Digital transformation of university teaching in communication during the COVID-19 emergency in Spain: an approach from students' perspective

La transformación digital de la docencia universitaria en comunicación durante la crisis de la COVID-19 en España: una aproximación desde la perspectiva del alumnado

Antonio J. Baladrón Pazos. Rey Juan Carlos University. Spain.
antonio.baladron@urjc.es
[CV] 🆔 🎓

Beatriz Correyero Ruiz. The Catholic University of Murcia. Spain.
bcorreyero@ucam.edu
[CV] 🆔 🎓 ᴿᴳ 🟢 🔴

Benjamín Manchado Pérez. The Complutense University of Madrid. Spain.
benjaman@ucm.es
[CV] 🆔 🎓 ᴿᴳ

ABSTRACT
Introduction: The COVID-19 (SARS-CoV-2 or coronavirus disease) health crisis declared in 2020 led to the suspension of ongoing in-person learning in Spanish universities and showed the difficulties to move forward in the digital transformation of the university world. The objective of the research whose results are presented is to approach, from students' perspective to how university studies in Communication in Spain adapted ongoing in-person learning to online learning during such an emergency period. **Methodology:** A self-administered online questionnaire was completed by a sample of Communication Faculties students from all the Spanish regions in which these studies are offered. **Results:** 57% of the students approve the management of the situation by their Faculties, resulting in a higher percentage in private universities compared to public ones. The virtual classroom has been the most recognized technological platform (accounting for 84.5% of the cases) while the main teaching resources have been File uploading (73.2%) and Videoconferences (67.9%), the latter being the most valued by students while not the most employed. **Discussion and results:** The Faculties of Communication -in the context of University education in Spain- have succeeded in deploying the existing resources to virtual learning, although the pandemic has exposed some technological limitations of the universities. Broadly speaking and given the urgency of the

transformation, common methods used for in-person learning have been shifted to the online world, instead of developing a teaching methodology that could benefit from all the advantages of virtual learning. Specifically, in anomalous situations like this one, the role of the teacher has proved to be essential, not only in transmitting knowledge but also in giving students attention and support.

KEYWORDS: university; coronavirus; COVID-19; Spain; new technologies; communication science; e-learning teaching

RESUMEN
Introducción: La crisis sanitaria de la COVID-19 (enfermedad producida por el coronavirus o SARS-COV-2) en el año 2020 conllevó la suspensión de la docencia presencial en las universidades españolas y evidenció las dificultades para avanzar en la transformación digital del mundo universitario. El objetivo de la investigación cuyos resultados se exponen aquí es aproximarse, desde la perspectiva del alumnado, al modo en que los estudios universitarios en comunicación en España adaptaron la docencia de presencial a virtual durante dicha crisis. **Metodología:** Se aplicó un cuestionario online autoadministrado sobre una muestra del alumnado de Facultades de Comunicación de todas las Comunidades Autónomas de España en las que se imparten estos estudios. **Resultados:** El 57% de los estudiantes aprueba la gestión de sus centros de estudio, porcentaje superior en las universidades privadas. El aula virtual ha sido la plataforma tecnológica de referencia (en el 84,5% de casos) y los principales recursos docentes utilizados han sido la subida de archivos con temario (73,2%) y la realización de videoconferencias (67,9%), siendo este último el mejor valorado por los alumnos pese a no ser el más empleado. **Conclusiones:** Las Facultades de Comunicación -en el contexto de la universidad española- han sabido potenciar los medios de los que disponían para la docencia virtual, si bien la pandemia ha puesto en evidencia las limitaciones tecnológicas de las universidades. A grandes rasgos y dada la urgencia de la transformación, se ha trasladado al mundo online los métodos docentes propios de la enseñanza presencial en lugar de desarrollar una docencia que aproveche todas las potencialidades de lo virtual. En la docencia virtual, en especial en situaciones anómalas como la vivida, es fundamental el papel del profesor no sólo como transmisor de conocimientos sino en su papel de atención al alumno.

PALABRAS CLAVE: universidad; coronavirus; COVID-19; España; nuevas tecnologías; ciencias de la comunicación; formación e-learning.

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Translation by **Paula González** (Universidad Católica Andrés Bello, Venezuela)

1. Introduction

At the end of January and the beginning of February 2020, the first two positive cases of the COVID-19 disease were detected in Spain; the first fatality is registered on February 13th. During this month there are positive cases in different parts of the Spanish territory that on March 8th were already more than 500, a figure that was growing exponentially day after day (more than 1,200 on March 9th and more than 30 deaths). The situation forces the regional government of the Community of Madrid to announce on March 9th the suspension of face-to-face classes at all educational levels for two weeks, with nearly a million and a half students affected; As a consequence, the next day the Conference of Rectors of the Madrid Public Universities agrees to second the suspension. On March 12th, it is the

state government that recommends to all the Autonomous Communities the closure of teaching centers, given that education is a competence that in Spain is transferred to regional governments; that same day, the Autonomous Communities suspend face-to-face classes at their universities, as well as at the other educational levels, a measure that affected some 9.5 million students. The health emergency was such that, the next day, the President of the Government announced that as of March 14th, the state of alarm would enter into force throughout the Spanish territory through Royal Decree 463/2020, of March 14th, declaring the state of alarm for the management of the health crisis caused by COVID-19; On March 15th, there were about 8,000 positives and about 300 deceased, which is why the Government of Spain forces the Spanish into mandatory confinement, with the prohibition of leaving their residences. From this moment, after successive extensions of the state of alarm, increasingly restrictive measures were established that implied the practical paralysis of, not only social but also economic and business life in the country.

In this context, with the campuses closed and with no signs of being able to restart their face-to-face academic activity, universities are forced to adopt measures to reorient teaching in their degrees and adapt to the new online teaching environment, to not paralyze academic activity nor their education programs. Against the clock, public and private institutions develop plans and develop tools to carry out remote teaching by their professors. The first, from their university autonomy and coordinated by the Conference of Rectors of Spanish Universities (CRUE by its acronym in Spanish), an organization that in an official statement on the day of the entry into force of the state of alarm highlights that:

> The university government teams (...) are arbitrating possible measures to reduce the risks to
>
> individual and collective health in the university community and working for the better
>
> development of non-face-to-face teaching so that curricular training is not affected (…) And,
>
> therefore, it is vital to attend the academic activity in a non-face-to-face way (CRUE, 2020a).

