



# Article Lessons Learned from the Educational Experience during COVID-19 from the Perspective of Latin American University Students

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Abstract: The COVID-19 pandemic impacted the educational context. University students were exposed to an educational transition from a face-to-face context to emergency remote teaching (ERT). This change affected the educational experience of students and teachers in general, and impacted their educational performance, as well as their emotional and mental health, among other aspects. However, learning from the successes during the ERT and reflecting on good and bad practices will allow us to configure effective learning scenarios that respond to the new normal. The objective of this paper is to describe and present the lessons learned during ERT from the experience of university students in Latin America who have already returned to face-to-face instruction. The study used a qualitative inductive approach and a phenomenographic design. The sample consisted of 640 undergraduate students (63% women) of higher education who experienced online education during the year 2021 and a face-to-face modality during the first semester of 2022, belonging to universities in Chile, Venezuela, and Ecuador. The results suggest that new learning scenarios should consider specific pedagogical practices, including active, collaborative, meaningful, and problembased strategies, together with a diversity of feedback practices. It is concluded that the ERT brought good practices that should guide university educational policies.

Keywords: higher education; COVID-19; university students; quality education; virtual education

# 1. Introduction

Since January 2020, when the World Health Organization (WHO) classified the coronavirus disease SARS-CoV-2 or COVID-19 as a pandemic, it brought with it radical changes around the world [1,2]. The educational context was not exempt, especially in terms of higher education, impacting students in emotional, psychological, and educational aspects [3–5].

University students were exposed to an educational transition from face-to-face instruction to emergency remote teaching (ERT). In some cases, this transition lasted for more than two years [6]. With the aim of adapting face-to-face courses to an online teaching modality, educational institutions were subjected to the need to change their traditional teaching methods based on lectures to the adoption of various information and communication technologies [7,8]. However, ERT was implemented quickly and in an unplanned fashion. There are aspects that clearly distinguish virtual training, characterized by careful planning to offer a quality learning experience to students. In order to do so, courses follow a predefined instructional design, which seeks to address the heterogeneity of the students



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via the careful planning of synchronous and asynchronous work, integrating technological platforms with enriched content (e.g., hypermedia resources, study and evaluation guides), as well as strategies that promote interaction between teachers and students [9,10].

Virtual education is effective when it results from careful instructional design and planning, considering the target audience and using a systematic model for its implementation [7]. Therefore, this implies planning a variety of interconnected elements (e.g., technology, tutorial model, communication, monitoring and follow-up, evaluation), which produce specific forms of teaching that have to be adapted to the educational objectives [11]. However, during this stage of the pandemic, teachers were not prepared to redesign the courses and redefine their instructional, pedagogical, technological, assessment, management (academic and technical), support and ethics approaches [12].

Currently, in this "post-pandemic" stage, in which students and teachers from higher education institutions are returning to campuses, attention is being given to how to restructure teaching and learning processes to transition from a traditional expository model to a hybrid model that takes the best of face-to-face and virtual instruction, and that responds to the new demands made of those involved. On the one hand, students demand greater preparation from teachers to design scenarios of greater flexibility, with students partly managing their own learning processes, at their own pace and with opportunities for work continuity [13]. On the other hand, teachers demand from universities accompaniment, training, and both technological and methodological tools to face "the new normality". Thus, universities need to satisfy these demands, which is considered a complex task at the pedagogical, organizational, infrastructural, legal, economic, and even sociological level [13–15].

## 1.1. Virtual and Hybrid Learning

The virtual classroom is identified as a space for educational innovation, which is characterized by being flexible, integrating content through a diversity of formats and generating spaces for reflection through different learning activities [16]. However, for students to achieve planned learning, emphasis is placed on the need for student motivation and autonomy as a critical success factor [16,17].

Garrison [18] proposes that the construction of knowledge in virtual environments of teaching–learning, such as virtual classrooms, occurs through the development of a community that is characterized by the presence of three components: (1) pedagogic, (2) social and (3) cognitive [19,20]. The first, pedagogic, considers all aspects of the design, planning, facilitation, interaction, and management of teaching and learning processes [21–23]. The second, social, refers to the interaction between participants in the classroom to promote collaborative learning, in which participants feel affectively and cognitively connected to each other, with open communication and the ability to express themselves [23,24]. The third component, cognitive, refers to all activities and learning materials that involve the autonomous construction of knowledge by the student, and that allow the development of competencies such as critical thinking, the use of communication skills, reflection, and disciplinary skills, among others, based on the resources and activities available in the virtual classroom [23,24]. Of the three components, the most important is the cognitive [20].

Virtual university training, if systematized (and not as a reactive effort in the face of emergencies), has been shown to have important advantages in the training process. Empirical evidence establishes that virtual education provides greater opportunities for the cognitive development of students, particularly for those under the conditions of social vulnerability [25]. Audiovisual media represent an opportunity to support learning processes; these facilitate and grant greater learning opportunities to students [26]. In general, students highlight the benefits of virtual learning, such as being able to learn at their own pace, developing strategies to self-regulate their learning process, greater responsibility, leadership and teamwork capacities, flexibility to interact asynchronously, and continuous access to learning materials, among other desirable outcomes [16,27–29].

In addition to the advantages of online training, recent studies analyze its effectiveness in terms of learning achievements, and compare it with traditional face-to-face learning and even hybrid approaches. One analysis is presented in the study by George, et al. [30]. The authors conducted a literature review on online learning from January 2000 to August 2013, in which they studied 59 learning experiences with 6759 students enrolled in online courses. The most relevant conclusions of this study suggest the following: (1) online learning is equivalent to or better than face-to-face learning in terms of knowledge acquisition and skill development; (2) online learning helps in the development of technological, educational, communicative, research and communication management skills; and (3) online learning encourages the development of self-regulation strategies for learning, which are key to the autonomous development of the student throughout their life.

