. Requires autonomy, teacher guidance and adequate resources.</p>
	<p>Online education: Teachers and students participate and interact in a digital environment, through technological resources making use of the facilities provided by the Internet and networks in a synchronous manner, this method usually has as an area of opportunity the social dimension.</p>	<p>Self-management and dedication time (Flexibility). It depends on the effectiveness and development of autonomy, teaching guidance and adequate means. Personalized accompaniment</p>

<p>Classroom education supported by virtual education</p>	<p>Emergency remote education: According to Peña (2021), this concept was born in the wake of the global crisis thanks to Covid-19. Education was faced with an extremely difficult situation, as it had to adapt its methods in a very short period of time in order to be able to continue teaching all its students. The main objective is to move the courses that had been taught face-to-face to a remote, virtual, distance or online classroom. The roles of students and teachers may vary depending on the technological and digital appropriation of the subjects. There is no clear method to apply emergency remote education, only the distance education concepts of teacher-student separation and flexibility in the student's self-management time. The resources used depend on the digital competences of the subjects.</p>	<p>This method prioritizes the emergency situation and looks out for the welfare of its students. It groups together all actions coming from governments,</p> <p>It is applied without the digital appropriation and competencies necessary for teaching in the 21st century.</p>
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Source: Adapted from Padula, 2001; García (2003; 2009); Ibáñez, 2020; Peña, 2021.

In view of the demands of the process, it is necessary to transpose face-to-face teaching in times of educational emergency to the new spaces of remote education mediated by ICTs, where they play an integral part in the act of teaching and learning and influence cognition. They allow students to be autonomous, more responsible for their learning. Also, they can affect teaching methods, because the diversity of virtual learning resources blurs the distinction between formal instruction and appropriation through immersion in an environment (Gamboa, Urbina and Gómez, 2020). Therefore, the postulates of didactic transposition and the technological knowledge of teachers must be considered.

Thus, to transpose teaching content, Amador et al. (2016) suggest applying a model of didactic transposition, focused on e-learning teaching, together with the TPACK Model (acronym of the expression “Technological Pedagogical Content Knowledge”). The TPACK model is based on the following: pedagogical and content knowledge (PCK); technological and content knowledge (TCK); technological and pedagogical knowledge (TPK); didactic and content knowledge (DCK); didactic and pedagogical knowledge (DPK); didactic and technological knowledge (DTK) (See Figure 1).

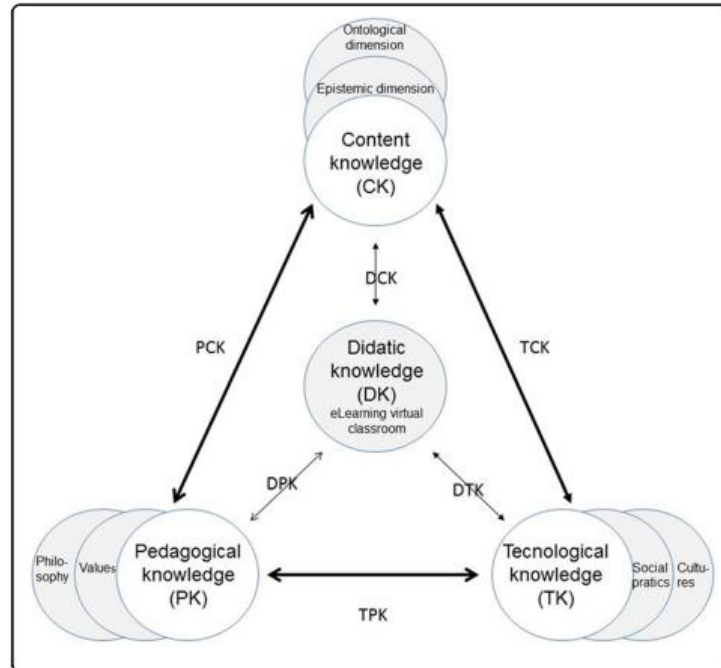


Figure 1. Didactic transposition model, focused on e-learning teaching.

Source: Amador et al., 2016.

