

Remote Learning Mode in Morocco: A Modality of Choice or a Complementary Modality to Face-to-Face Mode

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Abstract

The correlation between information and communication technologies (ICT) and higher education is indispensable, whatever the mode of education adopted; face-to-face, remote, or hybrid. The crisis of the COVID-19 has increased the interest of managers and decision makers in digital transformation, especially in private and public administrations and institutions, as well as universities that were obliged to switch into remote mode. During the COVID-19 pandemic crisis, there has been a significant investment in the use of information and communication technologies in higher education. Thus, numerous analyses have been carried out to assess the impact of ICT use on the quality of high education. It is in this perspective that this research work is inscribed, through that we aim to identify the state of play of the adoption of distance education during COVID-19 and the prospects for its implementation as a conventional education mode. To achieve this objective, we direct our attention to conducting a qualitative study with professors and pedagogical managers of private and public universities in Morocco, through semi-structured interviews. The gathered responses are analyzed and discussed based on various parameters. The results of our interviews reveal a hesitation in the adoption of distance learning as a choice modality due to its requirements and difficulties in terms of materials and management, particularly for open access universities. Unless, master and doctoral students are prepared for self-training.

Keywords: Quality; High education; Training; formation; face to face; remote; hybrid; survey; professors.

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1. Introduction

The COVID-19 pandemic has turned the whole world upside down by stopping the wheel of economic and social activities. Containment and other restrictive measures have become essential from a global perspective given the scale and gravity of this unprecedented crisis.

Certainly, in light of the current COVID-19 pandemic, an increasing number of universities and graduate schools around the world have postponed or canceled all events such as workshops, conferences and activities. Furthermore, universities took intensive measures to prevent and protect all students and staff from the disease. However, and given that the state of confinement and prevention has spread over this entire period, they have found themselves forced to switch to online teaching platforms to ensure the continuity of training and activities. This state of confinement has been a good opportunity to highlight and evaluate teleworking and distance learning tools. In this context, many studies have been carried out to assess the impact of Information and Communication Technologies' use in the field of education on the quality of training during the crisis period.

Indeed, to deal with the health crisis linked to COVID-19, students and teachers were obliged to switch to the use of information technologies. In this sense, and according to our knowledge, all the studies that have been carried out have an interest in studying the impact of ICT during the period of COVID, the time in which this migration was not a choice but an obligation. Otherwise, the objective of this work is to explore the possibilities of adopting distance education as a sustainable formula within institutions to cope with the constraints linked to overloads and massive flows of students and to limited logistical capacities. Furthermore, the follow-up of distance courses could be a solution to the problem of the great student mass in higher education in Morocco, contribute to improving the level, the motivation, and the involvement of learners in the job market.

Moreover, the adoption of the remote mode in universities will allow the Moroccan state to activate the clause of Article 1 of Law 10.00. This clause confirms that "Higher education, the subject of this law, is based on the following principles: It is open to all citizens fulfilling the conditions required on the basis of equality of chances". Indeed, circular no 504 of March 18, 1982, prohibited any official from enrolling in the faculty without the prior approval of his administration's head. However, another circular dated July 20, 2015, was deployed; it was decided to repeal the provisions of circular no 504 of March 18, 1982. Since then, state officials now have the possibility of continuing their higher education without needing the authorization of their superiors [1].

In addition, the clause 17-51 of the law also emphasized the importance of integrating ICT in education. This obliges the government to take all necessary and appropriate measures to enable educational, teaching, training, and scientific research establishments in the public and private sectors to develop resources and means of teaching, learning, and research.

To question this formulation, we conducted a qualitative survey with professors and pedagogical managers from Moroccan higher schools and universities to find out their perceptions and assessments of the distance education mode. It is a question of evaluating the teaching devices used in the Moroccan high schools and universities for

distance learning and figuring out their effectiveness in improving the quality of higher education.

The remainder of this paper is organized as follows: the first section sheds light on an overview of ICT use in higher education. Then, the second section presents a review of empirical literature with some related works. Afterwards, the third section reveals our research methodology and discusses results analysis. Finally, the fifth section concludes and argues some perspectives.

2. Materials and methods

2.1. The use of ICT in higher education in Morocco: Overview

In Morocco, the traditional face-to-face teaching represents the prevalent mode in high schools and universities. However, with the propagation of the Coronavirus, professors and students were obliged to find an alternative mode, like switching to distance learning mode. They do not have the ability to take their training differently.