Despite benefits also being reported during online education undertaken in the pandemic, as well as many shared experiences, emphasis has been placed on the specific challenges for institutions and countries according to socioeconomic, experiential and other factors [31]. Identifying and focusing on successful practices is an opportunity to enrich virtual education in the present and future.

Today, higher education institutions are at an inflection point [32], at which they must decide between going back to traditional teaching or adapting and promoting innovation in the teaching and assessment methods, integrating methods, mechanisms, and spaces. The international trend is to promote the development of educational practices for high-quality virtual teaching [33], presenting blended learning (BL) as one of the main means to transform higher education to the current post-pandemic scenario [15].

BL is an ambiguous term that can present adopt definitions depending on the author and the context in which it is applied [34]. So and Brush [35] define BL as "any combination of teaching systems methods, including face-to-face (F2F) instruction with asynchronous and/or synchronous computer technologies." Dziuban, et al. [36] refers to BL as "a pedagogical approach that combines the learning possibilities of the online environment, rather than a relationship of delivery modalities". Other researchers, such as Koper and Tattersall [37], use the term in a more technological way to refer to the combination of F2F with technologysupported activities, as well as pure online learning, to enrich educational experiences.

BL is a teaching modality that combines in a "fair" way the best of the face-to-face instruction and distance education. Its implementation implies the definition of a technological didactic strategy, in which the advantages of both contexts (face-to-distance) are taken into account and combined in a fair way according to the recipients, the learning outcomes, the characteristics of the teachers, the context, etc. [38]. An ally of BL is the learning management system (LMS) that allows for collecting evidence regarding the learning process through virtual classrooms [39,40].

# 1.2. Objective of the Study

Learning from the ERT during the pandemic is an opportunity without precedent, given that never before has there been a scenario that forced students, teachers and institutions to think of a new way of approaching the massive modernization of teaching and learning, through the incorporation of techno-pedagogical tools, consistent with the changes on a global scale that the digital age has generated in our societies and that place technologies at the service of people.

With globalization and the development of technology, university institutions have found in hybrid and virtual education a key element to generate new scalable learning spaces that meet the demands of today's society [41]. Within this framework, postpandemic virtual education in university contexts could contribute to the Sustainable Development Goals (SDG) [42]. Goal 4 seeks to ensure inclusive, equitable and quality education, and to promote lifelong learning opportunities for all [42,43]. Therefore, higher education institutions can potentially contribute to equality for present and future generations by identifying the successes of the ERT, without ignoring the difficulties and negative consequences caused by the pandemic. In this context, the main objective of this study is to describe and present the lessons learned about the successes of ERT from the experiences of university students in Latin America who have already returned to face-to-face learning, and whose perceptions are not biased by the uncertainty that characterized virtual education during the pandemic. This study highlights the challenge of addressing the features of the teacher, students and content that favor greater motivation and better learning in virtual environments, and that would enable higher-quality post-pandemic university education based on a blended learning modality that includes the benefits of the ERT [15].

# 2. Materials and Methods

An inductive qualitative approach and a phenomenographic design were used. This design aims to identify and systematize ways of thinking by which people understand, experience, conceptualize and perceive aspects of reality [44]. In addition, hermeneutically oriented text analysis was used to understand the meaning and significance of the written discourses regarding the experiences during pandemic education [45,46].

## 2.1. Participants and Instruments

The sample consisted of 640 students—403 women (63%) and 237 men (37%) at the undergraduate stage of higher education who experienced online education during the year 2021 and transitioned from confinement due to COVID-19 to the face-to-face modality during the first semester of 2022, belonging to universities in Chile, Venezuela, and Ecuador.

The written discourses were obtained from answers to three open-ended questions as part of an adhoc questionnaire called "Questionnaire on university educational experiences in the return to face-to-face classes after the COVID-19 pandemic", which was built following a literature review, expert judgment, cognitive interviews and pilot applications to assess appearance and format validity and ethical validity. The experts determined that the indicators of the instrument do not cause harm to the participants. This type of instrument is recognized as necessary in the literature around education for responding more precisely to the research objectives, in addition to being one of the most broadly used types of instruments.

The questionnaire contains 3 sections, each containing 19 closed questions with response alternatives, and another section with 5 open questions [47]. The instrument was applied at the end of the first academic semester of 2022 when the students had already experienced the return to face-to-face education. Of the 5 questions, 3 were used for this study: (a) From your experience with virtual education, what teaching strategies or practices increased your academic motivation and why? (b) From your experience with virtual education, what resources or activities used by your teacher were effective for yours learning and why? (c) Which were the benefits or advantages of online education?

## 2.2. Procedure and Ethical Considerations

Three open-ended questions were developed as part of the application of the Online Education Experience survey [48]. We sought to explore students' perceptions about the pedagogical practices that motivated their online learning, as well as the resources and activities they consider most effective for online learning, and the benefits of online education for the training of higher-level professionals. The students' discourses were obtained through non-probabilistic sampling using the snowball technique.

Administrators of the universities to which the researchers had access were asked to facilitate the application of the survey to their students. The invitation to participate was sent via institutional e-mail to all students taking undergraduate courses at their universities. From the returned surveys, only those in which participants had answered all three open-ended questions were selected. The regulations and ethical principles for the research were considered: informed consent, the safeguarding of the information in codified databases, and, especially, the assurance of the confidentiality of the information.

#### 2.3. Analysis Plan

Data analysis was carried out through three main steps: (1) the review of the information, (2) the identification of the units of analysis, and (3) categorization. Through the constant comparison method, the information was coded and analyzed simultaneously. First, the meaning of the unit of analysis was analyzed, and a category was generated. Then, another unit of analysis was analyzed and compared with the previous one, and if it did not correspond, it was associated with another. Finally, the categories generated by the same unit of analysis were compared.

