

# Training, personal and environmental barriers of online education

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## Abstract

The sudden change that universities experienced in the wake of the COVID-19 pandemic raised some key issues in higher education. The objectives of the present study are to discover the barriers that students experienced regarding training in the use of synchronous online teaching tools, and to analyse the barriers they faced in terms of personal and environmental aspects. A quantitative methodology was used, with an ad hoc questionnaire consisting of Likert-type questions that was completed by 670 students of Education at the University of Cordoba and the University of Lleida. The results showed that most students did not receive any training in teaching synchronous online classes. Also, the students who did not have their own devices (i.e. a computer, mobile or tablet) or had to share one with other members of their family had the most difficulties in following online courses. The efforts made by students during the crisis is notable, and teachers are encouraged to think about possible strategies for dealing with similar situations in the future.

**Keywords:** online learning; virtual classrooms; online training; teacher training; emergency remote education

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**Resum.** *Barreres formatives, personals i ambientals de l'ensenyament en línia*


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El canvi sobtat que van experimentar les universitats arran de la pandèmia per la COVID-19 va fer sorgir algunes problemàtiques candents de l'educació superior. Per això, els objectius del present estudi són conèixer les barreres que es van trobar els estudiants respecte de la formació en l'ús d'eines d'ensenyament sincrònic, i analitzar les barreres dels estudiants respecte d'aspectes personals i d'entorn. Es va utilitzar una metodologia quantitativa mitjançant el disseny d'un qüestionari ad hoc amb preguntes tipus Likert que es va aplicar a 670 estudiants d'Educació de la Universitat de Còrdova i de la Universitat de Lleida. Els resultats van mostrar que la majoria dels estudiants no van rebre cap mena de formació per a la realització de classes síncrones. A més, els alumnes que no disposaven de dispositius propis (ordinador, mòbil, tauleta...) o que havien de compartir-los amb altres membres de la família eren els que tenien més dificultats per seguir les classes virtuals. Es destaca l'esforç realitzat pels alumnes durant la situació d'emergència i s'anima els professors a pensar en possibles estratègies per afrontar situacions similars en el futur.

**Paraules clau:** aprenentatge en línia; aules virtuals; formació en línia; formació de professors; educació remota d'emergència

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**Resumen.** *Barreras formativas, personales y ambientales de la enseñanza en línea*


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El repentino cambio que experimentaron las universidades a raíz de la pandemia por COVID-19 hizo surgir algunas problemáticas candentes de la educación superior. Por ello, los objetivos del presente estudio son conocer las barreras con que se encontraron los estudiantes respecto a la formación en el uso de herramientas de enseñanza sincrónica, y analizar las barreras de los estudiantes respecto a aspectos personales y de entorno. Se utilizó una metodología cuantitativa mediante el diseño de un cuestionario ad hoc con preguntas tipo Likert que se aplicó a 670 estudiantes de Educación de la Universidad de Córdoba y de la Universidad de Lleida. Los resultados mostraron que la mayoría del alumnado no recibió ningún tipo de formación para la realización de clases síncronas. Además, los alumnos que no disponían de dispositivos propios (ordenador, móvil, tableta...) o que tenían que compartirlos con otros miembros de la familia eran los que más dificultades tenían para seguir las clases virtuales. Se destaca el esfuerzo realizado por los alumnos durante la situación de emergencia y se anima a los profesores a pensar en posibles estrategias para afrontar situaciones similares en el futuro.

**Palabras clave:** aprendizaje en línea; aulas virtuales; formación en línea; formación de profesores; educación remota de emergencia

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### Summary

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## 1. Introduction

The abrupt irruption of COVID-19 into everyday life led to the emergency lockdown of the world's population in their own homes. This emergency measure also affected higher education institutions, as the model of face-to-face teaching had to be transferred online (del Arco et al., 2021) – in Spain, this situation extended from March to June 2020. This created great levels of stress and worry among the entire university population, as all the usual teaching processes were affected (Ramos-Pla et al., 2022a). Were the students trained in the use of synchronous online teaching tools? How did the students cope with this situation? What personal and environmental obstacles made synchronous online learning difficult for the students? What emotions did the students experience when dealing with a situation caused by the pandemic and its consequences?

This study thus has two objectives:

- To discover the barriers students faced with respect to training in the use of synchronous online teaching tools.
- To analyse the barriers students faced with respect to personal and environmental aspects.