Universities had to reschedule courses and degrees online just two months before the end of the academic year, complement the e-learning plans for teachers, or reinforce their limited technological infrastructure, with virtual classrooms not always prepared to convert their face-to-face teaching into an online one, due to the high volume of traffic that this generated (Cabero-Almenara, 2020; Nuere and De Miguel, 2020; UNESCO, 2020c). To these limitations, it was necessary to add the difficulty among some sectors of the student body to have sufficient devices or knowledge for efficient Internet access that would allow them to fully follow the course (Frente de Estudiantes, 2020; Fundación CYD, 2020; UNESCO, 2020b). In this sense, the CRUE asked Spanish universities to carry out a series of surveys among students that would allow them to make an approximate X-ray of the academic reality and face the end of the academic year. The first consultation was to know the needs of international students (CRUE, 2020b), in the second, promoted by the rector of the University of Castilla La Mancha -also responsible for the section of Student Affairs of the CRUE-, the students were asked about the academic calendar and the evaluation formulas, and, in the third, it was intended to know the technological resources of the students, that is, the type of equipment they had (laptop, tablet, mobile phone) and the connection, (if it is fiber, mobile, or any other) (Espinar, 2020). To reduce this digital divide, the Supera Covid Fund, an initiative of Banco Santander and CRUE, obtained a budget of two million Euros in May to finance the purchase of 5,000 computers and provide 15,000 internet connectivity solutions and webcams for young university students from all over Spain who are in an unfavorable socioeconomic situation (CRUE, 2020c).

More or less quickly, the universities were converting face-to-face teaching into remote teaching, adopting different measures following the guidelines agreed with the Ministry of Universities of the Government of Spain. A technical working table was organized with the participation of the Ministry of Universities, representatives of the Autonomous Communities, the Quality Assessment Agencies, the Conference of Rectors of Spanish Universities, and the Council of University Students of the State that drew up a draft with the general criteria that, while respecting university autonomy, public universities in Spain should follow for the adaptation of the 2019-2020 academic year due to the COVID-19 pandemic; said document is agreed at the April 15th meeting of the General Conference on University Policy. As indicated therein:

> The common objective is that no student misses this course due to this crisis, or suffers an economic cost overrun from the measures adopted in the teaching field. Second, that administrations, universities, and agencies join forces to guarantee the academic quality of the teachings that students receive at the end of the 2019-2020 academic year. (Ministry of Universities, 2020, p. 1).

And they add: "the participation of the university community: the teaching staff, the student body, and the administration and services personnel, is considered adequate when specifying these general criteria in the specificities of each degree and/or subject" (Ministry of Universities, 2020, p. 2).

Following this document, the universities and their respective centers, including the Faculties of Communication, advanced in the restructuring of all their teaching dynamics. The change affected all levels: adaptation of teaching guides, online teaching tools, evaluation tests, curricular practices, degree accreditation processes, defense of final degree and master's degree projects, even the reorganization of the academic calendars agreed by each university institution. This extraordinary situation forced to update in record time the way of teaching communication by the teaching staff, who in those months had to work to update their training and adapt to the new e-learning environment at a forced pace; This was a real challenge for university communication studies that are about to complete half a century of life in Spain, where 203 communication degrees are currently taught in 67 universities and 101 centers (Postigo and Recoder, 2018).

1.1. New technologies and communication teaching in Spain

Studies conducted on the state of ICT integration in Spanish universities have increased in recent years (Cubeles and Riu, 2018; Esteves, et al., 2018; De Pablos et al., 2019; Hernández, 2019; Colomer et al., 2020; De Casas, Caldeiro, and Havrankova, 2020; Guillén and Mayorga, 2020; Liesa-Orús et al., 2020; Llorent, Tallon, and De las Heras, 2020; Mercader, 2020). Baelo and Cantón (2009) differentiate, on the one hand, the reports on ICT in Spanish universities and, on the other, the research carried out within the universities on specific aspects of the integration of ICT in higher education. A third group could be added, referring to the reports on the use of ICT in the teaching of a certain discipline, undoubtedly the least abundant. In the latter case, regarding the field of communication, the works of Santín-Durán (2009), Gómez-Escalonilla et al. (2011), Santín et al. (2011), and Aparici and García Matilla (2016) stand out.

The University 2000 Report or Bricall Report (Bricall, 2000) constituted the starting point for the development of important reforms in Spanish higher education and showed how in practically all

Spanish universities actions had been initiated to promote ICT within its structures, although there was still an excessive dependence on traditional didactic methods; It included the need for each university to promote the combined use of face-to-face with virtual education (Council of Universities, 2003). Currently, the most relevant reports and studies on ICT in Spanish higher education are the three promoted by the Information Technology and Communications Sector of the Conference of Rectors of Spanish Universities (CRUE): UNIVERSITIC, the Report on the state of online training and educational technologies (FOLTE), and the ICT 360 Report (ICT Trends).

As for the UNIVERSITIC report, which has been published biannually since 2004 (Barro, 2004), it is structured around two fundamental axes: Description of IT and IT Management, which group the main processes of university activity: teaching-learning, research, university and information management, training and ICT culture, and ICT management (resources, projects, services, management, quality and regulations, and collaboration). For each of these axes, a series of indicators are defined that allow collecting first-hand information on real penetration, use, and existing needs in ICT in Spanish higher education. In the absence of the publication of the 2019 report, the last one published corresponds to the 2017-2018 academic year (CRUE, 2017), the main conclusions show a consolidation of the implementation of new technologies as support for teaching with lower growth rates due to the good levels that are taken as a starting point. According to the data provided by the report, we have reached a point where "we cannot speak separately about IT services and infrastructures for face-to-face and non-face-to-face teaching, given the favorable evolution of face-to-face teaching with strong use of educational technologies, both in the classroom and outside of it" (CRUE, 2017, p. 18).