The coding and reordering categories are iterative processes based on the permanent comparison of data, readings, and re-readings. The coding of the written discourses continued until the theoretical saturation of the generated categories was reached, that is, until the point at which new data no longer offered new information [49]. Using descriptive analysis, meanings associated with the educational experience during the pandemic were obtained. This analysis allowed us to identify the main components and to hierarchically organize these contents [45].

## 3. Results

With the objective of describing and understanding the experience of Latin American university students with ERT from the perspective of the return to face-to-face learning, the analysis of the discourses of students from Chile, Ecuador, and Venezuela was performed.

The use of discourse analysis allowed us to characterize the three topics set out by the researchers (pedagogical practices that motivate virtual learning, the most valuable resources, and activities for virtual learning and the benefits of virtual education), and to add an unforeseen one, which refers to strategies that favor participation in synchronous classes via videoconference.

## 3.1. Pedagogical Practices That Motivate Learning in Virtual Education

The students reported a series of pedagogical practices that they consider beneficial to their motivation for e-learning, and that facilitate the use of classroom resources and activities. These can be divided into the characteristics of instructional design, interaction, teaching and learning strategies, and how the teacher approaches student performance.

## 3.1.1. Instructional Design

The students' reports have allowed us to establish the specific characteristics of the instructional design of the virtual classroom that favor motivation to interact with its contents (Table 1).

A classroom with a logically ordered structure in terms of the organization of materials, that responds to a planned learning cycle and that is coherent with the subject programs favors a greater willingness to learn. The quantity, diversity, and availability of resources and activities in the virtual classroom are also mentioned as relevant to the motivation of using them, as opposed to classrooms with few materials of the same type.

Availability refers to the fact that the classroom allows permanent access to all the resources and activities of the subject. Another element highlighted by the students is the inclusion of breaks in the planning, which would provide a space to consolidate learning and rest, favoring virtual learning.

The variety of assessment processes that arise in virtual education and the possibility of having more time for them is considered by students as an element that motivates their study, as well as the inclusion of formative evaluations that allow them to approach the expected performance without sacrificing their grades.

Finally, the quality of the audiovisual resources used in virtual education would also influence motivation in this teaching modality, together with the incorporation of breaks in the academic planning.

Categories	Dimensions	Units of Analysis
Virtual classroom features	Organization	"That all the material is uploaded to a platform and that it is organized" (P88). "The classroom organization; I could sort out from what complicated me the most to the least complicated" (P142).
	Pedagogical structure	" that all the material is uploaded to a platform and that it is presented by week according to the subject plan" (syllabus) (P88). "The previous organization of the course in the classroom, the activities to be developed in the cycle, indicating from the beginning of the cycle the work to be carried out and their respective dates, in this way it is not mixed with the tasks of the other subjects" (P631).
	Diversity of learning materials	"I think the diversified material, through which they wanted the student to be interested in the content through the different methods and materials that were presented" (P71). "That the class was didactic and with a variety of ways to transmit the information" (P191). "Teachers used different resources such as videos or did dynamic activities and that motivated me a little more (P201).
	Quantity of learning materials	"Greater amount of material" (P81). "There was much more, and one could choose, or you had more to lean on to study."(P352).
	Material availability	"An advantage over face-to-face is the possibility of being able to view the content at any time and at any time" (P345). "One of the biggest advantages is being able to have the recordings and the access documents in a much faster way, also the notices/announcements" (P372).
	Consideration of breaks	"The weeks of recess and there was not so much academic overload" (P213). "The weeks of recess, since I took time to catch up, calm down and rest" (P112). "There was a week when a short break was taken that served as a time to catch up or review what we missed understanding" (P77).
Evaluations	Time to carry out assessments	"Have more time for assessments" (P81). "More time in the assessments" (102). "The time to be able to carry out some assessments" (P243).
	Variety of assessments	"The use of more creative and varied strategies to assess, not just written, oral or presentation exams" (P320). "Various evaluation methods in a digital and simpler way" (P327).
	formative assessment	"Formative assessments with hypothetical and realistic cases" (P45). "Small tasks or more frequent assessments that do not have notes and allow you to rehearse" (P493).
Of the resources	Quality of audiovisual materials	"That the videos and audio are of good quality" (P88). "Good image and video quality" (P626)

Table 1. Instructional design strategies that motivate learning in virtual education.

## 3.1.2. Student-Teacher Interaction

Regarding the interaction between teachers and students, students' express appreciation for those teachers who exhibit intentional actions to stimulate participation, who are attentive to their learning rhythms, and who are willing to provide help and address doubts when students request it, giving the interaction a pedagogical role focused on improving learning (Table 2).

On the other hand, students declare that the availability of their teachers in virtual education is greater, as they show themselves to be more flexible, understanding, and attentive to their emotional state.

Categories	Dimensions	Units of Analysis	
Interaction functions	Promotion of participation	"Involve the student during class and also check if he is paying attention, for example, ask him to read a section and reflect on it" (P201). "Teachers offer many spaces to ask all the doubts that arise" (P234).	
	Support to resolve doubts	"The willingness to answer any questions" (P259). "The availability to answer questions at any time respecting schedules" (P343). "The fact that there were more possibilities to solve the doubts, with the same teachers" (P619).	
	Support against learning difficulties	"The willingness of the teachers to help when one told them that they did not understand" (P385).	
	Attention to the learning rhythms	"Teachers show concern addressing and taking educational needs into account" (P191). "In addition to being concerned about how we were doing with the content, they were more attentive" (P257).	
	Teacher availability	"Incredibly my teachers were more expeditious in virtual than in face-to-face" (P383). "The fact that the teachers are ready to listen to us and support us in what we asked to reinforce, and they took the time" (P517).	
	Teacher flexibility	"The flexibility to carry out assessments or tasks the flexibility to access classes" (P93). "The flexibility in the delivery of work" (P103).	
	Understanding of teacher before unforeseen	"Better understanding of teachers about students' situations" (P341). "The understanding of the teachers that in person is totally different" (P6). "Understanding in the face of various situations" (P182).	
Communication	Varied media	"That they gave all possible ways to be able to have the best communication with the teacher" (P132). "Communication by different means" (P24).	
	Communication frequency	"Greater communication regarding doubts/questions with teachers" (P327).	
	Opportunities for communication	"Collaboration via chat, the ease of commenting and not interrupting the teacher" (P309).	