## 2. Theoretical framework

### 2.1. ICT training processes

Many studies (Ali & Gatiti, 2020; Brooks et al., 2020; Peyravi et al., 2020; Sahu, 2020; Ramos-Pla & Flores, 2021; Flores et al., 2022) have shown that technological tools significantly help both teaching staff and students in academic tasks. However, it is necessary to monitor and support students to improve ICT training processes through ICT, and also to consider their mental health and well-being (Arteaga et al., 2015).

Although great advances have been made in technological and pedagogical knowledge in the last few years, it is clear that many university teaching staff still lack the necessary training and skills to move beyond traditional teaching methodologies (Ramos-Pla et al., 2021, 2022a). The number of teaching staff who apply active and innovative methodologies that make the development of skills possible is still small (Xarxa Vives d'Universitats, 2019).

### 2.2. ICT training during the pandemic

The training of university teaching staff is a widely researched field of study (Rahim et al., 2020; Walsh et al., 2021), for example: having skills and knowledge that can be passed on to students, and knowing how these skills and knowledge could be taught.

During the COVID-19 pandemic, many studies analysed the training of teaching staff to deal with this new situation (Ferrada-Bustamante et al., 2021;

Ramos-Pla et al., 2021, 2022b). Many studies have shown there has been an increase in on-going training in new technologies for teaching staff. However, most of these alternative training initiatives were directed towards working with institutional ICT tools, although the educators also expressed the need for training in pedagogical subjects (Ramos-Pla et al., 2021) and in tutorials with students (Martínez-Bello et al., 2021). Thus, it is necessary to train educators in ICT subjects and pedagogy, to be able to respond to future states of emergency that require teaching-learning processes to be transferred to online environments (Rahim et al., 2020; Walsh et al., 2021).

In addition, other studies have indicated that, in general, students were not satisfied with the way virtual classes were taught during lockdown (Bataineh et al., 2021; Van Der Velden et al., 2020; Avedaño et al., 2021).

Last, the students confirmed that some teaching staff transferred their face-to-face lecture formats directly to an online format (del Arco et al., 2021), although some teaching staff adapted to the new situation by applying more active and dynamic methodologies (“flipped classroom”, goal-oriented learning, etc.).

### *2.3. Emotions during lockdown*

Many studies have confirmed that emotions are negatively altered during periods of crisis, with individuals feeling deep emotional crises, anxiety, neurosis or depression (Fernández Poncela, 2021). All of these negative feelings can be closely associated with the COVID-19 pandemic, as lockdown and the health emergency situation itself greatly altered the everyday lives of university students (Fernández Poncela, 2021).

Fernández Poncela (2021), Acuña-Rodríguez et al. (2021) and Rodríguez-Cruz & Rodríguez Hernández (2021) argue that we must consider that emotions are important and relevant for health, and thus must be taken into account in teaching-learning processes. The same articles analysed the emotions of university students during lockdown, and the results were very negative. However, although the predominating emotions were anxiety, loneliness, fear, sadness, stress and uncertainty, other more positive ones also emerged, which helped to help the most vulnerable individuals: otherness, empathy, solidarity or gratitude. In this way, the students learned to face their fears and join the community (Rodríguez-Cruz & Rodríguez-Hernández, 2021).

## **3. Methodology and methods**

### *3.1. Sample*

The sample consisted of a total of 670 students studying for bachelor’s and master’s degrees in the field of education at the University of Cordoba and the University of Lleida, most of whom were women (79.7%, N=534). Their ages ranged from 17 to 55 years old (median of 22), with a greater number of

young students: 90% were between 17 and 28 years old, with 5% older than 32. The mean age of the sample as a whole was almost 22.5 years old (95% CI: 22.5-23.3), with a standard deviation of  $\pm 5.1$  years.

Almost two-thirds of the participants were enrolled on bachelor degree courses, more specifically Early Childhood Education (N=287; 42.8%), Primary Education (N=100; 14.9%), a double degree in both (N=35; 5.2%), and Social Education (N=14; 2.1%). The rest were master's degree students, in Teacher Training (N=201; 30%) and Inclusive Education (33; 4.9%).

Most of the participants (N=461; 69%) lived in an urban environment. About 29.3% (N=196 informants) lived in a rural environment, and 13 (1.9%) simultaneously in both.

