Mobile Learning for teaching journalism from a remote television set during COVID-19

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Abstract— This research describes the implementation of a system that allows a television studio to operate through cell phones and mobile applications, this innovation was developed in a university in Peru for television journalism courses. This is an applied research with a qualitative approach, which describes the development of this innovation from the experience of its creator and details how different technologies were made to converge so that students could broadcast news programs from their homes by operating the equipment located on the television set of tv. The results allow us to conclude that the pandemic has led to the invention of educational solutions that hybridize television technologies, cell phones, mobile applications and the Internet, from this convergence it was possible for students to develop journalistic educational skills remotely.

Keywords— Mobile learning, television journalism, technological innovation, television set, mobile applications.

I. Introduction

The Covid-19 pandemic produced consequences that affected all aspects of human life, harming education, among them, according to UNESCO figures, around 185 countries suspended face-to-face classes and more than 1.5 billion students were affected UNESCO [1], Universidad de Granada [2], Doucet et al. [3] the emergency situation forced to improvise and adapt face-to-face teaching to the modality [4] and teachers resorted to the use of applications and digital devices that they already used in their daily lives [5]. In this context, universities have had to redesign and adapt their contents, orienting them towards a virtual transition, becoming a generalized strategy that was adjusted to be different levels mediated by digital technology [6]. This meant the use of applications such as Zoom, Meet or Teams and other videoconferencing systems, in addition to adding instant messaging services such as WhatsApp or Telegram [7], [8]. In this uncertain scenario, cell phones were found to be an important instrument to continue teaching classes, this

did not arise from the pandemic, but rather this type of teaching called Mobile learning or M-Learning enables learning with mobile devices. Various authors define Mobile learning as a set of experiences and methods for education that use mobile technology using devices that connect wirelessly, which allows distance learning mediated by the Internet [9], [10],[11], [12].

In the field of media communications it also meant a resounding change in the ways of making content, television channels and film studios had to stop their productions, the exception was in the journalistic field, in this context the public resumed consumption of information through traditional media [13] this situation affected the advertising revenue of television channels due to the economic crisis [14], these aspects, added to the forced confinement, led to the consumption and rise of the news and entertainment genres in the hearings [15]. Regarding television, this medium was repositioned and acquired social centrality and a renewed interest on the part of citizens [16]

The need for information led to journalism once again acquiring a fundamental role, as had already happened in other previous health emergencies [17]. As a consequence of carrying out their coverage in a risky health context, the work of many journalists in Latin America was limited by the lack of health protection, job instability or the lack of normative codes [18], [19]. To fulfill their tasks, journalists had to apply what some authors have called remote journalism, through which they created technological combinations to work remotely using video calls or work in the cloud [20]. The circumstance increased the use of non-television technologies such as video calls to continue producing content [21]. One of the consequences of the use of non-television technologies -such as video calls, applications and mobile phones- was the change in the audiovisual language applied in the newscasts that brought as a consequence the morphological transformation of interviews, informative notes and live dispatches [22].

As can be inferred from the foregoing, both education and journalistic practice had as a complication, during the pandemic, the application of social distancing. In this sense, the objective of this research is: To describe the application of Mobile learning for the teaching of journalism from a remote television set during COVID-19.

II. METHODOLOGY

For this work, an applied research is carried out, in which the implementation of the connection of the equipment of a television set with the cell phones of the students is innovated, allowing them to operate them remotely from anywhere, thus respecting the distancing measures. social imposed by the pandemic. The application study was based on the design, execution and testing of the set equipment such as cameras, teleprompters or switchers that were integrated for connection with mobile and cellular applications. A second stage included the use of this innovation so that students can operate said equipment from their homes with the aim of being able to broadcast newscasts as part of their learning of the journalistic skills that their curriculum proposes.

For the development of this research, the methodology of action research with a qualitative approach was applied, which, from the perspective of Suárez [23], allows to study and explore an educational social situation with the purpose of improving it, in this the researchers are involved. that are involved in the investigated reality. For this study, the empirical information is collected through two techniques, the first is the in-depth interview with a semi-structured questionnaire to the creator of this innovation, the telecommunications engineer Wagner Rosales Ramón, and the educational manager of this process, Samuel Sifuentes Aranda, the The next technique was participant observation, by the television journalism teacher who taught the production and broadcast of the newscasts to the students of the course and made the field annotations about the use of the developed implementation and the learning obtained.

For the development of this research, the following general question was raised:

How was Mobile learning applied to teaching journalism from a remote television set during COVID-19?

In addition, the following specific questions were raised:

a.- How were mobile applications used to operate a television set remotely?

b.- How were mobile phone, television and internet technologies integrated to broadcast news programs from a remote set?