Table 2. Characteristics of teacher-student interaction.

From the students' perspective, another motivating element of virtual education is that it would provide them with more opportunities and a variety of communication channels to interact with their teachers, as well as their classmates.

## 3.1.3. Teaching strategies

Students referred to specific teaching and learning strategies that would favor their learning in virtual education. These are presented in Table 3, divided into active, collaborative, and meaningful learning strategies.

In active learning, the intentional integration between synchronous and asynchronous material and various information and communication technologies with gamification elements stands out. Regarding collaborative learning, academic and social interaction among students is expressed as central, as reflected in group work, debates, and the use of shared documents to construct knowledge among students.

The teacher promotes the application of knowledge through exercises, laboratories, case analyses, and examples. Moreover, superior experiences are offered when based on the use of meaningful and problem-based learning strategies, and these are positively valued by students.

Categories	Dimensions	Units of Analysis
Active learning methodology	Linking synchronous material with asynchronous material	"Complementary activities on the topic to later discuss the results in class" (P320). "Activities in the (virtual) classroom are useful for the classes" (P233). "We were asked to read more than usual, the good thing and what motivated me, was that classes were based on texts or chapters that we analyzed previously" (P18). "Conversations related to the materials of the virtual classroom" (P311).
	Use of ICT	"Use of PPT, videos, informative images" (P69). "Use different virtual tools to develop my learning" (P244).
	Games/gamification	"Knowledge games" (P24). "Quiz and online trivia games of questions (P386). "Virtual games to answer questions in a certain time, where the first places are finally rewarded" (P28).
Collaborative learning strategies       Discussions       "C         Group work       "C         Group work       cla         by       by	Discussions	"Group discussions on the topics of the subject and by forums" (P345).
	Analysis by shared documents	"Shared screen on which students can write" (P386).
	"Cooperative work in groups, where there is support from the classmates and it is possible to better understand the contents by interacting with each other" (P64).	
Meaningful and problem-based	Authenticity	"Those strategies that focused on practical activities rather than theory" (P195). "Guides to solve exercises, laboratories" (P611). "They presented you with a situation and you had to solve it, what would you do, like case analysis" (P222).
learning strategies	Use of examples	"Explanation with the use of many examples" (P347).
	Use of teacher experiences	"That teachers will tell personal experiences regarding the subject" (P76). "Share your professional experience" (P311).

Table 3. Teaching and learning strategies that motivate virtual learning.

# 3.1.4. Performance Approach Strategies

Students distinguish between individual, group, public and anonymous feedback, as ways for teachers to approach their performance and favor their motivation to learn. Additionally, they identify two moments for the provision of effective feedback—one at the beginning of the class when reporting on previous performance, and another immediately after a learning activity has been executed.

As for the content of the feedback, the use of instructive and evaluative messages would favor greater motivation for learning in students (Table 4).

The instructive messages deal with two aspects: (a) the ability/capacity displayed by the students in coherence with the learning goals, and (b) the work procedures considered desirable for certain learning activities.

Students distinguish between individual, group, public and anonymous feedback as ways for teachers to approach their performance that would favor their motivation to learn.

On the other hand, motivation to learn would increase when the teacher, in their feedback, recognizes successes through praise or prizes, and conveys high expectations and the usefulness and importance of their students' contributions and performance to the educational process.

Categories	Dimension	Units of Analysis
	Individual	"Feedback from tutoring at the individual level" (P154).
Feedback Types	Group	"Feedback at the end of the class with some group activity" (P240).
recubick types	Public	"The classes where we had to present, due to the teacher's feedback" (P77).
	Anonymous	"Anonymous surveys, and then their feedback" (P53).
	At the beginning of the class	"Feedback from the previous class, at the beginning of the class" (P365).
Feedback moments	Immediately after execution	"The tests results were delivered immediately, with the mistakes we made; the feedback was more immediate" (P172). "The teacher used applications such as kahoot that provided with feedback on the material passed in class" (P293). "Where the teacher observes the student's actions and corrects, in real time, the acquired learning errors" (P561).
	To the capacity	"They were attentive, they were concerned about telling us what we had not learned or why the note???" (P191).
Instructional feedback	To the work procedure	"The teacher congratulated us for being attentive to his instructions and working with concentration" (P400). "You are motivated by things like being rewarded with extra point for grades for finishing the work on time" (P283).
	Convey an expectation of competence	"The motivation that the teachers encourage in us so that we keep moving forward for achieving our goal, to make us feel that we are competent" (P45). "The value practices of the teacher" (P154). "The teacher in general made me feel comfortable to ask questions or make comments because some teachers make you feel that what you say whatever you want" (P373).
Reinforcements and constructive verbal persuasion by the teacher	Giving reward	"Participation and attendance points" (P343). "Offer extra points for grades for participation" (P26).
	Giving reinforcement/praise	"The praises the teacher gave us when we did well" (P343). "If I'm honest, in my case when the teacher highlighted the work, and you see that it is worth the effort, which made you want to give more" (P81).
	Conveying usefulness and importance	"That we were always told that there are no silly answers and that every question is always useful" (P69).

