Moroccan Higher Education at the Time of Covid-19: Issues and Challenges: A Case Study among Master Students Business Administration at IGA Casablanca

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Abstract: The year 2020 is marked by a COVID-19 that was propagated and impacted people all over the world. A total confinement of the population was imposed in many countries. In Morocco since March 16, 2020, a state of health emergency and confinement has been declared. The Ministry of National Education, Vocational Training, Higher Education and Scientific Research has taken a series of measures to ensure educational continuity. It has broadcasted online courses in synchronous/asynchronous modes. The restrictions imposed by Covid 19 and advances in information technology (IT) raise the question of implementation of new methods of teaching, mainly distance learning. This article presents the impact of the COVID19 pandemic and challenges confronted by the Moroccan higher education sector. A survey was conducted among master students (Business Administration) using an anonymous questionnaire. A thinking workshop on the Mural software has also been implemented with a group of professors, in order to draw up a list of proposals and recommendations. Through this research work, it has been concluded that accompanying and support should be provided to the students so as to remedy the difficulties encountered during this period and to encourage a use of active methods of learning.

1 INTRODUCTION

In the light of the restrictions imposed by the pandemic and state of health emergency, the Moroccan Ministry of National Education, Vocational Training, Higher Education and Scientific Research has taken a set of measures. Educational continuity for the year 2019/2020 was ensured, adopting a remote mode by broadcasting online courses in synchronous/asynchronous modes.

According to Devinney and Dowling (2020), this new dynamism will surely lead to unprecedented changes in the education system. Claire Marin (2020) asserts in a recent article published in the newspaper "*Le Monde*" that "when faced with a catastrophe, one is reassured by considering it as a parenthesis rather than a warning". For Claire Marin, the experience of the pandemic and its implications
(e.g., fear of the epidemic and confinement), have a destructive potential at all levels (psychic, moral, social, economic and political). They deconstruct the foundations of society and the rules by which they function. For the historian Françoise Hildesheimer, pandemics have played a very important role in societal, political, economic and sociological developments throughout history.

Covid-19 coupled with considerable advances in information technology have led to a revolution that is reinventing most of the foundations already established (Marin, 2020). Indeed, in educational institutions, the 'contract' that is defined by the unit of time, place and subordination is being reinvented.

Currently, new technologies make it possible to work synchronously and asynchronously in different contexts. The notion of place is no longer the same. It has been mutated into new spaces. Hence, human and professional relationships may be shaped by new management and leadership styles.

It is only when the crisis ends that the possibility of hindsight and reasoning about experience and choices opens up and the degree of impact can be measured (Hildesheimer, 2020). According to Claire Marin (2020), during the time of pandemics, a thousand voices and ideas are possible though they will not have the same weight and consistency.

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In this context, this article is a contribution to debate and research about inventing new teaching methods. It shares observations, recommendations with regard to distance learning with the emphasis laid on the following questions:

- Which means to put at the disposal of the students, in a state of health emergency?
- How to maintain, outside the school wall, the relations between administrators, teachers and students?
- How to keep and maintain the synergy of the group between students in virtual mode?
- How to ensure the professional insertion of the young laureates in the era of Coronavirus?

To answer these questions, this contribution falls into four parts. In the first part, we will present the impact of the COVID19 pandemic on Moroccan education sector. In the second part, we will explore the new challenges facing higher education in Morocco. The third part will be devoted to the description of the methodology in order to present the results obtained, their analysis and discussion in the last part.

2 IMPACT OF COVID 19 ON THE EDUCATION SECTOR

The COVID-19 pandemic has had several repercussions on the economic and social sectors. This has prompted governments around the world to implement a series of urgent decisions to combat its spread. They mainly imposed a total confinement, which impacted social, economic and educational sectors. UNESCO estimates that more than 1.5 billion pupils and students in 165 countries are no longer in school because of COVID-19.

The pandemic has forced the academic community around the world to explore new methods of teaching and learning through distance learning. This has proved difficult for both students and teachers, who must, not only cope with the emotional (Béland, 2020), psychological (Wang et al, 2020) and economic (Aissaoui and Aissaoui, 2020) difficulties posed by the pandemic, but also do their best to adapt to these new changes to ensure "pedagogical continuity".