Thus, in recent years it is very common to find degrees, many of them in communication, that offer a certain program, subject, or course with a combination of face-to-face times, in the classroom, and other work times outside the academic campus, with the support of technologies through virtual APIs, subject websites, or integrated packages of Google applications, wikis, or social networks. These mixtures and combinations of methods and resources, called blended-learning (Coaten, 2003; Bartolomé et al., 2018; García-Areito, 2018), had already been carried out by the first distance universities with the support of face-to-face tutorials, long before the advent of digital technologies (García Aretio and Marín Ibáñez, 1998). The most widely used ICT support services are virtual teaching (in 100% of universities), as well as support for computer rooms for teaching use (98% of universities), and management of software licenses for teaching (98% of universities). Those services that present a lower degree of use are the support for taking and correcting exams (76%), the support for the preparation of teaching content (78%), and the support for multimedia classrooms (86%), although in all of them higher values are obtained compared to the previous report (CRUE, 2017). Regarding the most used platforms for virtual teaching, there are, first, Moodle, followed by Moodle plus their own developments, Blackboard Collaborate, Sakai, and, finally, ad hoc created platforms by the universities. Regarding the supports for the completion and correction of exams, Moodle also leads the classification, followed by Dara, ad hoc platforms, Moodle plugin, Sakay, and Exaplus (CRUE, 2017).

Likewise, the CRUE report also shows that the use of services related to virtual teaching is very widespread, both among teachers and among students. An average number of 1,805 professors per university use the institutional virtual teaching platform, which represents an average percentage of 90.55% of the total number of teachers in each institution. Besides, the application of new information and communication technologies (ICT) to teaching has its maximum expression in e-learning training. The universities of the Spanish University System (SUE by its acronym in Spanish) offer an average of 10.76 non-face-to-face degrees, which represents an average percentage of 7.35% of all the degrees at these universities (CRUE, 2017). Besides, according to the latest data from the

Ministry of Education (Hernández and Pérez, 2019), the total number of students enrolled in non-face-to-face Spanish universities was 245,421, representing 15.4% of the total number of students.

E-learning education arrived at the Faculties of Communication fourteen years ago. The presence of practical subjects and the use of technological tools (editing, layout, design programs, etc ..) in studies framed within social communication made it difficult to adapt the study plans of these careers to distance learning. In fact, these are studies that the UNED, a pioneer in distance learning in Spain, has not yet launched, although attempts to offer a degree in Journalism have been announced on several occasions (Aneca, 2005, p. 104). In the case of Spain, the first university to create online degree studies in the field of communication was the Rey Juan Carlos University (URJC by its acronym in Spanish), which offered for the first time in the 2006-2007 academic year the Journalism studies under the modality "blended-learning"; the following year the URJC expanded this offer with the degree in Advertising and P.R. (Gómez-Escalonilla, Satín-Durán, and Mathieu, 2011). In 2009, distance communication studies began at the Open University of Catalonia (UOC by its acronym in Catalan), which launched the Degree in Communication and the Degree in Information and Documentation; the International University of La Rioja (UNIR by its acronym in Spanish), which offered a degree in Communication; and the Distance University of Madrid (UDIMA by its acronym in Spanish) incorporating the degree in Journalism into its educational offer. The last online university that will launch an official degree in communication in online mode, specifically the Degree in Journalism, in the 2020-2021 academic year is the Isabel I University.

1.2. New technologies and teaching during the pandemic

Despite the good results shown by the latest reports on ICT in Spanish universities, the truth is that, as has already been anticipated, the pandemic has revealed the weaknesses of the system to adapt face-to-face teaching to online teaching. The unchained crisis has led to the demand for the development of a new configuration of higher education in which each university must promote the combined use of face-to-face with virtual education through the use of ICT. Once the state of alarm was declared and the cancellation of face-to-face classes, the state and community authorities suggested, as we have already mentioned, that teaching continues to be taught electronically (Ministry of Universities, 2020, p. 1). Thus, at the end of March, the Conference of Rectors (CRUE) and the Ministry of Universities presented the platform, "C@nnected: University at home", a portal created by the National University of Distance Education (UNED by its acronym in Spanish) and the Open University of Catalonia, to help teachers and students in the transition to digital distance learning. In the presentation of the portal, it is said that the web would contain methodologies for giving classes, as well as conferences, advice, dissemination materials, and personalized attention for the psychological care of those who require it; However, some authors have criticized this platform for being a mere repository of resources (Pardo and Cobo, 2020, p. 17) and links to university web portals where they collect their indications for adaptation to the context of Covid-19.

During the pandemic, the strategies of Spanish universities, including those that teach communication studies, to adapt to the new situation and continue teaching have been the most diverse, although they all have a common denominator: virtual campus, which until that moment had been technological support for face-to-face teaching, became the reference teaching platform. Distance universities had an advantage since they were already adapted to teach their programs exclusively remotely, and both students and teachers were used to interacting through the platform; the main problem they had to face was the substitution of exams, the only strictly face-to-face procedure.

Regarding the adaptation of face-to-face teaching to distance learning, although it has been possible to verify a large number of good teaching practices and the good work of many teams of developers, the health crisis has shown that during the process of "emergency remote teaching" (Hodges et al., 2020) many universities "have improvised, arriving late or with insufficient preparation for this adaptation, applying voluntarism and replicating in virtuality learning models that are already being obsolete in the classroom" (Pardo and Cobo, 2020, p. 8). The difference in resources of Spanish university education and the technological deficiencies of most higher education centers, which are still in the process of digital development, have been highlighted since the total integration of the ICT in higher education is still far from fully exploiting their possibilities. Proof of this is the data of the study carried out during the state of alarm among teachers of all universities in Spain by researchers from the Faculty of Human and Social Sciences of the Universidad Pontificia Comillas, whose results reveal that, during confinement, 30% of the Spanish university teaching staff gave non-face-to-face teaching every day (55% several times a week) when 60% of teachers had never taught online classes (Ibercampus, 2020). This study also confirms that 10% of teachers have found it difficult to teach at a distance, due to not having sufficient knowledge about online teaching, or that 72% of teachers have acquired knowledge with courses from the university itself (56.5 % also with the help of colleagues through networks). All the teachers consulted affirm that, in general, their knowledge of the online teaching environment has increased by more than 50% compared to what they knew before, and 32% consider themselves sufficiently prepared to continue teaching non-face-to-face after this period. These data would show that, in general, teachers have adapted well and quickly to the new methodologies and that they have become familiar with tools such as Moodle, Blackboard Collaborate, or Teams, which have been the most used, according to this study.