Table 4. Teaching strategies for approaching student learning achievement.

# 3.2. Most Effective Resources and Activities for E-Learning

Students reported a series of virtual classroom resources and activities that favored their learning in the virtual education context (Table 5).

The learning resources they recognized as effective are recorded classes, infographics, and videos. In the latter, they differentiated between documents, instructional videos, solved exercises, and the use of movies or television series relevant to the contents of the class.

As for the learning activities reported as practical, the following are identified: immediate response systems, virtual games, surveys, forums, private classrooms for group work, online documents, interactive whiteboards, and simulations. In particular, the forums are divided into two types—academic content, and another of a general nature for the clarification of doubts, both of which are promoted by e-learning.

Category	Dimensions		Unit of Analysis
Educational resources	Recorded classes		"Recorded classes, since they allow to analyze the content more than once" (P177). "Recorded classes as a means to revise or take extra notes" (P506).
	Infographics		"Making infographics helps a lot" (P26). "Audiovisual media like infographics that allows to understand or visualize contents" (P203).
		Documentaries	"Documentaries that later are discussed" (P324). "Documentary videos" (P511).
		Instructional	"To see videos that explain key aspects step by step" (P372).
	videos	Solved exercises	"To see solved exercises and then discuss them" (P370).
		Movies/series	"To use movies or popular series to exemplify" (P332). "The forums about movies made in class" (P369).
	Immediate response systems		"Reading assignments and then asking about them in class, with Menti, Kahoot or others so that results are discussed in class" (P320).
	Virtual games		"Online trivia games" (P386). "Online games in which you answer questions in a determined time, with prizes for the first places" (P28). "Online games about the contents" (P121).
	Surveys		"Anonymous surveys and their feedback" (P53). "Surveys in class, the voting type, to see if we answered correctly" (P76).
Activities	Forums	Academic content	"Interaction through forums about class content" (P620). "Group discussions about topics of the subject in forums" (P345).
Activities		Consultation purposes	"Forums for questions" (P385). "The use of forums in which you could ask questions, and anyone could answer, if you did not understand something for example" (P81).
	Group rooms		"Virtual classrooms for working in group" (P168). "The experience of practical group work in virtual classrooms created by the teacher" (P238).
	Online collaboration and document sharing		"To create documents collaboratively online" (P586).
	Interactive blackboard		"Online blackboards in which you were doing the work" (P582).
	Simulations		"Use of simulation platforms that show the process that the teacher was explaining" (P441).
Learning materials integration	Resources (videos, pdf or other) related to group work		"Collaborative work with infographics, presentations, videos, which made work simpler and more entertaining" (P113).
	Resources (videos, PDF or other) related to individual work		"Audiovisual media such as videos, infographics, etc. that allowed to understand when you study alone" (P203).
	Resources (videos, PDF or other) related to immediate response systems		"Use of videos with questions to understand how much you know and key aspects" (P371).

Table 5. Most effective resources and activities for e-learning.

In addition, the students' discourses present the use of resources and activities in an integrated manner, in which the former contributes to the development of the latter, identifying learning resources linked to the performance of the group and individual activities and resources associated with immediate response systems.

# 3.3. Benefits of Virtual Education

Students reported a series of benefits of virtual education that can be divided into learning, teaching, and personal benefits (Table 6).

The learning benefits can be classified into individual and group learning benefits. In the first, students reported improvements in their capacity for autonomy and time organization, and the deployment of more effective learning strategies. In the latter, they reported better opportunities for collaborative work, improved peer coordination, and more opportunities to work with students.

 Table 6. Benefits of virtual education.

Categories		Dimensions	Units of Analysis
Benefits for learning		Improve autonomy	"Greater autonomous learning" (P421).
	Individual	Improve time organization	"Having more time to organize" (P408).
		Improve learning strategies	"Virtual education helped me improve my study techniques" (P542).
	Social	Promotes collaborative learning	"More collaborative work can be done" (P482). "More collaborative learning practices" (P598).
		Improves coordination for group work	"Coordination of time with classmates This is how time for group study is used effectively" (P486).
		More opportunities to work with other students	"More collaborative work, we learned from each other and worked with more classmates" (P67). "The teachers brought us together in groups on the same platform to share our knowledge and opinions with our classmates, encouraging collaborative work, the groups were assigned randomly, so we had the opportunity to work with classmates who are not your friends" (P112).
		Better organization	"The organization of many teachers is better" (P367). "Better organization of the teachers' time" (P445).
		Faster communication of information	"Speed in the transfer of information" (P154). "The speed of communication of information and warnings of unforeseen events" (P203).
Benefits for teaching		Best educational response	"The virtual teacher has more opportunities to change the ways to approach teaching, to change their teaching strategies to avoid that the student lose motivation, to learn better" (P286).
		Attention to learning rhythms	"Seeing my teachers committed to us, looking for ways and methods to motivate us and help us as much as possible when they realized that it was difficult for us" (P148).
		Timely feedback	"The feedback at the end of the class with some group activity or games with multiple choice questions, allowed to know how you were doing" (P240).
		Lower economic expense	"Decrease in expenses for mobility, food and others" (P594). "Savings in housing expenses for foreigners, tickets, food" (P429).
		Greater room comfort	"The comfort of being at home" (P646).
		Better nutrition	"I ate healthier and at my hours" (P223).
Personal benefits		Greater hours of sleep	"My hours of sleep increase by not having to travel two hours for 7 am classes" (P415).
		Less exposure to risk	"The security of being able to be at home without being exposed to danger, theft" (P513).
		Facilitating housework and parenting	"I could keep my home in order in a better way" (P463). "Since I am a mother, it allowed me to stay at home with my daughter who was very young" (P483).