III. RESULTS

A. Creation of Innovation

One of the first consequences that the COVID-19 pandemic brought was social distancing to prevent the spread of the virus, in this context, basic education schools and universities had to implement the teaching of classes through the internet, which resulted efficient for courses of a theoretical nature, however, for subjects that require the presence of students, and even more so their teamwork, meant a difficulty. The case raised refers to television journalism courses that require the presence of students on the television set so that they occupy specific positions in it and can broadcast their newscasts, however, this was not possible and the creation of the innovation described below.

For this, it is essential to mention the positions that were held in the television studio before the pandemic and allow its operation to broadcast newscasts or other types of journalistic programs:

- Staff located in the master control room:

- 1 Producer, who organizes and directs the program.
- 1 camera director, who operates the switcher.
- 1 play out operator, who launches previously edited content for the director to air from the switcher.
- 1 sound engineer, in charge of regulating the different audio signals that are generated in the transmission.
- 1 teleprompter operator, in charge of controlling the texts read by drivers on the air.
- 1 operator (a) of graphics and characters.

- Staff located on set:

- 3 Cameramen (as) who frame the drivers located on the set.
- 1 floor manager, in charge of giving the countdowns on the set so that the hosts know when to speak on air.
- 2 conductors, who present and comment on the informative notes

They all work together in person. With the exception of the producer, floor manager and drivers; the other members operate equipment and software for their specific functions, and, among them, only the director and the cameramen do not do it from computers, the rest do. With the arrival of the pandemic, the joint work of all these positions became impossible, so the innovation consisted of solving two problems:

a.- The remote operation of the following devices: switcher, play out computer, audio mixer, teleprompter computer, graphics and character computer. These devices are physically located in the television studio of the faculty of journalism.

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b.- The internal communication between the student operators of these teams who, in person, do so orally or by headphones when they are together in the same physical space and who, due to the pandemic, had to manage them from their homes.

For the first problem, an interconnection system was created that allowed each of the instruments to be operated remotely and from anywhere in the world. The first thing that was done was a review of each computer and it was evaluated that it has the possibility of being connected to the Internet. Based on this, it was detected that the Panasonic AV-HS6000P switcher could be managed by means of a computer via panel control software -Control panel V2.1 software- and therefore the external connection could be made through the Internet, which the same applies to the Avid Maestro graphics generator software, a similar situation for the case of the teleprompter system that is operated from the EZPrompt program, the same for the play out system with the Avid AirSpeed 5000 program. The evaluation allowed to determine that the equipment had the hardware and software characteristics to connect remotely, the next step was to determine, through trial and error, with which software they could be operated remotely, at the beginning tests were made with the TeamViewer program , but it was discarded because it presented a connection delay of two seconds, a situation that complicates the broadcast of a live television program, the next option was the use of the AnyDesk program, which was functional, presenting only an approximate minimum delay rate of 500 milliseconds.

Once the remote operation of the equipment was solved, the next step was the creation of a communication system that allows the students to coordinate and execute the live launch of the television program, for this purpose tests were carried out with various interconnection software such as Sky, OBS, Zoom or vMix; The latter being chosen because it did not present delays or hardware complications in the interconnection, it also has the option of making up to 8 calls simultaneously, which allowed all team members to connect. And, it also has a return functionality that allowed to generate an exclusive communication environment for the team of students in charge of the transmission of the television program.

In addition to the aforementioned, the vMix allowed the audio and video signals, generated and sent by the students, through their cell phones by the vMix Call functionality, to be processed, converting them into an NDI source, these signals, when received and processed at the university where the broadcast equipment was located, they were integrated into an internal LAN network, so that later each signal was viewed independently on a computer through the NDI Tools – Studio Monitor software, the signals, in turn, were converted from an HDMI format to an SDI using Blackmagic Brand converters, to this last signal a Harris brand frame synchronizer (Harris Selenio X50) was applied, which allowed to standardize the videos in 1920 x 1080 format so that they are recognized correctly by the switcher and can be launched into the air. This