In this regard, Carapeto and Vieira (2019) referring to Figure 1, point out that:

In Figure 1, the letter “C” indicates content knowledge, the teacher's conceptual knowledge and the respective ontological and epistemological dimensions, i.e., the teacher's work with the selection of content, objectives and competencies to be acquired by students in the conception of the content and the approach addressed therein. The letter “P” stands for knowledge, values and pedagogical philosophies. As the teacher's pedagogical strategies are based on learning theories and make possible the knowledge of the students, recognizing at the same time their characteristics and difficulties through evaluation dynamics. The “T” refers to technological knowledge, the knowledge that the teacher has to

operate computers, Internet network, software and hardware, for example, allowing to contemplate differences in students and provide appropriate experiences to different cases. At the heart of this model is the interdependence between didactic, pedagogical and technological knowledge and teaching/learning in the form of distance learning and e-learning. (p.4)

From there, the teaching method is determined, the techniques used (individual work, group work, projects, among others), tools and technological resources according to the curricular-technological and pedagogical-technological knowledge, that is, applying the Technical Pedagogical Knowledge of Content (TPACK), and in turn, the evaluation devices, their forms and modalities (Arévalo-Duarte et al., 2019; Hernández et al., 2021).

In view of the above, emergency remote teaching must apply discretization (adapted to the context), as well as depersonalization (separation of knowledge from the person who produced it) and decontextualization (knowledge proposed to the era of the 21st Century) or methodological vision adapted to the specific educational context (Chevallard, 1998; Gómez, 2005), so that in the new educational scenario in emergence, students and teachers are structured or described as actors; the objectives and goals that students should know and know how to do at the end of the training and for what purpose, as well as the contents and their elements and knowledge to be acquired.

METHODOLOGY

The research was descriptive and field design with quantitative methods (Gamboa, 2019). In addition, it was cross-sectional, since information was collected at a specific moment that identifies the transition from a classic classroom teaching to continue with the classes during 2020, since all the academic courses were implemented 100% virtualized, with which, it seeks to determine the first data in such transposition designed in the contingency of the classes. The research was developed in three phases: 1) research design, 2) data collection, and 3) analysis and development.

Similarly, a quantitative analysis of the information provided by Scopus under a

bibliometric approach on the scientific production related to ICT-assisted education during Covid-19 identified from Latin American institutions is performed in order to know the approach of scientific papers through the use of keywords; by means of this, the impact and scope of the research published under the aforementioned topic is intended to be known thanks to the map of co-occurrence of keywords.

Research design

The population to which the study was directed consisted of the enrollment of 3314 students belonging to the seven (7) programs of the Faculty of Education, Arts and Humanities of the Universidad Francisco de Paula Santander, Cúcuta - Colombia, where they receive face-to-face teaching and their enrollment in the programs present sizes that are unequal: Architecture (517); Social Work (1.028); Law (540); Social Communication (542); Bachelor's Degree in Mathematics (328); Bachelor's Degree in Natural Sciences and Environmental Education (226) and Bachelor's Degree in Early Childhood Education (133). In relation to the sample, a non-probabilistic sample was chosen (of an intensive nature), since all the students who responded to the survey and decided to participate voluntarily in the study were selected directly and intentionally. Therefore, a sample of five hundred and three hundred and three (503) students of the faculty was selected, representing 15.18% of the student population (See Table 2).

Table 2. Sample.

Faculty of Education, Arts and Humanities			
UFPS Programs	Registration	Respondents	%
Architecture Program	517	89	17.21%
Social Work Program	1028	149	14.49%
Law Program	540	90	16.67%

Social Communication Program	542	75	13.84%
Bachelor's Degree in Mathematics	328	40	12.20%
Bachelor's Degree in Natural Sciences and Environmental Education	226	35	15.49%
Bachelor's Degree in Early Childhood Education	133	25	18.80%
TOTAL	3314	503	15.18%

It is important to highlight that in the breakdown by gender, 43.14% are female (217) and 56.86% are male (286), while in the breakdown by age there is an overrepresentation of 44.33% of students between 21 and 30 years of age (223), followed by 33.80% of those between 31 and 40 years of age. The rest, under 20 years of age (85) 16.90% and over 40 years of age (25) 4.97%.