As for the benefits for teaching, virtual education would improve the teacher's organization and allow for the faster distribution of information to their students. At the same time, they state that virtual education allows the teacher a better educational response to the needs of the students with attention to their learning pace and more timely feedback regarding their performance.

In terms of personal benefits, students report savings in economic resources, more comfortable study environments, better food and sleep habits, and the facilitation of household and childcare tasks.

# 4. Discussion

The transition to the pandemic has provided an opportunity to think about how to continue the transformation of university education to a sustainable model for the next generations [50]. In this sense, the present study aimed to understand the experience of university students in Latin America, particularly in Chile, Ecuador, and Venezuela, with emphasis on the qualitative perceptions of different key elements of the ERT formative experience from the point of view of the experience once they returned to face-to-face classes.

The study is based on the premise that during the pandemic, students recalled previous classroom education in a manner that was biased by an idyllic retrospection [51,52], a coping strategy that human beings use to adapt to difficult situations, in which the past is perceived as more favorable, minimizing the negative aspects, while the present is viewed with greater pessimism. This cognitive bias in the interpretation of the ERT experience did not allow students to adequately value the benefits and opportunities of virtual classrooms, their materials, and activities. On the contrary, the reports issued by the students in this study were elaborated 3 months after the return to face-to-face classes, granting the possibility of a more adjusted evaluation of their experiences with virtuality.

## 4.1. Pedagogical Procedures to Motivate Learning

Student motivation during re-entry to face-to-face education after ERT due to the COVID-19 pandemic was impacted by instructional design, teacher interaction, teaching strategies, and performance approach strategies

# 4.1.1. Practices Associated with the Instructional Design

The organization and virtual classroom structure of resources and activities in the virtual classroom are perceived by students as a favorable teaching aspect, giving relevance to pedagogical intentionality that reflects an anticipated instructional design. Instructional design is the process of creating the learning experience by conjugating diverse elements to ensure more effective planned cycles or paths in particular learning situations [53]. All the teacher's efforts made during the ERT, in the form of providing tools, knowledge, and skills to manage, create and develop virtual teaching processes, lead to the challenge of framing them in a good instructional design [54].

The benefits indicated by students regarding a virtual classroom with a logical structure are a global and integrated perception of the subject, similar to a mental map, consistent with the academic programs, which encourages them in decision-making and reflecting on what contents could be made more or less complex, allowing us to understand the academic load and estimate the need for and distribution of time, among other actions. This helps us develop better study strategies and meta-cognitive evaluation processes [55,56].

The variety and quantity of virtual classroom materials are mentioned as important by students. In this context, the different instructional design models support the students' viewpoints, all of them indicating a common planning process that promotes the search for a variety of resources and activities to respond to different needs and learning styles, as well as estimating the dedication required in achieving the competencies set out in the learning objectives [54,57].

The planning of assessment processes within the instructional design is considered relevant by the students. In the context of authentic assessment [55], the students' state that in virtuality, they had a greater variety of opportunities for assessment focused on improving the quality of learning, instead of just a final judgment of their performance [58].

A longitudinal study conducted by Panadero et al. [59] on university students found that assessment processes generate the greatest negative emotionality in students, and seriously impact their academic motivation, as they are characterized by being summative and not associated with the promotion of self-regulated learning skills. On the contrary, formative assessment involves students in the performance of realistic tasks that give them a clear idea of their knowledge, skills, and abilities, and provides teachers with feedback regarding their teaching methods, forcing both to self-evaluate their strategies and make decisions about them.

The assessment activities described by the students are more consistent, i.e., they are part of the daily life of the classroom, in which mistakes are valued, and expectations that improvement is possible via a more constructivist approach to the teaching and learning process are transmitted [59].

Other relevant elements of instructional design expressed by students are the quality of audiovisual materials and a planning process that includes breaks. Regarding the former, there is evidence that supports the need to ensure the quality of audiovisual material while selecting and/or creating, since this determines the future level of use, in addition to impacting their motivation and satisfaction with the course. On the other hand, breaks have a more protective function over mental health, and a learning-leveling function, providing the opportunity to renew energies. In this context, the study carried out by Lo and Liu [60] reports that students noticed greater fatigue, a lack of concentration and visual problems when the online educational periods were very long, so they suggest that universities and instructors should consider shorter educational periods with a greater number of breaks. In curriculum planning [60], this period could represent an opportunity to consolidate learning and provide activities for self-care and/or bonding among students, teachers and directors, all of which are aspects reported as favorable for the quality of educational processes.

## 4.1.2. Practices of Teacher–Student Interaction

The role of the teacher is considered as key in the students' discourses, with a large part of the responsibility for the students' engagement in their learning falling on their ways of interacting. Following the transactional distance theory, in asynchronous education models, students experience a sense of separation, a psychological and communication void, which is attributed to the high dropout rates in online courses. Therefore, behaviors such as the promotion of participation, the permanent availability to answer questions and clarify doubts, the demonstration of concern for their learning rhythms and their associated emotional states, would shorten this transactional distance, in which the teacher is perceived as an understanding, flexible and close figure.

One element that stands out is the perception that in the ERT, the availability of teachers was greater. This availability may be due to the fact that in virtual environments the channels and means of communication are diversified, increasing the opportunities for interaction, both synchronous and asynchronously. The use of chat, forums, written audio and gestural messages (emoticons), among others, favors interaction. These communicational tools also favor a more youthful audience, which brings students closer to a more dialectic and collective learning, in which the student can even become a passive actor, that is, a spectator of the communication of others.

#### 4.1.3. Teaching Strategies

The students' perceptions allowed us to identify strategies previously reported as more successful because they respond to a constructivist and socio-constructivist approach. In particular, these include active, collaborative, and meaningful learning models.

Active learning involves highly complex reflective and cognitive processes that can only be developed if students play an active role in the construction of knowledge [61]. This interpellation towards students' active participation would be given by pedagogical practices such as the intentional linkage between resources and activities, between synchronous and asynchronous material, and the incorporation of gamification in the learning processes [61].