allowed the drivers to present the content from their homes or the reporters to broadcast their dispatches live.
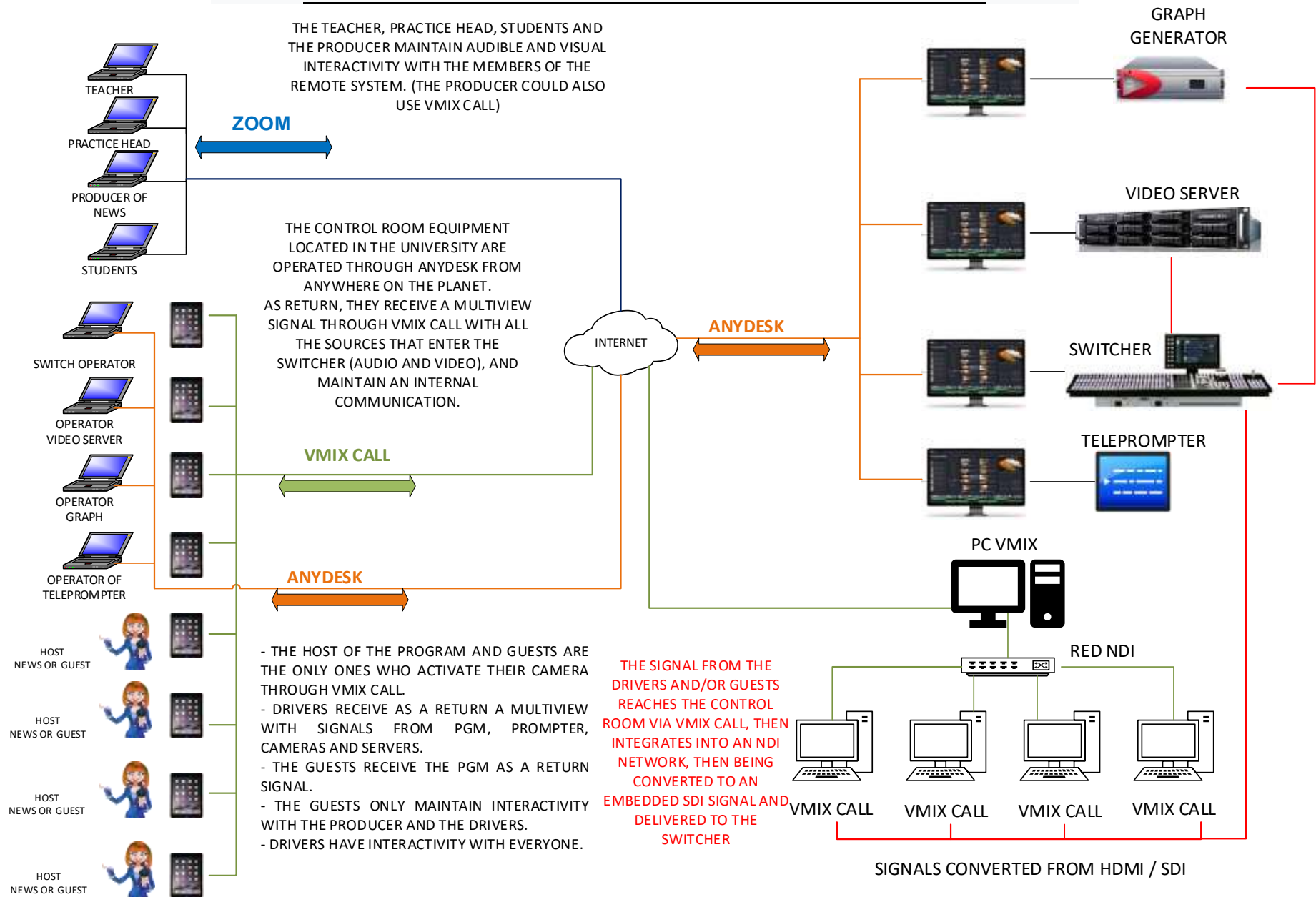
So, for the broadcast of the program each student needed to have 2 devices: a desktop computer, laptop, tablet or ipad with the AnyDesk remote desktop software activated with which they connected to their respective master control computer to execute their assigned position, be it the director, playout operator, chart operator or teleprompter. It should be noted that for each of the positions, the student in charge was assigned an AnyDesk code that allowed him to operate his respective machine in the master control. The second device was his mobile phone with which all team members coordinated and could have visual feedback, in the form of Multiview, which contained information signals such as: PGM, PVW, graphics, video servers, teleprompter and video calls, all this through vMix Call, which allowed them to see what the machines in the studio were generating and what they were operating.

All this remote equipment operation system was integrated with the function that it could be viewed by the entire student section, it should be noted that each section of these courses could have 40 or more students. Then the teachers, students, heads of practices and producers of the program could see and hear what the assigned group executed to broadcast their news, this connection was made through the Zoom video call application.

The integration of Zoom into this system made it possible to see how each group operated the television set virtually, but also allowed the teacher or producer to give instructions both to the group that was operating the equipment remotely and to the other students. of the section that were observing the practice carried out.

This system of two mobile applications -AnyDesk and vMix- that were superimposed on an entire television structure has allowed the connection of students from Lima, regions of the interior of the country and even from countries such as Germany or the United States, allowing them to operate the equipment that was physically located on the television set located in a communications faculty in Lima, which, in turn, allowed the students to broadcast the journalistic programs live through Facebook Live.

