

# Impacts of COVID-19 on Higher Education in Developing Countries and the Strategy of Using ICTs for e-Teaching from the Catholic University of Mozambique

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**Abstract:** COVID-19 has tested the organizational capacity of the education system in Mozambique, including the higher education level when it became mandatory to close all face-to-face teaching activities. To respond to this challenge and continue with the noble mission of teaching, the Catholic University of Mozambique implemented a hybrid model, specifically through digital platforms, even though it was aware of the various resource limitations on the part of teachers and students. This strategy would be determinant for a successful path to the purpose of "never stop teaching and learning." This paper attempts to answer questions that arose at introducing this new teaching model during the COVID-19: (i) What skills did teachers have to respond to ICT-mediated teaching? (ii) What strategies were used to circumvent the difficulties arising from COVID-19 for Teaching and Learning? (iii) What kind of skills, difficulty, and behaviour characterized the students to correspond to a 100% online teaching system? and (iv) What platforms and instruments were used to respond to this teaching model? The paper first seeks answers from exploratory interviews with teachers about the use of ICTs in teaching and learning and subsequently presents some challenges in three dimensions (institutions, teachers, and students) of which their consideration can lead to a path in the immersion of the technologization of teaching. In methodological terms, a qualitative approach was used, where interviews were conducted with a sample of teachers from this university who were part of the frontline of the process. The results show that for the case study, it was possible, to teach and learn through Moodle platforms, Google Classroom, interacting through Zoom, Google Meet, and using Skype as a communication tool with students.

**Keywords:** Higher education, e-learning, digital platforms, and COVID-19.

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## 1. Introduction and Background

In Mozambique, the first case of coronavirus (COVID-19) was registered on March 22, 2020 (Mapote, 2020; Silva et al., 2020). In the beginning, there were so many doubts and uncertainties about the future, some hypotheses pointed to a possible worldwide collapse due to the rapid spread of the pandemic, so many countries were following the World Health Organization (WHO) guidelines of taking measures of social distancing and isolation to safeguard people's lives; around all these several questions were arising such as: how would services be offered and accessed? This is how the world reinvented itself like a phoenix, migrating many services and events to the online modality. This apocalyptic scenario reached the education sector in particular in higher education. According to UNESCO, with the social detachment, the continuation of learning activities required a financial effort from higher education institutions, a didactic change from teachers and students that in some situations would be for the first time using a digital platform (UNSECO, 2020). This scenario was more impactful in developing countries, particularly in Africa where there are infrastructure and connectivity problems and the percentage of homes with an internet connection is around 17% (Rhongo et al., 2018; UNSECO, 2020).

In the international context as a way to contain COVID-19, higher education was forced to fully migrate from the traditional classroom model to the online modality so as not to stop with the teaching and learning process (Bao, 2020).

Higher education in Mozambique in 2020 was composed of a total of 53 educational institutions, among 19 Universities, 27 Institutes, 4 Schools, and 3 Academies. There were 22 public and 31 private, and a total of 230,000 students, with 14,000 teaching staff (CNAQ, 2020; MCTESTP, 2020). In Mozambique, some initiatives such as tv schools, Radio-School were promoted at the beginning of the pandemic as a way to make up for the absence of face-to-face teaching in the secondary education (TVM, 2020) and digital platforms in higher education; however, the work focuses on higher education due to the environment of ICT use at this level, contrary to the resistance and difficulties of acceptance found in secondary education (Caldeira, 2011; TVM, 2018).

### 1.1 Context of e-Learning at the Catholic University of Mozambique

Against the backdrop of COVID-19, on March 20, 2020, the Catholic University of Mozambique suspended all classroom teaching activities (dispatch 0016/2020/UCM/GR) in response to the presidential decree on the state of emergency and to respond to the teaching and learning process, the institution guided the use of the Moodle platform for the provision of didactic material, interaction with students (feedback of work) and video conferencing emphasizing Microsoft Teams, Google Meet as well as others that could ensure the registration of evidence (dispatch).

The issue of using digital platforms is not something new, it has been discussed for many years as a methodology to develop skills and competencies through electronic learning (e-learning) mainly in distance learning, as stated in (Rhongo et al., 2020), which substantiates the possibility of learning and educating without people sitting in a conventional classroom, but geographically dispersed. These findings support that this was perhaps the only teaching alternative before COVID-19.