The Moroccan government urges universities to share online courses free of charge to encourage e-learning using available online platforms such as MOOC (Massive Open online courses) and LMS (Learning management content) platforms like Moodle (Modular object-oriented dynamic learning environment).

On the other hand, this migration necessitates the use of interactive devices. Indeed, distance in learning systems is a factor that requires considerable students accompanying techniques. Moreover, interaction between professor and student aims to break the isolation that surrounds the student and makes him active, to further explain the course and its content, and to engage the student through the action of questioning and follow-up.

Furthermore, professors should adapt their courses by modifying the content of courses in order to make them suitable for remote use. Adapting the content of a course is an important step to facilitate tasks. According to [2], this adaptation consists of three steps:

- **Circumscription:** a lecture is an unsuitable lesson for distance education since it is impossible to capture the attention of students for a long time. Courses should focus more on the most important content and introduce succinct capsules.
- **Organization:** it is important to privilege visual aspects in distance learning courses. The organization of such courses facilitates their assimilation by students.
- **Planning:** remote activities offer lots of flexibility. However, it is important to review the schedule to ensure a better division of labor. Setting deadlines is a relevant example.

Therefore, in order to ensure this adaptability, professors should make a combination of text, illustrations, audio, and video for dissemination of educational activities. The interactivity between the professor and student during a distance session is very important and efficient. This is why professors were urged to use interactive technological tools rather than static platforms.

For the same reason, they choose to use easy and accessible platforms on computers and smartphones such as Microsoft Teams, Zoom, and Google Meet while judging Moodle as a powerful tool but inaccessible on mobile

devices and complicated for beginners. Likewise, Moodle is not accessible to students who have not activated their institutional email accounts. In table 1, we list the most widespread and used technologies in higher education in Moroccan universities published by [3] and [4]. We show some of their characteristics and figure out their functionalities.

Table 1: Technological tools used in higher education Moroccan universities.

Platforms	Video conference	Security	Collaborative tools
Microsoft Teams	Service plans 250 participants	SRTP (Secure Real-time Transport Protocol) for video, audio and desktop sharing High security	Integration with other Google apps and services associated with G Suite. Use Google Drive to share meeting resources, Gmail, Google Chat...
Zoom	Good video and audio quality 100 attendees	TLS (Transport Layer Security) low security	Cloud platform for video and audio conferencing, collaboration, chat and webinars. A Zoom account is required to start or join meetings
Google Meet	Easy interface 250 participants	End-to-end encryption medium security	Cloud-based team collaboration software fully integrated with Office 365. Professional email, video meetings and file sharing

During recent years, the Moroccan government has promoted new horizons and launched new technological projects. Thus, during the opening ceremony of the 10th edition of the Assizes of Digital Transformation in Africa [5], [6], which have been held for the first time in Morocco [7], under the theme "Deploying a resilient, sovereign and sustainable infrastructure to encourage African innovation," on November 25 and 26 2021, the Moroccan Minister Delegate in charge of Digital Transition and Administrative Reform, reviewed "the various strategies and programs initiated by Morocco in this area, including the launch of the National Broadband Development Plan in 2012, which aims to provide Morocco with the latest generation of communication infrastructure and to generalize access to an Internet service with a minimum speed of 2 MB/s to the entire population over a 10-year horizon, and the launch of the Maroc Digital 2020 strategy, which has made it possible to reduce by 50 % the digital access divide and invest in quality telecom infrastructure throughout the national territory".

She added that "Morocco currently has 30.6 million internet subscribers, thus recording an annual increase of 16% and a penetration rate of 85.11%", specifying that "the evolution of this share is mainly driven by mobile internet with 28.49 million subscribers, while the mobile phone subscriber base is 49.46 million, representing a penetration rate of 137.61%". She also indicated that, "As for the rate of the household computer/tablet equipment, it has been on an upward trend since 2010, while this rate rose between 2015 and 2018 from 54.8% to 60.6%" [8].