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FLOWCHART OF REMOTE OPERATION OF THE TELEVISION SET

THE TEACHER, PRACTICE HEAD, STUDENTS AND THE PRODUCER MAINTAIN AUDIBLE AND VISUAL INTERACTIVITY WITH THE MEMBERS OF THE REMOTE SYSTEM. (THE PRODUCER COULD ALSO USE VMIX CALL)

TEACHER

PRACTICE HEAD

ZOOM

PRODUCER OF NEWS

STUDENTS

GRAPH GENERATOR

VIDEO SERVER

THE CONTROL ROOM EQUIPMENT LOCATED IN THE UNIVERSITY ARE OPERATED THROUGH ANYDESK FROM ANYWHERE ON THE PLANET.
AS RETURN, THEY RECEIVE A MULTIVIEW SIGNAL THROUGH VMIX CALL WITH ALL THE SOURCES THAT ENTER THE SWITCHER (AUDIO AND VIDEO), AND MAINTAIN AN INTERNAL COMMUNICATION.

INTERNET

ANYDESK

SWITCHER

SWITCH OPERATOR

OPERATOR VIDEO SERVER

TELEPROMPTER

OPERATOR GRAPH

VMIX CALL

OPERATOR OF TELEPROMPTER

PC VMIX

ANYDESK

RED NDI

HOST NEWS OR GUEST

- THE HOST OF THE PROGRAM AND GUESTS ARE THE ONLY ONES WHO ACTIVATE THEIR CAMERA THROUGH VMIX CALL.
- DRIVERS RECEIVE AS A RETURN A MULTIVIEW WITH SIGNALS FROM PGM, PROMPTER, CAMERAS AND SERVERS.
- THE GUESTS RECEIVE THE PGM AS A RETURN SIGNAL.
- THE GUESTS ONLY MAINTAIN INTERACTIVITY WITH THE PRODUCER AND THE DRIVERS.
- DRIVERS HAVE INTERACTIVITY WITH EVERYONE.

THE SIGNAL FROM THE DRIVERS AND/OR GUESTS REACHES THE CONTROL ROOM VIA VMIX CALL, THEN INTEGRATES INTO AN NDI NETWORK, THEN BEING CONVERTED TO AN EMBEDDED SDI SIGNAL AND DELIVERED TO THE SWITCHER

HOST NEWS OR GUEST

HOST NEWS OR GUEST

VMIX CALL   VMIX CALL   VMIX CALL   VMIX CALL

HOST NEWS OR GUEST

SIGNALS CONVERTED FROM HDMI / SDI

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IV. Discussion and Conclusions

The COVID-19 pandemic was an event of global significance that affected humanity, and therefore education and journalism, this work demonstrates how human beings have developed comprehensive solutions that converge different types of technologies. To continue fulfilling their tasks, the journalists implemented a series of uses of apps, social networks and devices that were called remote journalism [20], with which they were able to execute some stages of journalistic production, however, at the Of the Peruvian television channels, a system, such as the one described in this study, was not implemented to allow a television set to be operated remotely to broadcast news or other informative programs.

Mobile learning is a set of techniques and strategies that allow education with the mediation of mobile phones, their applications and the Internet [9],[10],[11], [12], but It should be noted that the pandemic has promoted the hybridization of this type of education with other technologies, such as the television exposed in this research. The fact of intercommunicating television devices -with each other- for the broadcast of newscasts, which are physically on a television set, already implies a complicated technological process, and if we add to that the fact that these are operationally subordinated to mobile apps that are going to allowing its remote operation means an evolutionary step in m-learning, demonstrating that the digital convergence of all these devices can provide the opportunity to carry out practical work remotely for teachers and students, which can also be extrapolated so that the television media apply them.

During the pandemic, the mix of television devices with technologies such as mobile telephony, applications or the internet reconfigured the audiovisual language applied in the creation of informative content in television news [22], however the experience described in this work demonstrates that these technologies were also hybridized to broadcast programs of this type and, furthermore, this led to the readjustment of production processes, adapting them not only to carry out remote journalism but also to execute what can be called remote audiovisual production. On the other hand, the experience described makes it possible to demonstrate the need for interdisciplinary knowledge, as in this case, where telecommunications engineering works to solve specific problems in the production of newscasts and other information formats.

This is an initial work that has been prepared to account for this educational innovation, however, more research remains to be carried out in this regard that addresses in depth the acquisition of professional skills by journalism students who have experienced this innovation. purpose for which the subject can be addressed both from qualitative or qualitative methodologies, still remaining as pending tasks to be carried out. It is proposed to continue with the research through qualitative or quantitative techniques to carry out the evaluation of functionality that would be useful in the replicability of the research or to highlight the advantages, strengths or weaknesses of the system.

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