Meanwhile, the university students of all disciplines have complained during the confinement of the lack of understanding on the part of the teaching staff, whom they criticize for not having taken into account the particular conditions that each student had at home; The students argued that it was assumed that everyone had a suitable study environment and their own work team when this was not the case. To overcome the digital divide between those students who did not have access to the necessary resources to follow up on telematic classes, many Spanish universities made available to students extraordinary loan services for laptops, webcams, and SIM cards. However, in the case of students who did not have unlimited access to the Internet in their places of residence, the situation became especially complicated. Besides, it must be taken into account that in many households several family members were teleworking or studying remotely at the same time and that not all households have an Internet connection that supports the consumption of data by all at the same time. For both teachers and students, there was also the "collapse of the context" (Boyd, 2002), something that happens when people, information, and norms from different environments meet and overlap. The lockdown has been an anomalous and provisional situation, but it has demonstrated the importance of hardware, software, and connectivity for any digital expansion strategy of the campus. As stated by Pardo and Cobo (2020, p. 51), "these problems of access to technologies and connectivity imitate the difference between universities with resources and the rest with greater limitations, and inevitably deepen the historical inequality between both types of institutions."

In terms of exams, the Minister of Education, Manuel Castells, urged universities to define non-face-to-face tests (González, Marco, and Medina, 2020). Within the framework of the Conference of Rectors of Spain (CRUE), it was proposed that the student's final grade be distributed among different activities that could be carried out throughout the semester, reducing the importance of the final exam; that is to say, that the continuous evaluation proclaimed by the Bologna Plan be extended. However, each university adopted a different strategy, although in general, most teachers opted for students to carry out asynchronous assignments or a "test" evaluation with a limited response time to try to avoid possible plagiarism and information exchanges. Besides, students in

some degrees had to install programs to ensure the validity of the test, with functions such as screen lock and camera surveillance; The obligatory nature of this system was questioned by some students, who consider that, by granting permissions for the recording of images and audio from their device, their right to privacy could be compromised.

At present, most of the world's universities are modifying their teaching planning considering various scenarios. Some experts say that this movement towards virtuality imposed by the COVID-19 pandemic has come to stay, while others bet on the enhancement of face-to-face teaching combined with remote learning experiences within the comprehensive education process of the students. In any case, ICTs will play an important role in the post-pandemic era, becoming more than just a "transitory crutch" (Chiape, 2016; Orihuela, 2020; Onyema et al., 2020) and being essential elements for the development of the organizational flexibility of teaching and the development of new synergies that fully lead universities towards knowledge societies (Castells, 2001, 2006; Coll and Martí, 2001), all in a dynamic of change and reflection on the what, how, and why of 21st-century education (Castañeda and Selwyn, 2020, Orihuela, 2020; LeBlanc, 2020; Pardo and Cobo 2020).

2. Objectives

To address the proposed study object with scientific rigor, a research was developed whose generic objective was an approximation, from the students' perspective to how university studies in communication in Spain were adapted to virtual teaching during the health crisis of COVID-19; It was interesting to know the perceptions of the students, therefore surpassing what was researched in other studies that have been carried out and that have been previously mentioned, focused on teachers. This generic objective had to be translated into the following specific objectives:
1. Know the degree of satisfaction that communication students have about the adaptation of their centers to virtual teaching during the suspension of face-to-face classes.
2. Identify, from the students' perspective, the main teaching resources and technological platforms used in the virtual teaching of communication during the suspension of face-to-face classes.
3. Know the assessment for their learning that communication students make of these teaching resources, as well as the different assignments proposed by teachers in their subjects during the suspension of face-to-face classes.

3. Methodology

To this end, a descriptive research was carried out, using a self-administered online questionnaire as a quantitative technique. It was prepared through the online application of Google Forms, allowing, in a simple way, the collection and subsequent dumping of data for analysis. Given the confidentiality in the treatment of the data and its use strictly for the research, the heading stated the anonymous nature of the provided answers, as well as the use of the data only for academic purposes, so that assumed an implicit consent for participation in the research without an express refusal being necessary.

As attached below, the questionnaire consisted of eight questions. In the first two, an attempt was made to objectively identify the resources and platforms used by the teaching staff for virtual teaching, offering the possibility of marking one or more responses from a presented range (including "None"), to which those items that the students considered could be added. The next three questions collected a subjective assessment of the quality of teaching in its virtual modality (through a numerical scale), as well as the resources used and the tasks carried out in that period (using, in these cases, ordinal score scales). In this way, the first five questions could cover the various aspects

that were raised as objectives of the research. On the other hand, the last three corresponded to the identification of the undergraduate/postgraduate studies, and the institution in which they were studying: specifically, information about the type of university, the degree studied, and the full name of the university (with a drop-down list including all Spanish universities).