Living arrangements during lockdown varied, with the most frequent response being "with parents and siblings" (51.64%). Thus, the number of individuals who lived in the same house (during lockdown) varied from 1 (1.8%; N=12 cases) to 11 (0.1%; N=1 case), with a median of four people. In 10% of the homes there were five cohabitants or more.

The informants' homes were characterized according to whether they had natural light (N=613; 91.5%), a private balcony (N=338; 50.4%), a private patio (N=326; 48.7%), a private rooftop terrace (N=222; 33.1%), or a private yard (N=99; 14.8%). About 2.8% (N=19) stated that they did not have any of these.

Finally, in relation to having their own electronic devices for following their courses and whether they had to share them with other members living in the same household: 96.4% (N=646) had their own electronic device and 82.2% (N=551) did not need to share their ICT devices with family members.

### *3.2. Instruments*

To conduct the present study, an ad hoc questionnaire was created, with the objective of discovering what training university students received during the COVID-19 crisis, in order to analyse and diagnose the actual situation. The questionnaire was designed in Spanish. Although the instrument was composed of seven sections or dimensions, the present study will only focus on two of them: barriers relating to training in the use of synchronous online teaching tools; and barriers relating to personal and environmental aspects.

The section on barriers relating to training in the use of synchronous online teaching tools was composed of six items that used a Likert scale of five response options (1=completely disagree to 5=completely agree). The section on barriers relating to personal and environmental aspects was composed of 10 items, and also used a Likert scale of 5 response options.

### *3.3. Reliability and validity of the questionnaire*

First, the content was validated by expert adjudicators, who used the criteria of clarity, relevance, and degree of importance for each item in the questionnaire.

Next, reliability was analysed, considering all items (six from the first section, and ten from the second), with a Likert scale of five points. The items were validated by verifying the unidimensionality of the set. The result obtained in the section on barriers relating to training in the use of synchronous online teaching tools showed that from the perspective of this single dimension, the item with the highest score (item 1.5) had to be excluded, as it did not obtain the sufficient factorial load, as supported by an almost null commonality value. A model with two dimensions could consider this item as a second dimension, but this is not feasible. Therefore, we opted for the unidimensionality solution without the item mentioned, which explained 65% of the total variance. Table 1 shows this solution, and as we can see, the factorial loads of the rest of the items were high ( $>.60$ ), thereby indicating their factorial validity. In addition, the reliability of the items was calculated, with all of them obtaining very good values ( $\leq .50$ ), except for one; that is, the item that was not part of the dimension found in the factorial validation, which supports the decision to exclude it. The Cronbach's alpha test result in the section on barriers relating to training in the use of synchronous online teaching tools is .72

**Table 1.** Psychometric properties: Validity and Reliability. Unidimensionality of the section "Barriers relating to training in the use of synchronous online teaching tools." N=670

Items	Factorial Analysis		Reliability of the Item
	Commonality	Factorial Load	
1.1. I have the necessary training in the use of online synchronous education tools to be able to follow the classes properly	.65	.80	.60
1.2. We have been provided with a tutorial for new users in the use of synchronous communication tools used in online teaching	.55	.74	.52
1.3. The teaching staff, in general, helped in the use of the synchronous communication tools used in the classes so that you could follow the online teaching properly	.61	.76	.59
1.4. I have sufficient basic training in the use of online synchronous communication tools to be able to follow the teaching properly	.39	.62	.50
1.5. I have learned, through my own resources, how to use different synchronous communication tools used for online classes	.01	---	.03
1.6. The teaching staff had the necessary knowledge and training to teach online using synchronous communication tools	.46	.68	.50

EFA –Variance explained: 65.0% // KMO=.74 // Bartlett: P-Value<.000001  
Source: Authors' own.

These results validated the construction of a gross score variable of this dimension. Following the method of sum of scores, the range of the expected values was found to be between 5 and 25 points, which the sample in the present study fully obtained, with a median of 15 points. The distribution tended towards a normal bell shape, with a mean value of 15.3 points.