Like most countries, Morocco is committed to adopting and integrating ICT into its education system. This has been realized through the implementation of several programs, actions and projects, initiated in 1998 by the MARWAN program, which aims to set up an information and communication infrastructure between training

establishments and teaching, followed by several programs, namely:

- The GENIE program launched in early 2006 and revised in 2009, which aims to install multimedia environments connected to the Internet, train teachers and directors, acquire digital resources, create a national laboratory for digital resources and a national ICT portal, and provide support for users.
- E-Sup program for the generalization of ICT in higher education.
- The INJAZ program aims through partnerships with telecom operators, to equip students with laptops and high-speed 3G modems in order to facilitate the use of ICT in the education system.
- The Nafida@ program (NAFIDA II launched in 2021) aims to facilitate access for the teaching family to ICT, allow them to use these tools in the education system, and access multimedia content.
- MARWAN 4 (2017-2021) et MARWAN 5 (2022-2026)
- " Connected Campus " project in higher education launched in September 2021
- The CITI Program (The Center of Innovation for Human Development)
- Moroccan Education and Resources Network (MEARN)
- Advanced Learning and Employability for a Better Future (ALEF) Project

In this section, we present an inventory overview of future projects launched by the Moroccan government. In the following, we review some related words to the implementation of ICT in Moroccan universities, especially during the confinement state.

2.2. Review of empirical literature

Several works have been developed in Moroccan contexts to meet the challenge of using ICT for the benefit of higher education. Moreover, the pandemic has set off a discussion that has since been a subject of international debate. Indeed, in the literature, the latest works related to ICT and higher education have been strongly linked to the period of the pandemic crisis.

In this context, in [9] the authors propose to question teaching practices and the use of ICT during the period of health crisis. The objective of this study is to evaluate the teaching devices used and their effectiveness in the higher education establishments of Mohamed V University of Rabat. The authors have adopted the current methodological empirical-deductive approach, and they have conducted two surveys with a sample of 300 people: one by questionnaire carried out with 250 students, and the other by semi-structured interview carried out with 50 teachers. This study showed that technological competence was lacking among teachers who are good at emerging technology, but who require training in platforms and digital tools for educational purposes (teaching, evaluation, etc.). On the other hand, in [10], authors reported, via a study, the effectiveness of hybrid education launched by the Ministry of National Education, Professional Training, Higher Education, and Scientific Research in order to guarantee a successful 2020-2021 school and university year during the COVID-19 pandemic. The results of the study reveal that the vast majority of students prefer the hybrid mode for teaching.

Moreover, in [11], authors shed light on the impact of online education and the students' satisfaction by

identifying problems encountered, and solutions adopted. This represents a solid basis for better strengthening distance education through either the resolution of the problems or the proposal of remedies. Findings show that Moroccan students in engineering schools are not satisfied due to many issues related to connectivity and technical problems.

Furthermore, in [12], authors questioned the state of play of using ICT in Moroccan universities using descriptive-analytical research. This study figures out difficulties and recommendations for using ICT in higher education from the professor's point of view. Besides, from the student's point of view, authors in [13] related, via a qualitative case study method, the students' experience in terms of uncertainty, technical and logistical hurdles, inequality, and lack of intimacy. This is in order to improve the distance-learning mode. Nevertheless, in [14], the authors analyze the impact of the use of ICTs on the university performance of Moroccan students. Using an ordered probit model, they reveal that technological skills have a positive impact on students' academic performance.

2.3. Research methodology

Our research methodology is based on the use of semi-directional interviews directed at the private and public sector higher education professors. The purpose of this semi-directive interview is to collect the data needed to provide a thorough analysis of our formulation.

The qualitative method based on semi-directional interviews used in our research presents various advantages. It allows us to provide relevant, deep, and useful information [15]. Furthermore, according to [16], it can provide rich and comprehensive data, which might be flexible, facilitating the development and adjustment of a survey line. On the other hand, the interviewer can search for specific answers [17], or more explanations.

Nevertheless, using only the qualitative method is not so practical because interviews might be long, answers can be non-standard and diversified, which complicates the analysis of the data collected. So, in addition to semi-directional interviews and in order to ensure a good understanding of the phenomenon studied, we opted for the directed sampling method. This method aims to select interviewees according to their quality and experience and not their characteristics; therefore, they had to meet selection criteria [18] namely, years of experience, private or public sector, etc.

In this research, to bring out the perspectives of all stakeholders about the possibility of adopting remote learning as a method of choice within Moroccan universities, we consider it is important to interview, in addition to professors, the pedagogical managers.

In the following section, we present the obtained results, and we figure out the constraints and perspectives of the full remote education possibility.

3. Results and discussion

Without doubt, the analysis of collected data is the most complex phase of a qualitative study [19]. The most

common approach to analyzing any qualitative data is thematic analysis of the content, which consists of developing themes to properly analyze and understand the phenomenon studied.