Table 1. *Questionnaire*

Questionnaire
1. What are the resources that your teachers are using for the virtual teaching of their subject? (indicate the most used up to a maximum of 3) - Chat - Forum - Glossary - Mail - File upload (agenda) - Online tasks (practical) - Self-assessment test - Videoconference - Wiki - None - Other [editable field]
2. What platforms are your teachers using for virtual teaching of their subject? (indicate the most used up to a maximum of 3) - Virtual classroom of your university - Blackboard Collaborate - Blogs and web spaces of the subject - Microsoft Teams - Social networks - Skype - WhatsApp - Zoom - Other [editable field]
3. How do you think the University is carrying out virtual teaching instead of face-to-face classes? Rate from 1 to 10, with 10 being the highest possible grade [numerical scale]:
4. Rate the usefulness of the following resources for your online learning in your subjects (Not useful, Not very useful, Useful, Very useful) [ordinal scoring scale] - Chat - Forum - Glossary - Mail - File upload - Online tasks - Self-assessment test - Videoconference - Wiki
5. Evaluate the degree of importance, for you and your learning, of the tasks virtually carried out by the teacher during the suspension of face-to-face classes (1 being less important and 5 more important) [ordinal scoring scale] - Explain the content of the subject - Carry out tests to evaluate the student - Propose tasks that serve to understand the contents of the subject - Provide content about the subject - Solve doubts about the subject - Stay in direct contact with the student
6. Type of university you study at - Public

- Private
7. Communication degree you study - Audiovisual Communication - Journalism - Advertising and P.R. - Another degree in communication - A double degree in communication - A postgraduate degree in communication
8. University where you study [drop-down menu]

Source: Self-made

To send the questionnaire, via email, a database of contacts of teachers from the different Spanish Communication Faculties was created to whom it was sent so that they could send it to their students; In the cases in which a lower response was obtained, the questionnaire was sent to the representatives of the students of those centers in which there were student organizations so that they could distribute them among their classmates. The completion by the students was carried out during the weeks that the declaration of the state of alarm lasted, and the consequent suspension of face-to-face academic activity in all universities; always before the end of the school period that ranged between the end of April and the end of May between the different universities. It should be noted that the suspension of face-to-face classes throughout the country began on March 12th and was consolidated with the declaration of a state of alarm on March 14th, although it was decided to start fieldwork after two weeks after the declaration of said state of alarm; This was because, given the situation that occurred, the Communication Faculties had to have a margin of time to be able to adapt their face-to-face teaching dynamics to remote teaching, and the assessment that the students made of this necessary adaptation time was not intended to distort the final results of the research.

The research was based on a non-probabilistic sample of students from Spanish Communication Faculties, a total of N=560 individuals who answered the questions in the questionnaire between March 29th and May 5th, 2020. As a starting point, the specific university in which they carried out their studies was not established as a relevant study variable, although students from both public and private universities and from all the Autonomous Communities that make up the Spanish State in which university communication studies are offered participated (Table 2); This despite the difficulties involved in being able to contact and have the collaboration of students from so many universities in full confinement and state of alarm. 72.1% of the participating students were students from public universities and the remaining 27.9% from private universities. This sample guaranteed the validity of the approach to the object of study, established as the main objective of our analysis.

Table 2. *Autonomous Community of the university*

Autonomous Community	Nº Cases	% Cases
Community of Madrid	267	47.7%
Murcia Region	148	26.4%
Castile and Leon	60	10.7%
Andalusia	26	4.6%
Aragon	22	3.9%
Basque Country	12	2.1%
Valencian Community	6	1.1%
Catalonia	5	0.9%

Galicia	4	0.7%
Canary Islands	2	0.4%
Cantabria	2	0.4%
Foral Community of Navarra	2	0.4%
Estremadura	2	0.4%
Castilla La Mancha	1	0.2%
Balearic Islands	1	0.2%
Total	560	100.0%

Source: Self-made

The collected data were dumped into an Excel spreadsheet to proceed with the purification and validation of the entered data. Finally, we proceeded to the statistical treatment of the data collected in the questionnaires using the IBM SPSS Statistics 24 program. This software allows two alternatives to perform the multiple response treatment, which in the questionnaire appears in the first two questions, in which students had to provide information about an a priori indeterminate number of items, namely the teaching resources and the platforms used in online teaching. The method that considers the open nature of both questions was chosen (Martínez, 2006), constructing as many auxiliary categorical variables as the greatest number of answers collected in each question (8 for the question on resources and 6 for the platforms) to be needed, in this case, fewer variables than the method for closed questions (which used dichotomous variables in each possible individual response), and because it is also simpler than that proposed in Serrano Aguado, 2013. The main results found are set out below.

4. Discussion and results

The results of the research indicate that the communication students participating in the research approve -regardless of the academic terminology- how the centers in which they study implemented virtual teaching instead of face-to-face teaching; in fact, as shown in Table 3, 57% score it above 5 out of 10; those that rate it with a notable account for almost a quarter of the total (24.5%) and those that give it an outstanding are 8.4%; therefore, practically a third of the students give a very positive assessment. However, it should not be overlooked that 24.1% of all students simply approve how their universities developed virtual teaching to replace face-to-face teaching and that there is a percentage of 43% who have chosen to fail the management done.

On the other hand, the degree of satisfaction of the students participating in the research is uneven between the different centers and within them. In the first place, a better evaluation is clearly observed among students from private universities compared to those from public ones. And, secondly, as reflected in Table 3, the lowest degree of satisfaction is observed among Audiovisual Communication students (45.3% approve the management of their university) compared to, for example, Journalism (65, 2%), or Advertising and P.R. (54.7%). The results indicate a much higher degree of satisfaction among students of double degrees or of other types of communication degrees, although these data should be questioned due to the limited number of students from such studies among those who completed the questionnaire.

Table 3. *Degree of satisfaction with virtual teaching by degree*

Score	Degree	Audiovisual Communication	Journalism	Advertising and P.R.	Another Communication degree	Double Communication degree	Postgraduate Communication	Total

1	N° Cases	22	9	18	0	2	0	51
	% Degree	14.7%	8.0%	9.9%	0.0%	2.1%	0.0%	9.1%
2	N° Cases	18	6	13	0	4	1	42
	% Degree	12.0%	5.4%	7.2%	0.0%	4.3%	20.0%	7.5%
3	N° Cases	22	9	29	2	17	1	80
	% Degree	14.7%	8.0%	16.0%	11.1%	18.1%	20.0%	14.3%
4	N° Cases	20	15	22	2	9	0	68
	% Degree	13.3%	13.4%	12.2%	11.1%	9.6%	0.0%	12.1%
5	N° Cases	15	11	19	1	8	1	55
	% Degree	10.0%	9.8%	10.5%	5.6%	8.5%	20.0%	9.8%
6	N° Cases	14	18	26	1	20	1	80
	% Degree	9.3%	16.1%	14.4%	5.6%	21.3%	20.0%	14.3%
7	N° Cases	18	23	19	8	23	0	91
	% Degree	12.0%	20.5%	10.5%	44.4%	24.5%	0.0%	16.3%
8	N° Cases	6	11	20	2	6	1	46
	% Degree	4.0%	9.8%	11.0%	11.1%	6.4%	20.0%	8.2%
9	N° Cases	7	3	7	2	2	0	21
	% Degree	4.7%	2.7%	3.9%	11.1%	2.1%	0.0%	3.8%
10	N° Cases	8	7	8	0	3	0	26
	% Degree	5.3%	6.3%	4.4%	0.0%	3.2%	0.0%	4.6%
Total	N° Cases	150	112	181	18	94	5	560
	% Degree	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%