The Catholic University of Mozambique has extensive experience in distance education through the Institute of distance education. Since 2003 it has administered and developed competencies in this modality, having advanced with a 100% online course in which students from mobile and computing devices access varied platforms (Moodle, Google Apps educational and WebEx) for online sessions (Rhongo et al., 2020).

## **2. The Problem Statement, Aims and Objectives**

Considering that the Mozambican population faces numerous deficiencies such a) technological support to teachers and students; b) difficulties in e-Pedagogy; c) difficulties in accessing the Internet; and d) lack of computational tools (Rhongo et al., 2020), given this scenario the country has opted for a strategy of implementation and integration of ICTs in schools and communities through SchoolNet and Digital Resource Centres (CPRD) accompanied by the technological plan of Education as a way to enable all students in the use of essential technologies (Educacao, 2011; O. M.Matusse & Fofonca, 2017; R.Matusse, 2013).

Therefore in Mozambique for the continuity of the classes during COVID-19, the Ministry of Science and Technology and higher education directed the Universities to use digital platforms to support the teaching and learning process as a way to enable the teaching and learning process (MCTESTP, 2020). In this context, not all higher education institutions were able to effectively conduct lectures using e-learning; for the case of the Catholic University of Mozambique, even with so much experience in e-Learning, which is about 20 years, it was equally challenging in the initial phase, where the professors played an important role.

Hence this paper raises the following questions: (i) What skills did teachers have for ICT-mediated teaching? (ii) What was the strategy used by UCM to circumvent the difficulties arising from the consequences of COVID-19 for education? (iii) What kind of skills, difficulty, and behaviour characterized students to match a 100% online teaching system? and (iv) What kind of platforms and instruments that were used to match the online teaching model?

Therefore, this paper explores the process of using teaching and learning technologies in higher education at the Catholic University of Mozambique during COVID-19. Specifically: 1) the pandemic context and its implications in higher education in Mozambique are analysed in a general way; 2) the platforms used in higher education during the pandemic period (COVID-19) are characterised; 3) the organizational strategy of Catholic University of Mozambique to sustain the face-to-face classes is explored, as well as the main practices experienced and challenges faced by teachers/students from an exploratory survey; and at the end 4) A humble contribution is made to minimize the challenges for both institutions, teachers as well as students considering the educational context in higher education in Mozambique.

## **3. Literature Review**

### **3.1 E-Learning and Learning Platforms**

Modern education has been improved with various technologies incorporated in both distance and face-to-face education; to this has been added the internet and other platforms related to social networks that, because of their ease of use, add the possibilities of effectively implementing teaching mediated by technologies; this process has begun to take shape and discussion among academics.

### 3.1.1 Moodle

Moodle is a free platform for distance learning, whose acronym stands for Modular Object-Oriented Dynamic Learning Environment (Lisbôa, Jesus, Varela, & Teixeira, Gláucia Helena Sales; Coutinho, 2009; Sabbatini, 2007). It was developed by Prof. Martin Dougiamas, at Curlin University in the United States (Nasrin, n.d.). Its implementation took into consideration all teaching characteristics and a hierarchical structure of universities, colleges, courses, disciplines or learning modules (Mura & Rhongo, 2018).

### 3.1.2 WhatsApp

Social media has become quite popular in the academic context, for different purposes including communication and content exchange. In the study by Gasaymeh, (2017), he mentions that there are several pieces shreds of evidence of the use of communicational platforms in universities (e.g. 92.6% of university students in Jordan use Facebook, 89% of students in a university in Kuwait use Twitter, 100% of students in universities in the United States and Europe have smartphones and access social media platforms through them).

WhatsApp is generally installed in 99% of smartphones.

In Hong Kong, it was revealed that in the university students had experience with the formal use of WhatsApp to support their learning, and thus in academia this tool has proven useful in the teaching and learning process and its use includes: facilitating communication between students and teachers, giving quick feedback, making learning more flexible (Gasaymeh, 2017). WhatsApp enables asynchronous communication with a direct impact on student participation, due to the provision of the possibility of retrieving messages sent when students were offline, in remote areas without network coverage or when their devices were turned off (Susilo, 2008).

### 3.1.3 Zoom

The Zoom platform is part of most used in the teaching and learning process. One of the most used tools nowadays to bridge the physical absence in companies and the school context as a consequence of COVID-19, teachers started using Zoom. For its use, it seemed to be an amazing and scary resource, but deep down when you create confidence with it, you find a very simple and free access platform in the basic version with a 40 min limit, where more than one participant can access it (Fink, 2020). This platform has an excellent quality because videoconferencing is almost a replica of the face to face interaction, wherein in a Zoom class, you hear the voices and see the faces of the participants just like in a classroom, and you can build extremely active and participatory sessions making the classes less teacher-centred (Fink, 2020).