In this study, we conducted a thematic analysis of the interviews. According to [20], this qualitative method makes it possible to reduce the data by using denominations by theme and by grouping them into relevant categories. It helps to bring out representative themes from the answers to the questions.

Indeed, professor-researchers and pedagogical managers were asked about different aspects of remote education drawn from their experiences. Thus, we structured the interview guide based on the following themes:

- Profile of interviewees
- Experience of distance learning (the availability of tools, mastery of IT tools, conditions, the challenges encountered, etc.)
- Selection criteria for students receiving distance learning.
- The question of distance education and training quality is raised.

From a statistical perspective, interviewee's profile has no impact on the relationship between the use of ICT and higher education quality. Our interview results confirm this report.

For more information about the interviewee's experience, figure 1 presents percentages of experience's years, nature of taught modules, and taught levels.

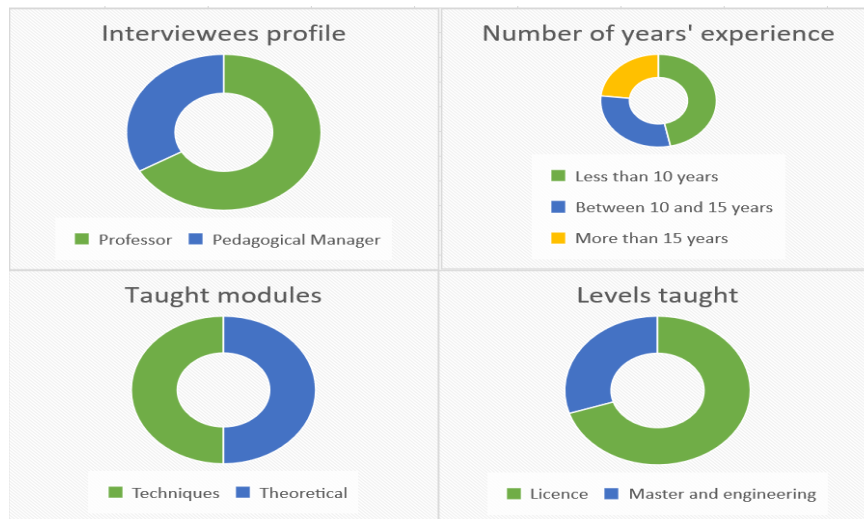


Figure 1: Interviewees profile information

As aforementioned, the results of the analysis of our interviews allow us to group all the information collected in three main axes:

3.1. Experience of distance teaching

Availability of IT tools

The majority of interviewees confirm that their institutions have the IT tools they need to provide distance-learning courses. This confirmation proves the technical engagement of Moroccan institutions in the process of integrating ICT into pedagogical practices. This engagement is translated by, on the one hand, the provision of portable computers, interactive boards, cameras installed in classrooms, and internet connection to ensure good connectivity for the benefit of professors. On the other hand, institutions have been equipped with platforms such as Google Meet, Zoom, Microsoft Teams, and Social Networks. The use of these tools presents diverse advantages such as an ease to manage interface, great ability to manage a large number of participants, good video and audio quality, and other features to successfully complete a remote course, namely: recording meetings, screen sharing, file sharing, meeting notes sharing, controlling participants, and other features described in part 2 of this paper.

Difficulties encountered during a distance-learning course

Despite the benefits of ICT in teaching practices, professor-researchers were asked as well about encountering difficulties while using ICT tools. In figure 2, a graph summarizing some of the difficulties experienced by our interviewees during their practices.

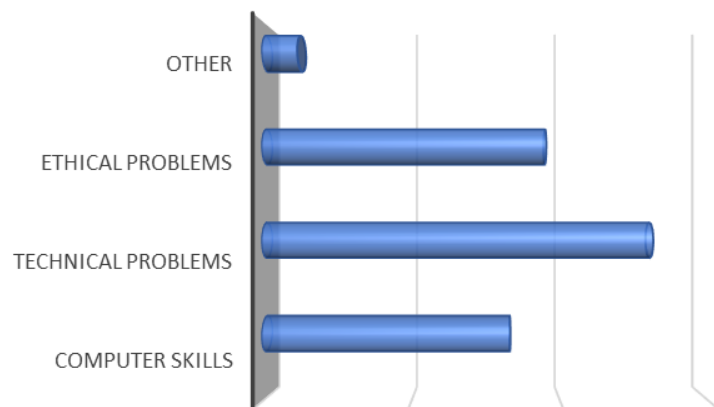


Figure 2: Difficulties encountered during distance learning course.