Next, the validity of the items in the section “Barriers relating to personal and environmental aspects” was studied, first to verify their possible unidimensionality. The result obtained (Table 2) allowed us to verify the unidimensionality in this set of items, given that all of them had a high factorial load in this single dimension. Only one item (item 2.6), relating to the impersonal nature of the learning, obtained a somewhat lower factorial load, although it was still high enough to remain in the dimension. Similarly, the reliability analysis indicated good values for almost all of the items; it was only somewhat lower in the item just mentioned. The Cronbach’s Alpha test result for the section “Barriers relating to personal and environmental aspects” is .86.

**Table 2.** Psychometric properties: Validity and Reliability. Unidimensionality of the section “Barriers relating to personal and setting aspects” N=670

Items	Factorial Analysis		Reliability of the Item
	Commonality	Factorial Load	
2.1. I felt frustrated at the start of receiving online classes via synchronous communication tools	.50	.70	.60
2.2. I am unable to regularly attend online classes via synchronous communication tools	.34	.58	.48
2.3. It is more difficult to pay attention in the online classes than in the face-to-face classes in the classroom	.40	.64	.54
2.4. I felt nervous and insecure at the start of the online classes via synchronous communication tools	.58	.76	.66
2.5. I thought about quitting the class/degree, after starting to receive online classes via synchronous communication tools	.30	.55	.45
2.6. I believe that learning was more impersonal in the online classes than the face-to-face classes in the classroom	.32	.47	.38
2.7. I have felt lost when following the online classes via synchronous communication tools	.68	.83	.75
2.8. I felt that the teacher did not have the skills necessary for online teaching via the use of the tools	.37	.61	.51
2.9. I felt anxiety/concern when starting to receive online classes via the tools	.66	.81	.73
2.10. I missed having necessary basic training in the use of online training tools to correctly follow the classes	.40	.63	.53

EFA –Explained variance: 54.4% // KMO=.88 // Bartlett: P-Value<.000001.

Source: Authors’ own.

Thus, the construction of a gross score value of this dimension was validated. Following the method of accumulation of scores, the range of expected values was between 10 and 50 points, which the sample in the present study covered completely, with a median of 32 points. The distribution tended towards statistical normality, with a mean value of 31.6 points.

### *3.4. Data analysis*

The statistical analysis of the questionnaire results was performed with the IBM-SPSS v.25 program.

The following statistical techniques and tests were performed:

- The quantitative variables were analysed to verify their fit, or otherwise, to a normal Gaussian bell distribution. For this, the following were employed: normal Q-Q graphs, asymmetry indices and kurtosis, and the Kolmogorov-Smirnov goodness-of-fit test, in which only a severe deviation ( $p < .01$ ) would make us consider that the variable did not have a normal distribution.
- The quantitative variables were described through centrality tools: mean and median; and variability ones: observed range, standard deviation, and interquartile range (P75 and P25).
- To compare between the groups of different subjects (independent from each other), the following tests were used: Student's t test and one-way ANOVA when the variables were normal, and their non-parametric alternative (Kruskal-Wallis), when they were not normally distributed.

## **4. Results**

### *4.1. Barriers relating to training in the use of synchronous online learning*

This section consists of six items, using a Likert scale (1 = completely disagree, and 5 = completely agree). Table 3 shows the description of these items.

It can be observed that item 1.4 (I have sufficient basic training in the use of online synchronous communication tools to be able to follow the teaching properly, with mean 3.74) obtained the highest agreement. Therefore, most of the students learned to use the synchronous communication tools independently, without help.

In contrast are items 1.1 (I have the necessary training in the use of online synchronous education tools to be able to follow the classes properly, with a mean of 2.60) and 1.2 (We have been provided with a tutorial for new users of synchronous communication tools used in online teaching, with a mean of 1.29). Here, the data shows a lack of formal training, which the users were obliged to obtain on their own.



**Table 3.** Descriptive analysis. Barriers relating to training in the use of synchronous online teaching tools. N=670

Items	% response for each response option					Mean	Standard deviation
	1	2	3	4	5		
1.1. I have the necessary training in the use of synchronous online education tools to be able to follow the classes properly	27.3	22.5	24.2	14.6	11.3	2.60	1.33
1.2. We have been provided with a tutorial for new users of synchronous communication tools used in online teaching	40.1	22.4	19.1	10.6	7.8	2.23	1.29
1.3. The teaching staff, in general, helped in the use of the synchronous communication tools used in the classes so that you could follow the online teaching properly	7.5	18.2	27.8	27.6	19.0	3.32	1.19
1.4. I have sufficient basic training in the use of online synchronous communication tools to be able to correctly follow the teaching	4.2	9.3	24.9	31.9	29.7	3.74	1.11
1.6. The teaching staff had the knowledge and training necessary to teach online properly via synchronous communication tools	3.4	13.7	36.3	29.9	16.7	3.43	1.03

Created with IBM SPSS Statistics 25.  
Source: Authors' own.