## 3.2 Use of online platform in higher education in Mozambique

In Mozambique, during the pandemic, HEIs adopted several platforms as an alternative means to supply face-to-face interaction. In the study presented by CNAQ, WhatsApp and skype stand out as the most used platforms (figure 2), followed by Google classroom, email, Zoom and Moodle AQ, 2020).

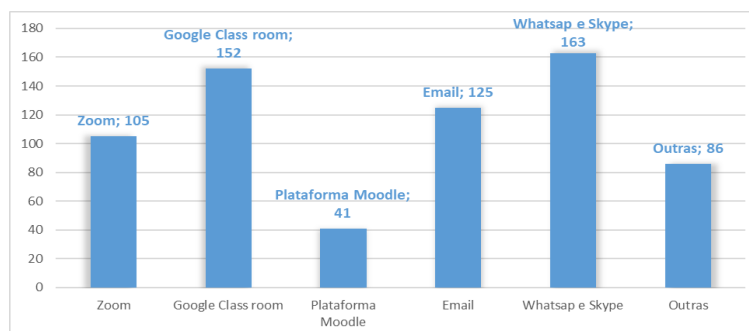


Figure 1: Use of online platform in teaching in Mozambique

Source (CNAQ, 2020)

## 4. Methodology Approach

In terms of configuration, this article was developed based on the qualitative approach, using a case study. The data collection and acquisition strategy was carried out through semi-structured interviews with 10 Professors

of the Catholic University of Mozambique, specifically in five Faculties: Faculty of Tourism and Informatics Management (FGTI-Pemba), Faculty of Social and Political Sciences (FCSP-Quelimane), Faculty of Forestry and Fauna Resources Management (FGRF-Lichinga), Faculty of Natural Resources Management and Mineralogy (FAGREM-Tete), Faculty of Economics and Management (FEG-Beira) and Faculty of Health Sciences (FCS-Beira). All participants are course coordinators, and the strategy of interviewing the coordinators was driven by their involvement in the teaching and learning process as well as their domain, knowledge and monitoring of the classes during the period of the pandemic. In APA standards we can cite the interviews as personal communication or recordings (Bloom, 2018), for the case, we present the data as personal communication and six of these interviews were conducted through telephone means and the rest face-to-face.

The study focused only on the first half of the year 2020, as a way to understand the events that took place in this period considered crucial. In addition to the information gathered through the interviews with the Teachers, documents, bibliographies, and Television were used using a systematic review. The strategy for selecting the material was initiated by defining keywords (teaching and learning, e-learning, digital platforms, higher education, COVID-19); after selecting the texts through the titles; methodologically followed by reading the abstracts to explore the content and the relationship with the research, and in this way, only the articles whose abstract was within the scope of the Research were selected. In terms of secondary sources were the Ministry of Science, Technology and Higher Education, Dispatches of the Catholic University of Mozambique, Television of Mozambique (TVM), Sociedade Independente de Comunicação (SOICO), UNESCO and electronic journals.

## 5. Results and Findings

As a way to better present the interviews and dialogue with the participants, here is the characterization of the participants taking into account the participant's condition, the college of provenance and the date of the interview.

ML from FGTI on August 18, 2020; KB from FCSP on August 18, 2020; AG from FGTI, on August 19, 2020; CA from FGTI on August 19, 2020; VR from FEG on August 26, 2020; EM from FAGREM on August 26, 2020; TP from FGTI on August 27, 2020; AC from FCSP on August 27, 2020, and EA from FCS August 28, 2020. To answer the objectives, we ask some questions about the main teaching practices during the period under analysis: *(a)What were the initial difficulties for teachers and students, and how were they overcome? (b)What tools were used to bridge the interaction in face-to-face sessions? (c)Which evaluation strategies (assignments, defences and exams) were used successfully? (d)What strategies were most assertive in overcoming digital literacy difficulties in the class? (e)What are the main lessons of the pandemic to academia?*

Given this and according to an analysis of the transcripts of the teachers' interviews we have the following answers:

### A. *What were the initial difficulties for teachers and students, and how were they overcome?*

Regarding this question, the results show that "The main difficulties were inherent to connectivity because the internet in the area where I live has a very weak signal" (AG) and many others likewise due to the deficiency of signal, it was difficult to upload video lessons. Others believe that there was a certain overload of the telecommunications infrastructure, for example, "the signal is very slow because many people at that time were using virtual platforms, I believe that the internet was so overloaded that at some point it made the interaction process difficult..." (AG). Because of these difficulties, solutions to the problem were being adopted and many resorted to lighter platforms that allow working asynchronously with platforms such as WhatsApp, email, and SMS. Besides the infrastructure problems there were problems related to discipline on the part of students, "There were students that in WhatsApp only said hello and did not participate and only marked presence ...sometimes when I launched questions they did not answer, but I saw that he read the question and then I called him by name, so the presences were marked by participation during classes" (TP). There were also economic problems that contributed negatively to the course of the lessons or to low student participation in the sessions, "...few could get into a session or stay in class the whole time, sometimes a class of 25 students only eight would get in" (AC). To get around the issue of the free version of Zoom that every 40 minutes ended the session, many migrated to Google Meet. In the opinion of one of the interviewees "with Google Meet I could teach online at will, for as long as I wanted, and it was not necessary to install it on the device because it came from the email connected to Gmail" (AG). This platform was being used recurrently in competition with Zoom.

### B. *What tools were used to bridge the interaction in face-to-face sessions?*

One of the problems that marked higher education arising from COVID-19 and that affected the process as a whole was the impossibility of holding face-to-face classes. To this end, the question arose as to what platforms were used to replace physical presence, and participants reported a gradual implementation in the face of the enormous challenge and test of resilience. For the case of the teachers who participated in this study, there was initially an approach to the Skype platform, but this was not very convenient in the teaching context due to the requirements such as 32MB just to name one example.

C. *What assessment strategies (assignments, defences, and exams) were used successfully?*

The Catholic University of Mozambique, after the course of the classes, provided guidelines on assessment, urging that the tests could be in the form of investigative work, while the exams should be held on Moodle platform, and, according to the characteristics of the subject could be explored the resources of the same either in open questions, questionnaire and multiple choice. This orientation was followed as described "The question of exams we used the Moodle platform and I used direct questions from the platform" (CA). The challenge was huge and some colleagues still had difficulties in taking and administering the exams even after a month of training, "the difficulties of the group that worked with email were reflected in the exam" (CB). This group of students that did not have computer resources, much less a cell phone with internet access, had an inclusive treatment by the teachers by sending the contents via email. Some subjects of a practical nature deserved another type of treatment and as mentioned before given the adversities, it required a lot of creativity from the teachers. One of the teachers says: "to make a balance or demonstration of results they had to do the tests on a sheet of paper and upload the photo of the resolution on the platform and the defences of these works were initially done in the Zoom, but due to the difficulties of the students we had to do in some cases in WhatsApp in which students shared their slides and in parallel made audios of their presentations and then colleagues had the opportunity to ask questions and participate through audios in WhatsApp and made the capture of the screen with the arrows to indicate the doubts" (PT).

D. *What strategies were more assertive to overcome the difficulties of digital literacy in the class?*

The measures taken by teachers were first the WhatsApp training, as they report "Initially I used WhatsApp because it was more comprehensive and students were more comfortable using it and not other platforms... WhatsApp also had an informational function ...for example, when I put an assignment while everyone was offline, I would send a message on WhatsApp so they could log in to Moodle and they did"(ML).

Other strategies include promoting and stimulating interest in the use of the platforms, "First I think that the centre of all this is the interest of this activity by the stakeholders, because having that the process becomes simpler because the person has the will and will be able to do everything to overcome the difficulties" (AG), substantiated by another respondent " I also think that illiteracy I think lack of interest on the part of some students who are reluctant to change, do not want to learn, because the methodology that we used as WhatsApp was accessible and hence they had no way to feel excluded, for this reason, that was the lack of interest.... many have it in their heads that they are not for distance learning...so the strategy to rescue this lack of interest is sensibilization" (TP). This phenomenon is called the change of mentality, "There must be the change of mentality... This investment should not only be made by institutions but also by individuals, the time has come to include in personal expenses a device capable of accessing the Internet and having mobile data capable of entering the virtual world for at least two hours a day" (EM). (AC).

E. *What are the main lessons of the pandemic to academia?*

The Pandemic resulted from COVID-19 besides bringing consequences to the whole fabric of higher education, there was the opportunity to take some lessons from the high education institutions, professors and students, and these lessons have to do with the individual or institutional structure.