The interviewed professors acknowledge other problems, such as the lack of students' concentration in distance learning courses. As for practical modules, professors recognize problems related to teaching methods and techniques. To overcome this obstacle, they suggest alternative tools such as simulators, emulators, and online ordering software, while others refuse to use them on the pretext that they are ineffective.

On the student's side, professors believe that the main obstacle faced is the high rate connection unavailability, which causes communication cuts, transmission latency, and disconnections. Therefore, students' motivations

might deteriorate due to these circumstances, in addition to the lack of physical contact during a remote session. Moreover, professors confirm that the absence of interaction in a distance course makes it very difficult to control students' understanding levels and therefore to adjust the teaching rhythm adopted to student progression in the course. On the other hand, the interviewed professors estimate that, during a distance course, they are not able to schedule group activities. They add that group activities are an important method for helping students with the co-construction of knowledge, while supporting the acquisition of skills such as autonomy, the ability to self-assess and self-criticism, the ability to deal with complex situations and the exchange of opinions among each other.

Furthermore, the evaluation of students at a distance session represents a great obstacle. Indeed, professors believe that the question of remote evaluation reveals the inability of ICTs to replace face-to-face evaluation as the majority of interviewed professors state that it is very difficult to assess pupils' learning at a distance session and that the means used are very limited and cannot provide real feedback on students' learning. Students can be evaluated via quizzes, MCQ's with limited time, case studies, mini individual projects, remote evaluation applications such as evalbox, and oral evaluation, which requires a lot of effort and time, especially with a very large number of students evaluated. All these reasons make professors believe that a remote session is not appropriate to reach practical course objectives.

Satisfaction level

Professors' responses to the question of their satisfaction level with course assimilation during a remote session, can sweep between rather satisfied and not at all satisfied. Their dissatisfaction is justified by the difficulties they have experienced in achieving their pedagogical objectives. Thus, the professors' state that the knowledge transmitted during a distance course is not equivalent to that transmitted during a face-to-face course.

3.2. Selection criteria for remote education students

Although the great majority of interviewed professors were against the adoption of a remote education mode for the aforementioned reasons, we insisted on asking about the criteria that they believed were essential to select students who could benefit from the distance mode. They confirm that, despite the challenges faced, remote learning can present an opportunity for certain categories of students, namely; officials and employees who want to continue their studies and improve their professional careers, students who are very far from universities, students with a disability or a handicap, and institutions with low reception capacity.

3.3. Does distance education provide a training quality?

In the same context of the last axis, about the possibility of remote learning adoption as a choice modality, professors believe that distance education can be a complementary tool to the face-to-face modality. They argue that there are several challenges to overcome related to logistics needs, ethics issues, and human resources. They added that this study modality would generate additional work and effort for the institution's staff. Nevertheless, they suggest several propositions and precautions to take in order to guarantee the quality of distance education, namely:

- Providing students with adapted content and a digital library rich in educational resources;
- Programming personalized coaching for students in difficulty;
- Establishing centers of educational innovation to provide technical tricks and innovative methods like Fablabs and virtual practical work.

To conclude, interviewed professors confirm that, in addition to the aforementioned selection criteria, the choice of remote education can be an opportunity to give to the students of master and doctorate programs regarding the limited number of enrolled students and their maturity.

4. Conclusion

In high schools and open access universities where a great number of students continue their studies, the challenge is to improve the quality of education while maintaining a high level of perseverance among students. Otherwise, the constraints linked to overloads and massive flows of students and to limited logistical capacities force the government to figure out practical solutions. In this paper, we discuss the possibilities of adopting remote education in Moroccan universities. We conducted a qualitative study with professors and pedagogical managers from Moroccan higher schools and universities to find out their perceptions and assessments of the distance education mode. This survey aims to evaluate the teaching devices used in Moroccan high schools and universities for distance learning and figure out their effectiveness in improving the quality of higher education and encouraging officials and employees to continue their studies with flexibility. The results of our study have shown that distance learning can be a complementary option to face-to-face learning and not a modality of choice. According to the interviewed professors, this is due to the various technical, ethical, and logistical difficulties encountered. Nevertheless, remote sessions are related to students' numbers, levels of study, and maturity. To conclude, interviewees believe that, in order to achieve a high education quality in Moroccan universities while adopting the remote education mode, various challenges should be managed, namely technical training programs and high connection rate especially for remote areas.

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