Source: Self-made

Besides this global assessment, the research carried out sought to know what were the teaching resources and the technological platforms that were used during remote teaching. Starting with the platforms (Table 4), a total of 1,117 responses were obtained since the respondents could point out various possibilities up to a maximum of 3, and it is clearly observed that the main platform is the virtual classroom of the university. Analyzing the data based on the number of respondents, it should be noted that 84.5% claim to have used the virtual classroom and 32.5% Blackboard Collaborate, platforms whose data could be unified because this last tool is frequently integrated with the virtual classroom. It is followed by Microsoft Teams (28.0%) or social networks (12.7%); Between one and the other, approximately 1 in 10 students also claim to have used other platforms such as blogs or

sites of the subject, and Zoom. The use of other platforms such as Skype, WhatsApp, WebEx, Google Meet, or Hangouts is much less.

Table 4. *Technological platforms used*

Platforms	Nº Resp.	% Resp.	% Cases
Virtual university classroom	473	42.3%	84.5%
Blackboard Collaborate	182	16.3%	32.5%
Microsoft Teams	157	14.1%	28.0%
Social networks	71	6.4%	12.7%
Blogs and web spaces of the subject	64	5.7%	11.4%
Zoom	64	5.7%	11.4%
Skype	40	3.6%	7.1%
Whatsapp	29	2.6%	5.2%
WebEx	16	1.4%	2.9%
Google Meet	13	1.2%	2.3%
None	4	0.4%	0.7%
Hangouts	4	0.4%	0.7%
Total	1.117	100.0%	

Source: Self-made

In any case, the most common has been the use of several platforms simultaneously. The results of our research (Table 5) show that the majority of the surveyed students used various technological platforms (30.0%, with three; 28.4%, with two), although there is 37.5% of the total that claims to have used only one; meanwhile, only 3.4% of the students say they have worked on their communication courses with more than three different platforms. For undergraduate studies, it is in the Advertising and P.R. degree where a greater number of different platforms have been used; For example, 37.5% of students who state that they have used a single platform drops to 32.0% in the case of Advertising and P.R., while it rises to 52.7% and 47.3% in the case of Journalism and Audiovisual Communication, respectively.

Table 5. *Number of platforms used by degree*

Nº. of platforms	Degree	Audiovisual Communication	Journalism	Advertising and P.R.	Another communication degree	Double communication degree	Postgraduate in communication	Total
0	Count	1	1	2	0	0	0	4
	% Degree	0.7%	0.9%	1.1%	0.0%	0.0%	0.0%	0.7%
1	Count	71	59	58	2	16	4	210
	% Degree	47.3%	52.7%	32.0%	11.1%	17.0%	80.0%	37.5%
2	Count	62	23	41	7	25	1	159
	% Degree	41.3%	20.5%	22.7%	38.9%	26.6%	20.0%	28.4%
3	Count	15	28	68	8	49	0	168
	% Degree	10.0%	25.0%	37.6%	44.4%	52.1%	0.0%	30.0%

4	Count	0	0	10	1	2	0	13
	% Degree	0.0%	0.0%	5.5%	5.6%	2.1%	0.0%	2.3%
5	Count	1	0	2	0	2	0	5
	% Degree	0.7%	0.0%	1.1%	0.0%	2.1%	0.0%	0.9%
6	Nº Cases	0	1	0	0	0	0	1
	% Degree	0.0%	0.9%	0.0%	0.0%	0.0%	0.0%	0.2%
Total	Nº Cases	150	112	181	18	94	5	560
	% Degree	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%

Source: Self-made

Regarding the teaching resources used in the virtual teaching of the subjects, the most frequent has been the use of three different resources (as stated by 58% of those surveyed) and then two (13.4%); Only 6.8% of the surveyed students declare having used only one resource and there is a marginal 1.1% who affirm not having used any, which implies the absence of virtual teaching of any kind. The remaining 20.7% corresponds to students who enjoyed more than three resources in their subjects. The percentages are similar both between public and private universities, although there is a greater tendency towards diversification of resources in the latter.

Table 6. *Number of teaching resources used by the type of university*

Nº. of resources	Type of university	Public	Private	Total
0	Nº Cases	6	0	6
	% Type	1.5%	0.0%	1.1%
1	Nº Cases	24	14	38
	% Type	5.9%	9.0%	6.8%
2	Nº Cases	69	6	75
	% Type	17.1%	3.8%	13.4%
3	Nº Cases	230	95	325
	% Type	56.9%	60.9%	58.0%
4	Nº Cases	37	11	48
	% Type	9.2%	7.1%	8.6%
5	Nº Cases	26	19	45
	% Type	6.4%	12.2%	8.0%
6	Nº Cases	10	10	20
	% Type	2.5%	6.4%	3.6%
7	Nº Cases	2	0	2
	% Type	0.5%	0.0%	0.4%
8	Nº Cases	0	1	1
	% Type	0.0%	0.6%	0.2%
Total	Nº Cases	404	156	560
	% Type	100.0%	100.0%	100.0%

Source: Self-made

On the other hand, very important differences cannot be concluded between the answers of the surveyed students of the different communication degrees. Now, focusing on the three classic degrees of Journalism, Audiovisual Communication and Advertising and P.R., it is observed that in the case of Journalism there is less diversity in the teaching resources used by teachers; not in vain if, out of the total sample, 79.3% of the students had less than three resources at their disposal, in the case of Journalism it rises to 86.6%, followed by Audiovisual Communication (80.0%), being the degree of Advertising and P.R. the one in which teachers offered a greater number of resources, according to the respondents.