Data collection

- The survey was used as a data collection instrument; therefore, a questionnaire was elaborated with 29 questions with several answer options and structured with 6 groups of questions: general data, knowledge about ICT-mediated remote education, tools and methods, evaluation, technical appropriation related to the tools, perception of ICT-mediated remote education during Covid-19. The instrument was administered online.
- For the proposed biometric analysis, a search is performed in the Scopus database. For this purpose, filters are established to identify the publications most related to the topic of study of this document. The selection of articles or research papers is done by establishing search criteria:

- Research papers (articles, conference papers, books, book chapters, among others) whose variable of study is ICT-assisted education and Covid-19.
- Research papers published in Latin American countries.

Analysis and development

Statistical tools were used for data analysis. Once the information was collected, it was represented in tables and analyzed using descriptive statistics and Excel spreadsheet. These made it possible to identify the students' transition from face-to-face teaching to ICT-mediated remote teaching during Covid-19. Therefore, statistics such as frequency were included for data analysis and interpretation.

RESULTS

In the survey applied, other data were obtained in the general questions, where it was determined that 100% of the students had access to the internet to continue their classes from home during the isolation, through devices such as pc (20%), laptop (29%), tablet (19) and smart phones (32%).

Perceptions in the transition from face-to-face to remote ICT-mediated learning during the educational emergency.

The findings related to ICT-mediated remote education highlight the perception of

autonomy in relation to their studies, as well as the positive and negative aspects related to motivation, time, pace of study, among others.

Autonomy

The results of item 5 are considered, and the question is: To what extent did the pedagogical scenario during the pandemic promote autonomy when developing studies in the ICT-mediated modality? The results are shown in Table 3.

Table 3. Appreciation of autonomy among students.

Faculty of Education, Arts and Humanities Programs	Respondents	Highly autonomous	%	Self-employed	%	Moderately autonomous	%	Not very autonomous	%
Architecture	89	23	25.8 4%	43	48.3 1%	18	20.2 2%	5	5.62 %
Social Work	149	60	40.2 7%	42	28.1 9%	36	24.1 6%	11	7.38 %
Law	90	20	22.2 2%	30	33.3 3%	29	32.2 2%	11	12.2 2%
Social Communication	75	18	24.0 0%	20	26.6 7%	24	32.0 0%	13	17.3 3%
Mathematics	40	11	27.5 0%	12	30.0 0%	10	25.0 0%	7	17.5 0%
Natural Sciences and Environmental Education	35	12	34.2 9%	10	28.5 7%	8	22.8 6%	5	14.2 9%
Early Childhood Education	25	8	32.0 0%	9	36.0 0%	5	20.0 0%	3	12.0 0%
TOTAL	503	152	30.2 2%	166	33.0 0%	130	25.8 4%	55	10.9 3%

In the results shown in Table 3 related to item 5, it was determined among the overall data of the very autonomous and autonomous alternatives, that an average of 63.22% of the students of the Faculty of Education, Arts and Humanities consider that they are very autonomous and autonomous to carry out their

studies remotely mediated by ICT. The rest stated that they are moderately autonomous (25.84%) and not very autonomous (10.93%). When these results are broken down by program, significant differences between the programs are evident. Since, it was observed that, among the same very autonomous and

autonomous alternatives, it was found that in the Architecture they declared to be very autonomous in 74.15%. While in the Social Work it is 68.46%, the rest, Law (55.55%); Social Communication (50.67%); Bachelor's degree in Mathematics (57.50%); Bachelor's degree in Natural Sciences and Environmental Education (62.86%) and Bachelor's degree in Early Childhood Education (68.00%).

Considering these data, a first observation emerges: Less than two thirds (63225) of the students feel autonomous in the pedagogical scenario, and it seems that not all students were able to develop the autonomy to take control of their own learning. From there, it is considered that in the transition from face-to-

face to remote university teaching mediated by ICT, the design of learning activities would have among its objectives to support the development that promote autonomy, since it is a disadvantage of distance and virtual teaching (Padula, 2001). Therefore, it is convenient to have models that allow understanding self-regulation and motivation in the transition of teaching, since they demand autonomy.

Flexibility

It considers the appreciation for studying at one's own pace, time and organization that the students have to carry out the study plan. The results of items 6, 7, 8 and 9 are shown in Table 4.

Table 4. Positive appraisals of flexibility in ICT-mediated remote education.