2.1 Lectures

During this pandemic, universities and colleges have opted for online lectures in the hope of limiting the spread of the COVID-19. Students from various private and public higher education institutions were obliged to follow their courses at distance. They used several digital media: PPT presentations, Word or PDF documents, recorded video and interactive courses via internet platforms (university website, Moodle, Zoom, Meet, Google Classroom, Teams, etc.). In the light of the organizational and personal constraints resulting from the pandemic that affected teachers, the courses were not constructed in an optimal way, or even in a home-made way. In developing countries (including Morocco), the lack of network infrastructure in rural areas has prevented several thousand of students from pursuing programs online.

2.2 Tutorials and Practical Works

Tutorials are a form of teaching that allows you to apply the knowledge learned in the classroom or to introduce new concepts. Students work individually on application or discovery exercises in the presence of the teacher, who intervenes to help and correct the exercises. The tutorials are done in a small group, so that the teacher can more easily help the students and adapt his interventions to their difficulties.

Practical work is a type of teaching based on practical learning with, in particular, the realization of experiments to verify and complete the knowledge given in the theoretical courses. Therefore, Practical Work (TP) is considered an essential part of science teaching and learning (Pekmez, Johnson & Gott, 2005; Abrahams & Millar, 2008; Abrahams, Reiss & Sharpe, 2013).

In the context of distance learning, and if dispensing of lectures and tutorials were possible thanks to the sharing of digital media, it was more delicate to simulate the materials virtually to carry out practical work. In many cases, several hours of practical work had to be cancelled.

2.3 Continuous Monitoring and End-of-Training Exams

The objective of the tests is to evaluate the knowledge acquired during a training period. The context of the pandemic raises the question of the evaluation method based on numerical scoring. This issue is of concern during this period of crisis in the light of the difficulty that teachers may encounter in evaluating their students at distance (Béland, 2020). It necessitates the obligation to rethink alternative forms to guarantee equal opportunities for all students and to apply measures to control and reduce fraud, plagiarism and cheating (Béland, 2020).

2.4 Internships and Professional Integration

It is important for every student to obtain a first professional experience. This contributes to the acquisition of skills related to the discovery of the company's context.

Thus, internships are presented as a first experience and a means of acquiring skills, complementary to those obtained in training. Also, they give young graduates access to a professional network and facilitate integration into the job market (Vincens, 2001).

In these uncertain times, and especially for millions of students who have to graduate during the Covid period, they will be confronted with an economically almost paralyzed world in certain fields (especially tourism, transport, etc.).

In Morocco, the results of a study under the theme "the impact of COVID-19 on the employability of young people in Morocco" showed that 67% of recruitments and 64% of internships were postponed or suspended during the crisis. Only 2% of companies plan not to suspend the recruitment of young graduates in 2020 (medias24.com, 2020).

3 HIGHER EDUCATION: NEW CHALLENGES AND ISSUES

3.1 Some Issues in Education 4.0

The traditional definition of a school/university is a place where learners acquire knowledge and skills necessary to not only integrate and evolve in the labour market but above all to participate in the development of nations.

The professional world has often evolved in a rapid and often unpredictable manner. At the same time, education has always known and followed important evolutions and revolutions that have marked it throughout human history. Increasingly, questions are being asked about the content learned and the way it is acquired and transmitted: is it adapted to new socio-economic realities?

Moreover, could the COVID-19 pandemic be a "godsend" for higher education in Morocco? Certainly, the Moroccan educational landscape, and higher education in particular, is undergoing a serious transformation brought about by the integration of Information and Communication Technologies (ICTs) as innovative tools to improve performance and quality, and to harmonize with international standards. More or less lagging behind in this area, has higher education in Morocco been able to catch up several years of delay, moving from 1.0 to 4.0 education? And have initiatives had anything to do with it?

In what follows, we consider higher education under the following headings:

- Education in the age of digital transformation;
- Education in the Age of Industry 4.0;
- Education and Generation Z.

3.1.1 Teaching in the Age of Digital Transformation

The world that is taking shape in the 4.0 perspective of digital transformation is reinventing the way businesses operate virtually in every field. The education sector has also been affected by this transformation. Pedagogical innovations have seen and continue to see the light of day through the use of diverse digital resources. And, for educational institutions as for businesses in other sectors, the digital transformation is taking place at the strategic and organizational levels as well as at the human and technological levels.

All companies today have become aware that they have entered a new civilization in which digital technology is transforming the way they produce, exchange, consume and communicate. The most informed are now looking to better understand and align themselves with the challenges of this new civilization characterized by the emergence of new players, new powers, and new forms of knowledge, innovative business models and new managerial skills (Dejoux and Léon 2018).