Specifying which have been the main teaching resources used by teachers, the following data is extracted from the 1,725 responses obtained. 73.2% of the students who participated in the research indicate that their teachers have uploaded files with content of the subject's syllabus, 67.9% that they have made videoconferences, and 58.9% that they have proposed online assignments related to the practical aspects of the subjects. These have been the main resources used by communication teachers, besides others such as mail (42.3%), forums (34.1%), or chats (23.6%), more oriented towards participation and feedback with the students. Table 7 shows the total specific percentages disaggregated by type of university. In both types of universities, the most mentioned resources were uploading files, videoconferencing, and online assignments, with more than 60% of the responses in each case, although in a different order (the most important being the uploading of files in the public university vs. video-conferencing in the private one); and only in the case of the public university the absence of any recourse was collected as a response. A chi-square homogeneity test revealed significant differences in the resources used between both types of universities (test value=165.524 with p=0.000), then it can be stated that the resources are used differently in the two cases.

Table 7. *Teaching resources used by the type of university*

Used resources	Public		Private		Total	
	N° Resp.	%	N° Resp.	%	N° Resp.	%
File upload (agenda)	313	25.9%	97	18.7%	410	23.8%
Videoconference	233	19.3%	147	28.4%	380	22.0%
Online assignments (practical)	223	18.5%	107	20.7%	330	19.1%
Mail	161	13.3%	76	14.7%	237	13.7%
Forum	172	14.3%	19	3.7%	191	11.1%
Chat	78	6.5%	54	10.4%	132	7.7%
Self-assessment test	17	1.4%	16	3.1%	33	1.9%
None	6	0.5%	0	0.0%	6	0.3%
Glossary	3	0.2%	1	0.2%	4	0.2%
Wiki	1	0.1%	1	0.2%	2	0.1%
Total	1,207	100.0%	518	100.0%	1,725	100.0%

Source: Self-made

Besides identifying which were the main teaching resources used in remote teaching by the professors of the Faculties of Communication, another objective of the research carried out was to know the assessment that the students participating in the research make of these resources. From Table 8 it can be seen what degree of utility students see in those resources that they have previously answered that

have been used. It was found, on the other hand, that the assessment that students made of the resources they had used differed from those cases in which they gave their opinion without having used them. Well, it could be said that the most used resources are also, broadly speaking, those that students consider most useful. Not surprisingly, the main one is the uploading of files, used by 410 students, which 78.1% consider useful or very useful, followed by videoconferencing with 380 students (useful or very useful for 82.6%), online assignments (for 69.1%), and email (for 74.7%). Meanwhile, the perception of usefulness is lower in the case of less used resources such as forums or chats, which students only consider useful or very useful in 47.6% and 55.3% of the cases respectively, and still lower in other resources such as glossaries or wikis. However, two significant data should also be highlighted. On the one hand, the high assessment of usefulness that students make of the self-assessment tests despite being a resource little used by teachers (75.7% of the students who used them consider them useful or very useful despite being a resource that only 5.9% of students say their teachers have offered them); in any case, it is data that should be contrasted with a larger sample. And on the other hand, the high utility that students give to videoconferencing as a teaching resource since it is the one that students qualify as very useful in the highest percentage of cases, although it has not been the resource most used by teachers.

Table 8. *Perceived utility of the teaching resources used*

Used resources	Not useful		Not very useful		Useful		Very useful		Total	
	N° Resp.	%	N° Resp.	%	N° Resp.	%	N° Resp.	%	N° Resp.	%
File upload (agenda)	20	4.9%	70	17.1%	170	41.5%	150	36.6%	410	100.0%
Videoconference	14	3.7%	52	13.7%	149	39.2%	165	43.4%	380	100.0%
Online assignments (practical)	27	8.2%	75	22.7%	149	45.2%	79	23.9%	330	100.0%
Mail	20	8.4%	40	16.9%	105	44.3%	72	30.4%	237	100.0%
Forum	16	8.4%	84	44.0%	69	36.1%	22	11.5%	191	100.0%
Chat	15	11.4%	44	33.3%	50	37.9%	23	17.4%	132	100.0%
Self-assessment test	1	3.0%	7	21.2%	14	42.4%	11	33.3%	33	100.0%
Glossary	0	0.0%	3	75.0%	0	0.0%	1	25.0%	4	100.0%
Wiki	0	0.0%	1	50.0%	1	50.0%	0	0.0%	2	100.0%
Total	---	---	---	---	---	---	---	---	560	100.0%

Source: Self-made

On the other hand, regardless of the resources and platforms used, the students were also asked about the degree of importance of the different tasks that the teachers were able to carry out virtually during the suspension of face-to-face classes; An assessment of this importance was proposed using a Likert scale from 1 to 5. The most important thing for the students (Table 9) was, on the one hand, that the teacher solves doubts about the subject and explains its content, that is, two essential missions in teaching work; the first is scored with 5 in 55.2% of the cases, and with 4 and 5 in 79.7%, while the second has an importance-degree of 5 also for more than half of the respondents (51.8%) and the valuation between 4 and 5 reaches almost three quarters (73.9%). On the other hand, along with them, another important task for students is to remain in direct contact with the professor, since it is of the utmost importance for 51.8% of the students who score it with 5, and 77.2% give it a score of 4 or 5. Providing content about the subject is the next most important task for students, given that 66.4% score it between 4 and 5. On the contrary, the least valued in terms of importance for students, are the practical tasks and, above all, the evaluation tests entrusted to the students: proposing tasks that serve

to understand the contents is valued with 4 and 5 by 57.7% of the students, while virtually carrying out tests to assess student learning obtained in 63% of cases a score equal to or less than 3.