	Item 6		Item 7		Item 8		Item 9	
Faculty of Education, Arts and Humanities Programs	Study at your own pace	%	Study at any time	%	Freedom of organization to study	%	No positive aspects	%
Architecture	65	73.03%	50	56.18%	38	42.70%	3	3.37%
Social Work	100	67.11%	75	50.34%	62	41.61%	6	4.03%
Law	62	68.89%	46	51.11%	40	44.44%	5	5.56%
Social Communication	55	73.33%	55	73.33%	55	73.33%	2	2.67%
Mathematics	28	70.00%	30	75.00%	29	72.50%	2	5.00%
Natural Sciences and Environmental Education	25	71.43%	25	71.43%	24	68.57%	1	2.86%
Early Childhood Education	22	88.00%	21	84.00%	22	88.00%	1	4.00%
TOTAL	357	70.97%	302	60.04%	270	53.68%	20	3.98%

Table 4 shows the results of items 6 to 9, concerning the positive appraisals that

students have of flexibility. Regarding item 6, it was verified at a global level in the context

of the Faculty of Education, Arts and Humanities that 70.97% appreciate studying at their own pace. While the same group of students in items 7 and 8, have a positive appreciation of 60.04% for studying at any time and 53.68% for the freedom they have to organize their studies respectively. Meanwhile, in item 9, it was determined that only 3.98% do not find positive aspects in the flexibility of studying remotely mediated by ICT.

Similarly, when the information was broken down for each program, it was observed that the students with the highest positive perception score were those in the Bachelor's Degree Program in Early Childhood Education, since their students feel positive about the flexibility of ICT-mediated remote education, since they consider item 6 to be affirmative, in terms of studying at their own pace (88.00%), as well as choosing any time to do so (84.00%) and having the freedom to organize their studies (88.00%). However, 4% expressed their dissatisfaction at not finding anything positive in these aspects. While the students who had the lowest perception were the students of the Social Work, who admitted that it is positive to study at one's own pace (67.11%), at any time (50.34%) and to freely organize their studies (41.61%). The rest of the programs have a positive appreciation of the flexibility between these ranges of the above-mentioned programs.

When observing items 6 to 9, it was verified that a significant group of students in the transition to ICT-mediated remote teaching were able to manage their time more freely and plan their own schedule. This evidence could be related to the level of planning in teaching, since it seems that the teachers used a prescribed study plan in a flexible way so that students also meet their needs, plan or adapt to the activities of the program provided. Which is an advantage of ICT-mediated remote learning to progress at their own pace, which agrees with Yong et al. (2017) who argue that a flexible sequence of learning is ensured in this process.

Although, a group that does not exceed one third of the respondents showed that the guidelines provided need interactions with the teacher or with other students. From there, it is inferred that this type of learning requires a specific profile of the students to receive the lessons at home, organize them and study at any time, which coincides with the approach of Garcia (2003; 2009) that in distance education flexibility requires time management and organization both educationally and personally.

Difficulties in the transition from face-to-face to ICT-mediated remote teaching

It considers motivation, pedagogical interaction, feeling of loneliness and concentration, as shown in Table 5.

Table 5. Difficulties in the transition from face-to-face to ICT-mediated remote teaching.

		Item 10		Item 11		Item 12		Item 13	
Faculty of Education, Arts and Humanities Programs	Respondents	Motivation	%	educational interaction	%	Soledad	%	Concentration	%

Architecture	89	35	39.33%	50	56.18%	52	58.43%	36	40.45%
Social Work	149	60	40.27%	73	48.99%	77	51.68%	58	38.93%
Law	90	40	44.44%	45	50.00%	50	55.56%	39	43.33%
Social Communication	75	30	40.00%	42	56.00%	50	66.67%	29	38.67%
Mathematics	40	15	37.50%	24	60.00%	27	67.50%	16	40.00%
Natural Sciences and Environmental Education	35	15	42.86%	20	57.14%	22	62.86%	14	40.00%
Early Childhood Education	25	11	44.00%	12	48.00%	16	64.00%	10	40.00%
TOTAL	503	206	40.95%	275	54.67%	295	58.65%	202	40.16%

Data shown in Table 5, corresponding to items 10 to 13, indicate that the greatest difficulty experienced by the students of the Faculty of Education, Arts and Humanities during the transition to the ICT-mediated remote modality was the feeling of loneliness (64.00%) followed by pedagogical interaction (48.00%), as well as low motivation during these studies with 44.00% and difficulty in concentrating with 40%.