Digital competencies consist in developing the competence that includes a multitude of transversal skills traditionally associated with the following literacy: media, technological, informational, visual and social communication skills. Within the International Society for Technology (ISTE), digital competencies are equated with digital literacy, which is based on: creativity and innovation, communication and collaboration, information retrieval skills, critical thinking, problem solving and decision making, digital citizenship, and technological concepts and operations.

Thus, in this context of global civilization, education (especially higher education) in Morocco is then directly concerned by the requirements of international competitiveness which forces the university to change paradigm. It is crucial to have training profiles with a high potential capable of meeting the challenges for a developing country like Morocco, or even on a continental scale, that of Africa.

In order to place education at the heart of the digital transformation and help young graduates to become lucid citizens in a changing world, the teacher must be supported in the integration of new technologies so as to develop new curricula that respond effectively to the new requirements of today's world.

3.1.2 Education in the Age of Industry 4.0

Like mechanization, electrification, automation and globalization, the "fourth industrial revolution" called Industry 4.0 promises to have remarkable impact on the way goods and services are produced and sold.

Industry 4.0, is mainly characterized by intelligent automation, including connected objects, big data, data backup on cloud spaces, augmented reality, virtual reality, etc. all combined with cyber security. These are fundamental elements for creating intelligence in an industrial system capable of great adaptability in the production of goods and services. Indeed, since its arrival companies are experiencing real changes that have influenced their value chains.

In the Moroccan context, the crisis of Covid-19 will serve as a catalyst for an in-depth reflection on the opportunity to make choices regarding the industrial policies to be implemented. In this perspective, educational institutions as well as SMEs have to make important investments to set up R&D departments and laboratories within their structures. Thus, the development of an "Industry 4.0" strategy and a digital plan are essential for universities, colleges and SMEs that want to make the best investment decisions for the acquisition and integration of new technologies (Benomar, 2017).

3.1.3 Teaching and Generation Z

Generation Z, also known as Generation C for Communication, Collaboration, Connection and Creativity, represents people born in 1997 and beyond (wikipedia).

Despite being Digital Natives, specialists talk about some common characteristics of this generation:

- It is enterprising: it invests itself and wants to be enterprising;
- It promotes an experiential and interactive learning style, involving collaborative work around projects;
- It is technology-dependent: it is the most connected generation. About half of Generation Z reports being connected 10 hours a day and using an average of five screens (desktop, laptop, smartphone, TV and tablet).

According to (Philippe, 2017), the point of view of the Internet Generation clashes with the vision of teachers, who overwhelmingly adhere to the idea that education is for everyone a way to increase their "human capital". This reporting theory helps to explain students' behaviour, their search for the least demanding teacher, and the sincere joy they express when a teacher is absent.

In their choice of studies, Generation Z adults no longer select their university based on academic performance, but rather seek the one that can offer them a unique learning experience.

4 THE COVID-19 ERA: TOWARDS A STUDENT EXPERIENCE ADAPTED TO TEACHING 4.0

4.1 Context of the Study

Under the circumstances of COVID-19, studies at the Higher Institute of Applied Engineering (IGA) as well as in other higher education institutions in Morocco switched from face-to-face mode to remote mode in a brutal manner. This switchover was in the form of creative, artisanal, intuitive DIY, which leads us to characterize it by a simple transposition from the face-to-face to distance learning. Many educational institutions, in the best cases, have urgently equipped themselves with videoconferencing environment or virtual classrooms without too much planning and with the use of free systems with degraded functionalities.

Institute of applied engineering (IGA) already has a digital space (extranet) dedicated to exchange with students and their parents. With the switchover to remote mode, several measures have been adopted to ensure the continuity of studies in the best conditions:

- The teaching staff has made considerable efforts to make course documents and the series of tutorials and practical works available to students online, 48 hours in advance of the scheduled sessions;
- For each subject, a Hangout group was created containing the professor, the students and an administrator manager (for real-time monitoring of absences). In addition to Hangout, several other platforms were used by the teachers to ensure the smooth running of the training and remote coaching (meet, Classroom, zoom...). This allowed teachers to quickly switch from face-to-face to distance

learning close to what they were doing in class, with the possibility of immediate speech, chat and access to document sharing spaces in real time;
- Several WhatsApp groups have been created to keep communication links between administration and faculty on one hand and students on the other.