In this sense, "It is good that comes with bad, the pandemic had its consequence but also brought other benefits and new experiences, and it should be necessary to bet on the use of ICT in the process of EA ... the education system should change, there should be more investment in technology, as well as on the part of teachers and students ... and in curricular terms should be strengthened the technological inclusion taking into account the context and socio-economic conditions ... should use a model of hybrid education as a way to reconcile the face-to-face and virtual ... it is necessary to test new models and follow the world dynamics!" (CB), this position is substantiated by (MA, VR and EM).

In the interviewees' answers the belief is highlighted, "the first lesson of all is to believe that it is necessary to change when there is a need, to believe that it is possible to use online platforms as an alternative means, not

only when we have problems like this and because these platforms are not there to make life difficult for us, they are there to facilitate in fact..." (MA), learn to be hybrid in methodology, "it is necessary the diversification of teaching methods, to program so that many tasks are also performed in both media..." (AG).

With all this, something came to stay, "the pandemic may have taken away a lot of things, but the technology remains and especially the digital platforms such as Moodle, Zoom, WhatsApp and others used in the process of EA, I just learned that there was the classroom because of the coronavirus" (MA). Conventional solutions also remained, as mentioned in the report "the other informal alternatives that we used were to do exercises in the notebook and take pictures and send on WhatsApp..."(TP), it was the solution of more immediate things and to work offline...(AG).

## 6. Discussion

COVID-19 caused the closure of a large number of educational establishments; the United Nations statistics through the Organization for Culture, Science and Education estimate that 1198 million students were affected, and the same organization issued recommendations for the potentization of distance learning strategies (Ferreira et al., 2020). This panorama combined with economic challenges, lack of technological infrastructure, as well as a formal education in digital resources, brought disastrous consequences, even though Mozambique has a theoretical history of Information Communication technology (ICT) that began in the year 2000 with the approval of the informatics policy and materialization of communication via internet in 1996 (Rhongo et al., 2018), a fact that would not only allow to assimilate a wide experience but also to give significant advances in the education segment and in particular in e-learning, as well as increasing the flexibility of the educational fabric and innovation in education (Milani & Malagolli, 2019). A more practical analysis shows that investment in ICTs in higher education is considered only as a requirement for opening it and not as an auxiliary model for an appropriation of an information society, where teaching opportunities can be expanded, accompanied by respective pedagogical, methodological, technological and communicational resources necessary for the teacher to prepare a class and administer it in a 100% digital environment.

The results showed that few teachers had technological competence, as a result of the daily use of computers and cell phones, but this knowledge was not pedagogical, because the Universities had never considered a massive context of distance education important, much less a pandemic that could distance people.

The report published by CNAQ shows that facing the COVID-19 pandemic many Higher Education Institutions in Mozambique were severely affected. Some developed some actions, such as investment in ICTs and training of the teaching staff as a way to prepare for the offer of classroom courses in the non-contact modality. But on the other hand, these actions were not carried out linearly, and some difficulties were noted, namely:

- A. *Faculty difficulties that are not only inherent to distance teaching and learning but to psycho-pedagogical training; students revealed a poor mastery of independent study methods and techniques, something that is useful not only for online classes but for lifelong learning.*
- B. *Just over 20% of the teachers did not effectively orient the teaching and learning processes due to difficulties in accessing ICTs (equipment and internet), equally 25% of the students did not access the online learning platforms due to the same problems as the teachers.*

In general, faced with COVID-19 many institutions opted for complete paralysis of classes due to the lack of technical, infrastructural, structural, economic, and technical-pedagogical conditions to make classes viable in this modality; In terms of indicators of those who have advanced with the process of distance education at the national level only 3% of teachers and student purchased Mega Bites individually, 7% of institutions distributed refills for teachers, as well as workers, 6% recorded video lessons for distribution on the internet, 23% trained teachers in the use of ICTs for distance learning (CNAQ, 2020).

The Catholic University of Mozambique started to use Moodle in 2013, but the results of the interviews point to low use of this platform due to lack of obligation; some who had already used it refer that it was in other contexts as training, as Master's or Doctoral students and not as a teacher who should manage the process.

The first strategy of the Catholic University of Mozambique was to guide the use of the official platforms which held the respective licenses in a harmonized manner, and the second was to give freedom and space so that, according to each context, other platforms of individual initiative could be used (Dispatch 0016/2020/UCM/GR, 2020), it was in this context that many teachers used several platforms of free access, easy to use as a means to

interact with students, but not all actors (teachers and students) had mastery of these ICTs, so each one used the one that suited them and that was mainly the students' domain as a mechanism of inclusion.