With reference to the items and topics indicated, it was found that the students within the programs of this faculty, who obtained the highest motivation (item 10) were the students of the Bachelor's Degree in Early Childhood Education with 44.00%, while the students of the Bachelor's Degree in Mathematics obtained the lowest score (37.50%).

Regarding pedagogical interaction (item 11), the highest score was obtained by those who teach (60.00%) in the Mathematics Bachelor's Program and the lowest was for the Bachelor's degree in Early Childhood Education (48.00%). In relation to item 12, it could be verified that the greatest feeling of loneliness was presented in the mathematics career (67.50%) and the lowest score was for the participants of Social Work (51.68%). Although those who had the greatest difficulty concentrating (item 13) were the students of Law.

These difficulties encountered in the transition to ICT-mediated remote teaching should be addressed in the return to classes and post-coaching, this situation requires the teacher to think about them, their participation, motivation, as well as their needs, feelings and

the diagnosis of their difficulties, when planning the adjustment of their pedagogical action to their specific context. In this way, the results found agree with the findings of Miguel Román (2020) who found within the formative process during the isolation time some unconformities of the students referring to communication with the teachers, that is, in the pedagogical interactions. Although, it was determined the adaptation that the actors have before virtual teaching, hence, it is considered to address the transition of teaching, but thinking of an opportunity for the teacher to use ICT and generate new skills in this context (Avendaño-Castro et al., 2021).

Results of the transition from face-to-face to ICT-mediated remote education

It comprises the transition from lectures, tutorials, activity assignments and evaluation to the new scenarios in the educational emergency. Thus, the questions in items 14, 15, 16 and 17 are related to the transfer from lectures to virtual classes, as well as the students' preferences for each of them, since they are face-to-face and the appreciation they have on which one is best suited to continue their studies.

Table 6. Preference of tools in the transition from master to virtual teaching.

		Item 14		Item 15		Item 16		Item 17	
	Respondents	Real-time conferencing (meet, zoom)	%	Recorded lessons (youtube)	%	Text material for independent study (platform/mail/other)	%	AI	%
Faculty of Education, Arts and Humanities Programs									
Architecture	89	75	84.27%	50	56.18%	15	16.85%	89	100.00%
Social Work	149	120	80.54%	73	48.99%	10	6.71%	149	100.00%
Law	90	85	94.44%	45	50.00%	30	33.33%	90	100.00%
Social Communication	75	60	80.00%	42	56.00%	15	20.00%	75	100.00%
Mathematics	40	35	87.50%	24	60.00%	0	0.00%	40	100.00%
Natural Sciences and Environmental Education	35	29	82.86%	20	57.14%	5	14.29%	35	100.00%

Early Childhood Education	25	22	88.00%	16	64.00%	2	8.00%	25	100.00%
TOTAL	503	426	84.69%	270	53.68%	77	15.31%	503	100.00%

Table 6 shows the most significant results of items 14 to 17, which refer to the students' perceptions of the transition from lecture to virtual teaching in Covid-19 times. At a global level, it was determined that 84.69% of the students of the Faculty of Education, Arts and Humanities received the transition from lectures to conferences in real time (item 14) and online through tools such as Meet or Zoom. Meanwhile, 53.68% of students said they had watched recorded lessons (item 15), either made by the teacher himself or found through Youtube in the curriculum. Similarly, it was learned that there is a low acceptance and preference when teaching is only by text (PDF) for independent studies (item 16) with 15.31%. However, they indicated that they would prefer the master classes to be transferred and supported with all of the above (100%).

In turn, it was verified that, in the same topics and items mentioned above, the Law program has the greatest predilection for real-time classes (item 14) with a score between the frequencies of 94.44%, and the lowest value belongs to the Natural Sciences and Environmental Education Program (82.86%). In relation to item 15, it was determined that in the Early Childhood Education Program are those who have the highest acceptance of the recorded lessons with 64.00% and those with the lowest score were those of the Law Program (50.00%). Meanwhile, regarding item 16, it was found that almost all the

students of the Early Childhood Education Program reject lessons through text and PDF material to continue their independent studies (92.00%), while a third (33.33%) of the law students are those who prefer this type of teaching through text. These data are consistent with Pérez, Vásquez and Cambero (2021) who confirm the translation of the face-to-face teaching model based on lectures to the remote environment mediated by ICT asynchronously, synchronously or with almost no interaction at all.