*4.2. Analysis of the barriers relating to personal and environmental aspects*

This section consisted of 10 items, which used a Likert scale (with 1 indicating complete disagreement, and 5 complete agreement). Table 4 shows the description of these items (only data that have obtained significant results are shown).

**Table 4.** Descriptive analysis. Barriers relating to personal and environmental aspects. N=670

Items	% response for each response option					Mean	Standard deviation
	1	2	3	4	5		
2.1. I am unable to attend online classes via synchronous communication tools regularly	35.1	24.3	20.1	12.2	8.2	2.34	1.29
2.2. It is more difficult to pay attention in the online classes than in the face-to-face classes in the classroom	7.2	7.3	5.5	20.9	49.1	3.97	1.26
2.3. I have thought about quitting the class/degree, after starting to receive online classes via synchronous communication tools	64.3	11.6	13.0	5.1	6.0	1.77	1.21
2.4. I believe that learning was more impersonal in the online classes than the face-to-face classes in the classroom	4.6	6.4	14.9	24.6	49.4	4.08	1.15

Created with IBM SPSS Statistics 25.  
Source: Authors' own.

The results show that item 2.4 (I believe that learning was more impersonal in the online classes than the face-to-face classes in the classroom, with a mean of 4.08), followed by item 2.2 (It is more difficult to pay attention in the online classes than in the face-to-face classes in the classroom, with a mean of 3.97) obtained a higher mean value than the rest. As a result, the students perceived that the face-to-face classes provided a closer relationship between the students and the professor. Also, paying attention in the virtual classes was more difficult for the students compared to the face-to-face classes.

At the opposite end, we find item 2.3 (I thought about quitting the class/degree, after starting to receive online classes through synchronous communication tools), with a mean of 1.77 indicates that this thought was not very frequent. And similarly, item 2.1 (I am unable to regularly attend online classes via synchronous communication tools) obtained a mean of 2.34. Thus, the fact that the classes were not face-to-face was difficult for the students, in the sense of attending class virtually.

#### *4.3. Inferential analysis of the barriers relating to personal and setting aspects*

The normality of the scores found in the dimension “Barriers relating to personal and environmental aspects” was verified for each of the sub-groups of the variable “academic year” through the Anderson-Darling test, with the p-value obtained lower than 0.0001. Therefore a non-parametric test was performed to deduce the correlation of the independent variable “year group” and the section “Barriers to training in the use of synchronous online teaching tools”.

A Kruskal-Wallis test was performed, which provided a p-value lower than 0.001. Thus we can confirm the existence of sufficient statistical evidence to ensure the presence of significant differences between the medians of the different academic years. In this sense, the median of the 5th year group was much higher than that of the rest (36). Thus this group of students had more difficulties in training in the use of synchronous online teaching tools.

In this section, the normality of the scores of each of the sub-groups of the independent variables was also verified. These sub-groups were: elements of housing, possession of their own devices, and sharing devices with other people. For this, the Anderson-Darling test was performed, which showed that all the comparisons obtained p-values lower than 0.0001.

Next, a Kruskal-Wallis test was performed between the sections Personal and environmental barriers, and the independent variable “I have my own equipment/device (PC, laptop, Tablet...) to follow the synchronous online class and do my work”. A p-value lower than 0.001 was obtained, so there is enough statistical evidence to ensure the existence of significant differences between the medians of possessing a device. In this case, the median of those who did not have their own device (median of 44) is notable. Thus the part of the sample that had the most personal and setting difficulties were also those who did not have their own device to be able to follow the classes (Table 6).

**Table 5.** Inferential analysis: Barriers relating to personal and environmental aspects according to academic year enrolment. N=670

Items	Median	Interquartile range	Test	P-value
<i>Academic Year</i>				
1,2,3 and 4	30	0	Kruskal-Wallis	< 0.001***
1st	29	8		
2nd	35	11		
3rd	33	9		
4th	35	15		
5th	36	9		
Master's	27	11		

Source: Authors' own.