Regarding gamification, which emulates the video games that are so popular among young people, thus considerably increasing their motivation, this approach also involves feedback elements such as the comparison of their performance with themselves and with their peers, which favors metacognitive evaluative processes and the self-regulation of learning [62]. These may not necessarily favor self-efficacy, but guide one on the path towards it [63]. Despite these potential benefits, the study by Ng and Lo [64] warns that gamification can negatively affect student motivation, and interrupt their participation in learning activities when training has not been safeguarded. Technological and technical aspects are relevant to its effective implementation. The authors of these studies suggest that to improve the effectiveness of gamification, the digital literacy of both students and teachers should be ensured, and to promote enthusiasm for it, the teacher must conduct a brief information session on the results of the gamification activity at the end of each online class session.

In the sociocultural learning model, collaborative processes for the construction of knowledge are central. Designing learning activities as social experiences generates individual benefits (improves communication skills, self-confidence, develops critical thinking skills, stimulates autonomy and responsibility) and collective benefits (fosters social interaction, promotes inclusion and diversity, encourages commitment, develops planning skills and goal setting) [65,66]. According to students, collaboration in learning could be promoted by group work using virtual tools such as web-based documents, private classrooms and virtual black-boards, among others, as well as the development of debates, plenary sessions, and discussion groups through applications such as forums and videoconferences.

One of the main components of meaningful learning is the use of previous knowledge for cognitive activation in the face of new learning, according to which the latter must be perceived by students as "meaningful", i.e., useful, functional, and representative of everyday life [67]. The teacher who gives examples and shares experiences, while asking for them, and who promotes the realization of exercises and applications of the contents will favor greater student motivation and involvement, more lasting learning, a better classroom climate, and more participative and democratic students, thus improving the educational results [68]. In addition, the exercise activity reported by students is related to problem-based learning (PBL), which offers benefits such as promoting critical thinking and knowledge integration skills, as well as using them in real time.

# 4.1.4. Practices for Addressing Students' Learning Achievement

How the teacher influences their students' performance is considered relevant by the students. Effective feedback encourages students to assume a more active and central role in their learning process by clarifying their performance and raising awareness of what and how they learn. Recognizing the affective and motivational world of the student helps when proposing more appropriate pathways to improve their performance [69]. Thus, through feedback, focus shifts to the student, allowing him/her to be an autonomous learner, while the teacher acts as a mediator. The model that supports this approach to performance is referred to as feedback for learning [70].

Regarding the means to deliver feedback, teachers' messages have been shown to have a greater effect on students' motivation, with two favorable types of messages having been identified—instructional and evaluative [58,71]. The instructive component refers to the teacher indicating concretely and precisely what the students did well or what elements should be improved to achieve the learning goals. The evaluative component refers to accompanying the instructive feedback with a message of praise and/or rewards for success, or general encouragement. Students declare that the use of this type of messages by their teachers transmits high expectations and a feeling of being useful and important to the educational space, given that their performance nurtures the learning of all participants [55].

The messages that have a positive impact on students are those that are situated at the level of the value interaction between teacher and students, and that comply with the following conditions: (a) being expressed with positive language; (b) focused on strengths and not on shortcomings; (c) appearing personal by including accurate and differentiated learning achievement information that makes them credible to students; (d) are part of daily classroom interactions promoting a culture of continuous improvement, and (e) being timely.

Regarding the latter, students report two moments of greatest effectiveness for feedback—one at the beginning of the class, reporting on the previous performance, and one immediately after the execution of an activity that reflects their learning. The former makes it possible to activate previous knowledge and use the information as a diagnosis; the latter is contingent, avoiding gaps or lags that would affect later performance [72]. In both cases, feedback is not only at the service of the students, but also at the service of the teacher, by providing him/her with relevant information for adjusting his/her teaching.

The students mention as favorable both individual and group feedback, and the role of anonymity in the evaluation space stands out. Anonymity allows one to avoid exposure in front of their peers at times when they must acknowledge mistakes or failures, thus reducing negative emotions and contributing to a greater willingness to make sustained efforts when faced with more complex tasks.

## 4.2. Resources and Activities Considered the Most Effective for Learning

The learning resources that students recognize as facilitators of their learning are recorded classes, infographics, and videos. The recorded classes favor the taking of notes, the clarification of doubts and a better understanding of the content provided by being able to review it several times. Infographics synthesize the relevant content with a strong visual support that makes it more didactic [73]. On the other hand, videos offer enough empirical evidence, making them a successful technological mediation tool and highly valued by students; the variety of types of videos could be associated to the particularities of the learning results they pursue [74].

Regarding virtual classroom learning activities, there is evidence that both immediate response systems and surveys favor learning processes by providing opportunities for the activation of prior knowledge, diagnostic, formative and summative assessments, and acting as tools that support the development of mastery pathways [54]. In addition, the available applications (menti, Kahoo, Forms, etc.) are of low complexity for both teachers and students, and allow great economy in correction times, along with favoring more timely feedback.

Forums offer spaces for consultation, and the exchange of opinions and experiences among students that would fulfill the function of the democratization of knowledge by stimulating more constructivist learning that is accessible to all those involved [15]. Research developed with 5000 Chilean students indicates that the use of forums favors academic performance up to the third year of studies, with a moderating effect in which the use of forums is more favorable for those students whose entry conditions are associated with higher risks of abandonment. This leveling effect offers an important contribution to combating early dropout in higher education.

Private classrooms, online documents and interactive whiteboards are technological means that favor collaborative learning [75], as well as the better coordination of the time and place of group work, favoring the systematization of information since in all three it is possible to leave an audiovisual record of the progress.