As could be observed in the items attended, from the student's perspective, many teachers should consider the participation in real-time lectures, but in turn, the recorded lessons together with a selection to didactic material that complements the two previous ones and not separately to present the contents. Which is in contrast to the approach of Amador et al. (2016) on the teaching work with the selection of content in relation to technological and content knowledge (TCK), since they must be in accordance with the objectives and competencies to be acquired by students in the conception of the contents and the approach addressed in them. Hence, it is considered that it is not enough just to present a specific content with non-human resources to make it accessible to the student, since, over time, the knowledge processed by the educational system ages; one day it seems old in relation to society (in relation to academic knowledge and in relation to trivialized knowledge) (Chevallard 1998).

Table 7. Preference in the transition to virtual tutoring.

		Item 18		Item 19		Item 20		Item 21	
Faculty of Education, Arts and Humanities Programs	Respondents	Synchronous video conference tutoring (Meet, Zoom)	%	Synchronous mobile tutoring (WhatsApp)	%	Asynchronous tutoring (mail/platform/forums, etc).	%	All of the above	%
Architecture	89	70	78.65%	51	57.30%	6	6.74%	89	100.00%
Social Work	149	115	77.18%	78	52.35%	8	5.37%	149	100.00%
Law	90	80	88.89%	45	50.00%	7	7.78%	90	100.00%
Social Communication	75	59	78.67%	46	61.33%	6	8.00%	75	100.00%
Mathematics	40	33	82.50%	25	62.50%	1	2.50%	40	100.00%
Natural Sciences and Environmental Education	35	25	71.43%	19	54.29%	3	8.57%	35	100.00%
Early Childhood Education	25	19	76.00%	18	72.00%	1	4.00%	25	100.00%
TOTAL	503	401	79.72%	282	56.06%	32	6.36%	503	100.00%

Table 7 shows the findings on the transition to virtual tutoring. It was found that 79.72% of the students of the Faculty of Arts and Humanities received synchronous tutoring via videoconference (item 18). Similarly, another group of respondents from the Faculty of Arts and Humanities, represented by 56.06%, indicated that they were tutored synchronously via cell phone (item 19). Meanwhile, asynchronous tutoring (item 20) had a very

low percentage of only 6.36% in the respondents of this faculty. Although, 100.00% agreed that tutoring should be given in the three ways mentioned above (item 21).

At the same time, it was verified by the respondents that in the program that applied asynchronous tutoring by videoconference (item 18), in a higher percentage were those who teach in the Law program (88.50%) and

to a lesser extent those who study Environmental Education (71.73%). Regarding tutoring via mobile (item 19), those taking Environmental Education had the highest tutoring attendance with 72.00% and the lowest score was for the Law program (50.00).

Without leaving aside the merit achieved by face-to-face teachers and attending the items (18,19,20 and 21), they show synchronization as a result of the transition from tutoring to the new virtual space in these first data, but when considering only these tools (Meet and WhatsApp) for communication with students

also show a gap in didactic transposition that limits the flexible learning of learners raised in the fourth generation of virtual education (Garcia 2003; 2009), based on online delivery through the Internet; with open educational resources (Web 2.0), with didactic and pedagogical knowledge (DPK); didactic and technological knowledge (DTK) of the teacher (Amador et al., 2016; Carapeto & Vieira, 2019), since they were limited to only delivery of activities, tasks with their respective evaluations and tests (See Table 7 and 8).

Table 8. Preference for the delivery of activities and practical assignments

		Item 22		Item 23		Item 24		Item 25	
Faculty of Education, Arts and Humanities Programs	Respondents	Video (synchronous and asynchronous) delivered to mail/platforms.	%	Simulations	%	Augmented reality	%	Some practical tasks are impossible to perform	%
Architecture	89	85	95.51%	0	0.00%	0	0.00%	4	4.49%
Social Work	149	149	100.00%	0	0.00%	0	0.00%	7	4.70%
Law	90	90	100.00%	0	0.00%	0	0.00%	6	6.67%
Social Communication	75	75	100.00%	0	0.00%	0	0.00%	2	2.67%
Mathematics	40	40	100.00%	0	0.00%	0	0.00%	0	0.00%
Natural Sciences and Environmental Education	35	35	100.00%	0	0.00%	0	0.00%	3	8.57%