In the context of higher education in Mozambique, WhatsApp and Skype were highlighted in 163 organic units, Google Classroom in 152, email in 125, zoom in 105 and Moodle in 41 organic units (CNAQ, 2020). This result presents an important analogy that shows that there was a concern for sending material to students. This factor may have been determined on one hand due to ease of use, but on the other hand since they are free platforms (Fink, 2020; Mura & Rhongo, 2018).

Due to its popularization in the social context and being pre-installed on most smartphones, WhatsApp was the communication tool the most used at the beginning of the pandemic, a fact confirmed by the trend from the outside world as well as from our interviewees. This Application was quite formally used in the university context before the pandemic, where teachers and students had used it as a pedagogical support tool in the communication aspect, feedback synchronously and asynchronously depending on the state of connectivity of the interlocutors (Gasaymeh, 2017; Paiva, 2020; Susilo, 2008), which leads us to consider that small resources that can do great jobs, especially in the bet of cell phones that it is believed that almost 100% of students in higher education have at least one, and according to (Arruda, 2020) in higher education there is less resistance to the implementation of digital technologies in the teaching and learning process.

Traditionally the mediation of a class requires the presence of the teacher in front of the students, and in the online modality it tries to be done through platforms, but not everything is a bed of roses, in an attempt to supply the face-to-face classes through a conferencing tool, many schools have used Zoom and it has been an absolute success in learning given its technical feature; For the context of UCM this platform was widely used by the interviewees since it presented itself relatively easy to use and with few demands/requirements. But like all online platforms the issue of fatigue and stress in successive classes can bring poor results, as one teacher reports in Fink (2020):

*"The first day I took two Zoom classes in a row, I ended up bleary-eyed and exhausted. I sat and watched something silly on Netflix, drank a glass of wine, and did nothing productive until I finally managed to fall asleep. I had had numerous Zoom meetings previously, many of which I had hosted..." (Fink, 2020, pag. 1).*

This section does not take away the merit of the platforms in meeting the needs of interaction, but only alerts to the need for careful planning of classes in this modality, considering all issues that may arise as consequences and that may probably jeopardize physical/mental health as well as the quality of perception and assimilation of the classes.

The other notable absence in terms of a faithful instrument to the teacher in classes through online platforms, according to the interviewees is the whiteboards; this instrument was not used by the majority because teachers were unaware of tools such as cam, digital desk, to replace the whiteboard that is usually used in conventional classroom (Helena et al., 2020).

To minimize this, there were initiatives from the private sector, specifically the operators tried to support higher education through subsidized rates for unlimited Internet access, under very low payment conditions (Vodacom free, TMcel and Movitel at 100 Mts/month so that all Students, Teachers/ Researchers and Technical-Administrative Staff can enjoy open and exclusive access to academic content (MCTESTP, 2020; Nhantumbo, 2020). But even so, reality has shown that these contents have not been fully accessed.

In the case of the Catholic University of Mozambique, even with so much experience in teaching and learning it was challenging in the initial phase, but gradually it was assimilated by the actors and aligned in all aspects (teaching and evaluation). This achievement was praised by the Minister of Science and Technology, Higher and Technical-Professional Education (MCTESTP) at the time, Gabriel Ismael Salimo, saying he was pleased by the level of readiness and response of the UCM on the COVID-19 pandemic (UCM, 2020).

This University saw ICTs enabling the teaching and learning process in the face of a lethal and aggressive COVID-19 in terms of contamination, to the extent that classes were administered, and tests and exams were also conducted via the platform.

## 7. Conclusions and Recommendation

This paper explores the practices and experiences that day-to-day characterized the teachers at the Catholic University of Mozambique, even recognizing their limitations in teaching skills in an online environment where

it is difficult to promote critical, investigative and individual learning. The COVID-19 pandemic has shown that many public and private higher education institutions have opened their courses and attached computer labs, but have forgotten to build a pedagogical approach oriented and assisted by ICTs. Online teaching has become the "new normal" (Fink, 2020), an expression that has been widely used to refer to the new teaching and learning practices and habits arising from COVID-19, so institutions of higher education and communication companies must greatly improve connection and connectivity; about this aspect, the interviewees presented the concern of internet slowness, which demands the improvement and increase of broadband capacity in the country to respond with such desired hybrid teaching.

After the pandemic, teaching will never be the same, schools are called to a vision in which incoming teachers must have mastery of ICTs for teaching as a requirement, and their students must also face ICTs with a different attitude, especially when it comes to information and services.

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