The use of simulators is a more complex teaching strategy, but one with important benefits, the main ones being the early exposure of students to real training situations without risks (use of substances, procedures with people, etc.) and the possibility of giving immediate feedback using parameters that report achievement levels and information on performance, and propose corrective measures [76].

Finally, the integration of resources and activities, as well as the linkage with individual and group learning activities, both relate to the fact that these virtual tools are designed with pedagogical intentions, and span from Information and Communication Technologies (ICTs) to Learning and Knowledge Technologies (LKTs). The TKTs require teachers capable of integrating technology into the pedagogy of their discipline, a challenge theorized by the Technological Pedagogical Content Knowledge Model or TPACK Model, which proposes this integrative competence as the highest and most desirable level of teacher preparation [77]. Along the same lines, the Community of Inquiry Model or COI model also indicates the central and preponderant role of the teacher in the definition of quality criteria for virtual education [18].

## 4.3. Benefits of Virtual Education

The most reported benefits of virtual education in the pandemic were related to the equity and flexibility of this modality [6], and, to a lesser extent, to benefits for educational, attributing this decrease to the emergency condition of virtual education in confinement. Coincidentally, students report personal benefits associated with these elements, but also identify essential benefits for learning and teaching [32,78].

In terms of personal benefits, rest, home comforts, financial savings, security related to the avoidance of social dangers (theft, transportation accidents, etc.), improved eating and sleeping habits, and the possibility of collaborating with household chores and, in some cases, parenting, give students a perception of well-being associated with virtual education that is consistent with previous studies. It is important to point out that although these studies support this vision of the students, at the same time, they report the sacrificing of indispensable learning processes that are not possible under the virtual modality, and that have led to the generation of pedagogical lags and more superficial levels of learning.

The benefits for learning are expressed at two levels: individual and social. The individual benefits are associated with improvements in self-regulated learning skills. Following the Zimmerman Model [79], a greater number of skills have been developed for the pre-discipline stage of study (organization of time, activities, group work, etc.); secondly, in the execution stage, they report an amplification of their learning strategies and metacognitive monitoring processes driven by virtual tools that provide greater opportunities for feedback in a more timely manner. As regards the third stage, evaluation, there are no clear reports that allow us to account for it.

At the social level, benefits have been reported associated with greater opportunities for collaborative work, better coordination among students, and more opportunities to work with students other than the ones they would have chosen in the classroom. On the contrary, at the beginning of the pandemic, this was one of the areas worst evaluated by students, who had the expectation that virtual education would not allow them to have quality relationships with their peers [47]. After the first year of the pandemic, a longitudinal study with university students sought to establish to what extent the students' expectations had changed because of their experiences of virtual education, and although the perception of the quality of the relationship with peers improved with respect to the initial measurement, it continues to tend towards the negative pole.

The positive evaluation expressed by the students in this study may be because they have already experienced the return to face-to-face education, so an adjustment is made in the parameters of comparison, with a more real and less idealized evaluation of the academic social interactions that pertained during the pandemic, in which isolation and confinement sharpened the need for social contact and social relations. Along with this, the advancement in teachers' technological competencies is likely to have consolidated at the end of the ERT period, which could have given them more and better experience of interactions with peers and professors.

In the area of teaching, the students report that virtual education also had a positive impact on the teacher's self-regulation skills, and declarations that allude to the better order, organization, risk anticipation behaviors, etc., attest to this. A self-regulated teacher

provides more and better structures for students to organize their learning, transmitting greater security to their students who can anticipate and feel more control over their educational processes, and this allows the teacher to provide the student with a better balance of the academic load by being able to distribute resources, learning activities and evaluation processes in a better way [72].

A second benefit for teachers is related to their better educational response to students' needs [80]. The diversification of teaching strategies with a variety of technological devices, the increase in the channels and frequency of communication, as well as the incorporation of formative evaluative processes into daily classroom interactions would justify this perception of students that virtual education gives the teacher greater possibilities to deploy timely and relevant support actions.

The evaluation of the perceptions of Latin American students has provided a broad view with relevant information to consider in the re-structuring of post-pandemic teaching, a challenge taken up by many higher education institutions that intend to move towards improving the quality of education by identifying learnings from the ERT.

The limitations of this study are related to the fact that the analyses carried out do not consider the variables that make the participants very different, such as the type of degree they study, the year they are studying in, the country they belong to, etc. The short period of time assigned to collect the information was also an obstacle, since the perceptions of the students had to be fresh but still close to the time of ERT; without this restraint, more students could have participated.

Future research could address the learning of the ERT considering differences between different disciplines, in the level or year of study of the students, in the types of higher education institutions, and between countries, to characterize information, and to gain further insights and identify effective solutions that respond to particular realities. Going deeper into the characteristics of the teachers who promote these practices would substantially enrich the results and enable us to begin to investigate the characteristics of each resource and learning activity in greater depth, enabling us to specify what makes them effective and favors their replicability.

# 5. Conclusions

This study describes the lessons learned during the ERT from the experience of university students in Latin America who have already returned to face-to-face learning. The lessons learned point out that new learning scenarios should consider pedagogical strategies in relation to instructional design; active, collaborative, meaningful, and problem-based learning teaching strategies; and a feedback process that considers different types and moments of delivery, which includes performance information, recognition, praise, and encouragement. The design or selection of resources and activities must consider elements perceived as effective by students associated with visual attractiveness, interactivity, and gamified materials. Finally, we consider not only the personal benefits that contribute to the equity and flexibility of this educational modality, but also pay attention to those benefits related to the development of transversal competencies for learning and teaching, which are considered criteria of educational quality in higher education.

It is concluded that ERT introduced successful practices that should be incorporated into educational policies, teacher training processes, and student teaching and learning processes, offering all educational actors the opportunity for improving experiences in higher education.

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