Early Childhood Education	25	25	100.00%	0	0.00%	0	0.00%	0	0.00%
TOTAL	503	499	99.20%	0	0.00%	0	0.00%	22	4.37%

The results found in Table 8 indicate that 99.20% of the respondents of the Faculty of Education, Arts and Humanities delivered their activities and practical work by means of both synchronous and asynchronous video filming. Similarly, 4.37% of them indicated

that there are some practical tasks that are impossible to perform. At the same time, in this forced transition, simulations (0.00%) and augmented reality (0.00%) were not considered for the delivery of practical work.

Transition in the evaluation.

		Item 26		Item 27		Item 28		Item 29	
Faculty of Education, Arts and Humanities Programs	Respondents	Independent studies. (Reports, case studies, projects, etc).	%	Assignments (minutes, content analysis, mind maps, diagrams, etc.)	%	Tests/ tests (multiple choice) with no time limit	%	Tests/ tests (multiple choice) with time limit	%
Architecture	89	89	100.00%	89	100.00%	0	0.00%	89	100.00%
Social Work	149	149	100.00%	149	100.00%	0	0.00%	149	100.00%
Law	90	90	100.00%	90	100.00%	0	0.00%	90	100.00%
Social Communication	75	75	100.00%	75	100.00%	0	0.00%	75	100.00%
Mathematics	40	40	100.00%	40	100.00%	0	0.00%	40	100.00%
Natural Sciences and Environmental Education	35	35	100.00%	35	100.00%	0	0.00%	35	100.00%

Early Childhood Education	25	25	100.00%	25	100.00%	0	0.00%	25	100.00%
TOTAL	503	503	100.00%	503	100.00%	0	0.00%	503	100.00%

While in Table 8, it was verified that in the Faculty in question the evaluations consisted of item 26, reports, case studies and projects (100%), likewise, the tasks (item 27) that included minutes, content analysis, mind maps and schemes (100.00%) stand out (100.00%), while in item 29, 100.00% said that they applied multiple choice tests/tests with time limit. However, in item 28, it was verified that no tests/tests without time limit were available.

These data expressed in Tables 7 and 8, which include items 22 to 25 and 26 to 29 respectively, show that students are very interested in using digital tools and devices in their studies. This means that personal learning environments and virtual classrooms can be an ideal learning environment for learning and in the transition of ICT-mediated remote education, although discretization,

depersonalization and decontextualization (Chevallard, 1998; Gómez, 2005) were not applied in such transition, since the perspectives of virtual education in terms of interactivity, sense of group, among other elements are not fully addressed.

In summary, it is important to highlight that this manuscript is part of a research project that arose as a result of the educational crisis caused by the educational emergency generated by Covid-19 where the following articles that address the various aspects of this problem can also be highlighted (Hernández-Suárez et al., 2021; Espinel-Rubio et al., 2021; Espinel-Rubio et al., 2021; Rincón-Leal et al., 2021; Hernández-Suárez et al., 2021; Rincón-Leal et al., 2021; Avendaño-Castro et al., 2021a; Avendaño-Castro et al., 2021b; Ayala-García et al., 2020; Prada-Núñez et al., 2020; Prada-Núñez et al., 2020).