Table 9. *Importance of online teaching tasks*

Score	Explanations	Tests	Assignment	Content	Questions	Contact
1	5.0%	10.5%	5.7%	3.9%	2.9%	4.3%
2	5.0%	18.6%	12.9%	8.6%	4.5%	5.4%
3	16.1%	33.9%	23.8%	21.1%	13.0%	13.2%
4	22.1%	24.1%	30.4%	28.9%	24.5%	25.4%
5	51.8%	12.9%	27.3%	37.5%	55.2%	51.8%
Total	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%

Source: Self-made

5. Conclusions

The health crisis of COVID-19 has forced Spanish universities -and consequently the Faculties of Communication- to face the challenge of their digital transformation, in particular the adaptation of face-to-face teaching to virtual environments. Although previous reports on the use of ICT in the Spanish university context yielded positive results, the truth is that the pandemic has shown weaknesses in the technological infrastructure of universities or in the training of teachers to respond to blended-learning plans or even the effective total implementation of remote teaching. The research carried out has sought to know how communication students have perceived the adaptation of their study centers to this virtual teaching and the results reveal different opinions. Not surprisingly, although the positive assessment is higher than the negative, some nuances could be made. In the first place, the higher degree of satisfaction of the surveyed students studying in private universities; Without being able to assess the whys, it is clear from the opinions of the students that these centers seem to have been much more flexible and decisive in managing the situation and rapidly implementing full online teaching. Secondly, the lower degree of satisfaction in those degrees with a greater practical component or laboratory teaching, such as Audiovisual Communication, that is, the one that has not traditionally been taught online due to its specificity.

In general, it could be said that the Faculties of Communication -in the context of the Spanish university- have been able to enhance the resources available to them for virtual teaching; Thus, the fact that universities turned the virtual classroom, and its associated applications, into the technological platform of reference for teaching, has avoided a greater image of lack of coordination as experienced in other educational levels. On the other hand, from the results of our research, it can also be deduced that broadly speaking, the teaching methods typical of face-to-face teaching have been transferred to the online world instead of developing teaching that takes advantage of all the potentialities of virtuality; Proof of this is that the main teaching resource used by the professors has been the uploading of files with theoretical contents of the subjects or that the videoconference, a resource best valued by the students, was not so widely used by the professors of the different universities. It is understandable, in any case, taking into account that the adaptation had to be done at a forced pace and with limited technological support.

Finally, it should be noted that the opinions of the students have been collected in a context of great exceptionality that has probably influenced the understanding of some students towards the management of their centers, so it would be necessary to continue researching to what extent virtual

teaching has served or not to achieve the learning objectives of the different communication degrees. The fact that respondents recognize that in the teacher's work during online teaching it is practically as important to maintain contact with students as other issues more linked to the explanation of content or resolution of doubts shows how fundamental it is in the teaching mission not only the transmission of knowledge but also the attention to the student, even more so in an anomalous social situation like the one analyzed in this research. In any case, it is necessary to carry out new studies that complement the approach presented here, serve to contrast the obtained results, and allow us to continue knowing the evolution of the virtual teaching work carried out in university communication studies in Spain. Said studies should overcome the limitations of the one presented here, given that the data collection process had to be carried out in very complex conditions due to the declaration of the state of alarm; especially regarding necessary greater equity in the sample with which we have worked, although in any case, the research carried out has been presented as a descriptive approach to the analyzed phenomenon. Since during the 2020-2021 academic year, academic activity in Spanish universities will continue to be conditioned by the health situation caused by COVID-19, it is convenient to carry out research that expands and completes the current one, deepening even more in the knowledge of the adaptation dynamics of teaching to virtual environments.

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AUTHORS:

Antonio J. Baladrón Pazos
Doctor in Advertising and P.R., Bachelor of Journalism from the Pontifical University of Salamanca and Bachelor of Advertising and Public Relations from the University of Vigo. He is currently an associate professor of this specialty at the Rey Juan Carlos University and coordinator of the Degree in Advertising and P.R. at said university. He has received an extraordinary doctorate award from the University of Vigo and a Research Award on Mass Communication from the Consell de l'Audiovisual de Cataluña. He has more than twenty years of teaching and research experience, one of his research lines in recent years being the advertising meta-research. He has participated in academic activities and as a visiting professor at different foreign universities, both European and American.
antonio.baladron@urjc.es
H-Index: 10
Orcid ID: http://orcid.org/0000-0001-7870-2545
Google Scholar: https://scholar.google.es/citations?hl=es&pli=1&user=9BrOauQAAAAJ

Beatriz Correyero Ruiz
Doctor in Information Sciences from the Complutense University of Madrid (UCM) and a specialist in Radio Production. She is currently Vice Dean of the Degree in Journalism at the Catholic University of Murcia (UCAM). She has more than fifteen years of teaching and research experience. Her lines of research are teacher training and innovation in communication, radio communication,

digital journalism, bibliometric analysis, and State propaganda through tourism. Currently, she teaches the subjects of Multimedia Journalism and Radio Information Workshop in the Journalism Degree at UCAM and is the coordinator of external internships for the degree.

bcorreyero@ucam.edu
H-Index: 10
Orcid ID: http://orcid.org/0000-0003-0069-8448
Google Scholar: https://scholar.google.es/citations?user=cB4A-6sAAAAJ&hl=es
ResearchGate: https://www.researchgate.net/profile/Beatriz_Correyero_Ruiz
Scopus ID: https://www.scopus.com/authid/detail.uri?authorId=55123230200

Benjamín Manchado Pérez

A Doctor from the Complutense University of Madrid, in the Department of Statistics and Operations Research II (Decision Methods). He is the co-author of several scientific articles, dealing with topics such as advertising research using bibliometric techniques and multivariate analysis, or academic fraud in Spanish universities. He has a professional experience of more than twenty years in positions of responsibility in the financial area of companies in different sectors: banking, wealth management, construction, health, food; as well as several years of undergraduate university teaching. He currently combines his position as Head of Market Intelligence of the Agroponiente Group in Almería with teaching in the MBA in English taught by the San Antonio de Murcia Catholic University.

benjaman@ucm.es
H-Index: 5
Orcid ID: http://orcid.org/0000-0001-9176-3182
Google Scholar: https://scholar.google.es/citations?user=wC-PsMIAAAAJ&hl=es
ResearchGate: https://www.researchgate.net/profile/Benjamin_Manchado