**Table 6.** Inferential analysis. Barriers relating to personal and environmental aspects and ownership of equipment. N=670

Items	Median	Interquartile range	P-value
<i>Equipment ownership</i>			
When I started the master's I bought a tablet	31	0	< 0.001***
At home, we have two computers (a laptop and a desktop), which are used depending on who needs them	–	–	
No	44	14	
I share the laptop. The rest, no	–	–	
Yes	35	13	
I use the company's laptop to do my work	1	–	

Source: Authors' own.

Lastly, another Kruskal-Wallis test was performed, which resulted in a p-value lower than 0.01, for the comparison between Personal and environmental barriers, and the independent variable “I share my work equipment/device (PC, laptop, Tablet...) with other members of my family to be able to follow the synchronous online teaching and to do my work”. Therefore we can confirm that there is enough statistical evidence to ensure that there are significant differences between the medians of sharing equipment. In this case, the median of those who shared their equipment was higher (median of 33), thereby indicating that they had the most personal and environmental difficulties (Table 7).

**Table 7.** Inferential analysis. Barriers relating to personal and environmental aspects depending on if the equipment is shared or not. N=670

Items	Median	Interquartile range	Test	P-value
<i>Sharing equipment</i>				
No	31	13	Kruskal-Wallis	< 0.001***
Yes	33	14		

Source: Authors' own.

## 5. Discussion

Emergency teaching, which was forced to go online, led to the emergence of difficulties that were already a major issue in higher education. The study conducted by Arteaga et al. (2015) pointed out that tutoring, monitoring and student support were needed in teaching/learning processes that involved ICT. However, the results from the present study indicate that students learned independently, without any type of training in the use of synchronous digital tools from teaching staff. Thus, the students themselves had to self-learn the use of these types of digital tools, as noted in the study by Rahim et al. (2020).

Another factor that led to students perceiving difficulties in their physical setting was the type of area where they lived. In this sense, urban areas and towns stood out. As Álvarez-Álvarez & García-Prieto (2021) and Belamghari (2022) note, the reason why rural areas appeared here was because they have less effective internet connections.

It should be added that the results of this study highlight that those students who had more difficulties in following synchronous classes were those who did not have an electronic device, as already pointed out by Anaya et al. (2021) and del Arco et al. (2021).

However, authors such as Ali & Gatiti (2020), Peyravi et al. (2020), Sahu (2020), del Arco et al. (2021), Ramos-Pla & Flores (2021) and Pattier & Ferreira (2023) indicate that during the period of lockdown, digital tools provided support for university teaching, although some students experienced difficulties using them. In this sense, the results from the present study indicate that students with the most problems tended not to have their own device (tablet, computer, etc.), and if they did, they had to share it with other members of their families. Thus, following Anaya et al. (2021) and Kardelis et al. (2021), the study provides further evidence on the digital divide that already existed before the pandemic.

## 6. Conclusions

Regarding the first objective set out in the study into barriers students faced in terms of training in the use of synchronous online teaching tools, methodological limitations were found in the university teaching processes during the COVID-19 crisis. We believe it is necessary to continue advancing differ-

ent methodological strategies to help students develop skills aimed at increasing their independence and to promote techniques for planning and designing teaching methods in the virtual environment, in order to capture the attention of students. The lecture-type methodologies that were used in face-to-face teaching are not transferable to a virtual environment, as the students lose interest when staring at a screen. Although this study highlights the students' efforts to train themselves using their own resources, it is not in itself a study of this. Managing university teaching, including taking the opinions and prior knowledge of the students into consideration, will allow for better organization, communication and involvement of every individual, especially during times of crisis.

Regarding the second objective (to analyse the barriers that the students faced in relation to personal and environmental aspects), the students encountered personal and environmental difficulties, some of which could be solved by the university itself. The most vulnerable students could be given laptops to make it easier for them to complete university-related tasks.

Lastly, we must underline the efforts of students during the emergency teaching period. However, certain aspects of virtual teaching could be improved, and it is therefore necessary for teaching staff to reflect upon these.

The main limitation of this study is that it focused on synchronous online teaching and not hybrid or asynchronous online teaching, as the variables to be studied occurred during the period of lockdown, and we were interested in exploring the actions of teachers in relation to training. In the future, the study could be extended to other contexts, including internationally.

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