BIBLIOMETRIC ANALYSIS

Keyword Co-occurrence Map

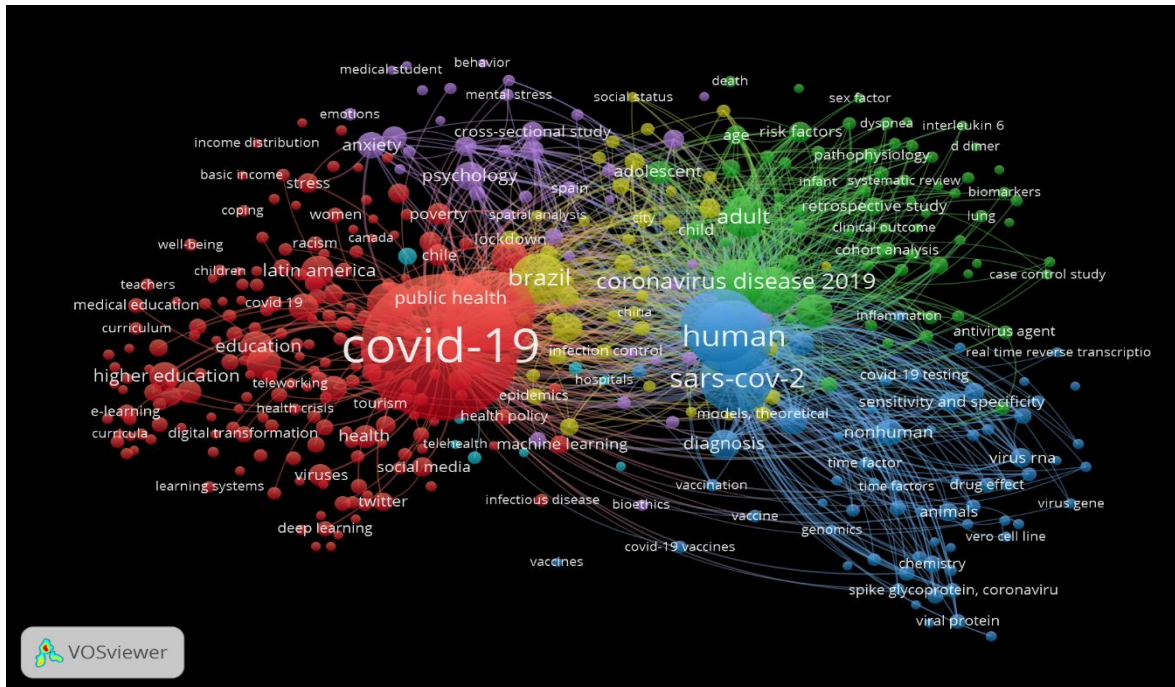


Figure 1. Co-occurrence of words

Source: Own elaboration (2021); based on data provided by Scopus.

Within the identified researches, the key word that is used with greater frequency is Covid-19, as variable of study with greater number of mentions due to the approach that develops the present investigation. Public Health, Health Policies, Education, and Telework are the variables that are identified more closely related, so that all health policy has been influenced by the measures adopted in order to reduce the number of infections in all countries of the world, within these measures is the telework and virtualization of academic content, abiding by the quarantine imposed by the various government actors to avoid crowds through social distancing, as it was found that the transmission of the virus was more accelerated in crowded environments. The Education variable is related to words such as e-learning, Higher Education, and Digital Transformation, since the measures adopted by the educational sector were the virtualization of contents and the application

of remote evaluation instruments. Classes went from being face-to-face to virtual thanks to the design of specialized programs for remote meetings where tools such as virtual whiteboard, online assignments, workshops in subgroups, forums, among others, were gradually adopted. This allows teachers greater interaction with their students and variety in the content taught. Of course, the challenge is evident not only for students, but also for teachers who must keep updated in the use of telecommunication technologies.

CONCLUSIONS

The transition from face-to-face to ICT-mediated remote teaching during the educational emergency, implemented a transition that to some extent allowed the continuity of pedagogical practices. However, in the forced transition some elements of the virtual teaching and learning process were obviated, since during the preventive isolation the role of the teacher was emphasized, where teaching was recorded and transmitted to reach

the student with an interaction influenced by factors of distance or time, but not as a context that are designed to complement the action plan in the field of education in response to the challenges of the information society and knowledge in general.

For this reason, it is considered that the transition used of teaching during isolation is incipient to describe alternatives from the face-to-face to the remote mediated by ICT, since it is reiterated that the implications of these types of learning and social interaction process that take place in the virtual modality were obviated. Therefore, it is important in the point of view adopted here, not to make comparisons, because the teaching perspectives play an important role in the actions and intentions of teaching that is opposed to a didactic transposition in the digital era.

Therefore, it is concluded that the transposition that has occurred in the educational emergency in the Faculty of Education, Arts and Humanities is a transposition under the concept of remote modality mediated by ICT to be teachable content from the teacher-centered needs to transmit information by the separation caused by social isolation between teachers and students, but not by knowledge, values, philosophies and pedagogical strategies of the teacher to operate learning network, intangible elements such as tools and resources, as well as tangible devices (smart phone, tablet, among others), which go beyond the individual, by interdependence, collaboration, communication, interactions, people, resources, environment, among others, which are currently raised in virtual education.

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