Several other initiatives have been launched by individual faculty members to help students overcome the effect of the crisis on their education (Louiz, 2020).

4.2 Methodology

In view of the study problematic and the field of investigation, a methodological approach by indirect observation was favoured. It is based on what the researcher notices, "observes" by living with people, sharing their activities and by using a survey questionnaire. The survey will initially be conducted in the form of a feedback questionnaire intended for a homogeneous group of 24 students of the Master 2 "Business Administration" (AE). They will be assured that their answers will be confidential and will not have any impact on their academic results. The aim is to gather additional arguments to shed more light on the most promising actions to be implemented in order to create an appropriate teaching environment and to reduce the impact of the COVID-19 pandemic. Also, a Design Thinking workshop was conducted with a group of teachers. This workshop allowed drawing up a list of solutions, proposals and recommendations to be undertaken.

4.2.1 Survey on the Impact of COVID-19 on Higher Education

A survey was conducted among a sample of IGA students. The targeted students are enrolled in a professional Master 2 "Business Administration" for the academic year 2019-2020.

The main objective of the study is to collect a certain amount of information in order to know:
- Impact of Covid19 on the student life and the course of the distance studies;
- To what extent the current distance learning devices have allowed to maintain a link with the educational institution;
- Impact of COVID19 on students' professional life.

For the development of the questionnaire, and in order to facilitate the analysis of the results, closed questions with check boxes were used. The general structure of the questionnaire is as follows:
- General and simple questions;
- Filtered questions;
- Issues with strong involvement;
- An open-ended question giving the student a free choice of expression.

Given the constraints of time and means, the administration of an anonymous questionnaire was online using Google Form via: mailing List and WhatsApp.

The data were exploited in a spreadsheet (Microsoft Excel, Microsoft Office) allowing the extraction of simple results (rankings, proportions). Due to the absence of groups, no statistical analysis was conducted.

Figure 1 and Figure 2, below, present socio-demographic information - including gender and country of origin (Moroccan or foreign), concerning the sample of students who agreed to answer the questionnaire - collected:

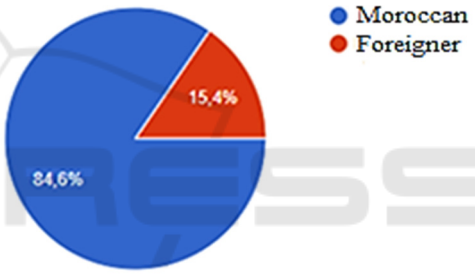

Figure 1: Percentage of students who agreed to complete the survey by origin.

- 84.6% of the population studied have Moroccan nationality versus 15.4% foreign nationality.

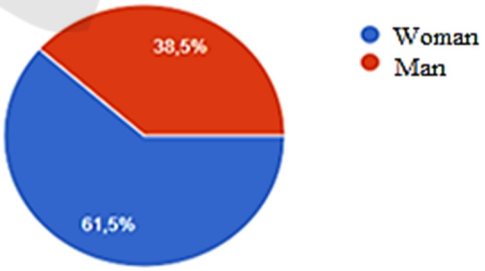

Figure 2: Rate of students who agreed to complete the questionnaire by gender.

In the graph above, we see that 61.5°/° of girls versus 38.5°/° of boys answered the questions, “which would allow to say that girls in Morocco are more used to working from home, unlike boys who often prefer to work outside the home” (Louiz, 2020).

4.2.2 Design Thinking Workshop

During one day, two workshops were held with colleagues and friends working in the professional sector to develop a list of recommendations. In this way, the relevance and complementarily of the data collected in the first stage was beneficial.

The Mural.co tool was adopted and used for this purpose. It is quick and easy to use visual online collaboration tool that allows teams to think and collaborate together to find innovative solutions to the most complex problems. Users benefit from Mural to create diagrams, which are popular in design thinking and agile methodologies.

For this study, the Lightning Decision Jam (LDJ) model was chosen. It is an animation technique that can be used in all situations that require a group of people (between 2 and 8 people per workshop) to make decisions: to solve problems, discuss challenges or implement quick actions. Indeed, LDJ exploits collective intelligence and allows defining concrete and viable actions, for relevant problems, in record time.

The Lightning Decision Jam (LDJ) method was used as a working tool, considering the IGA as a case study (see figure below).

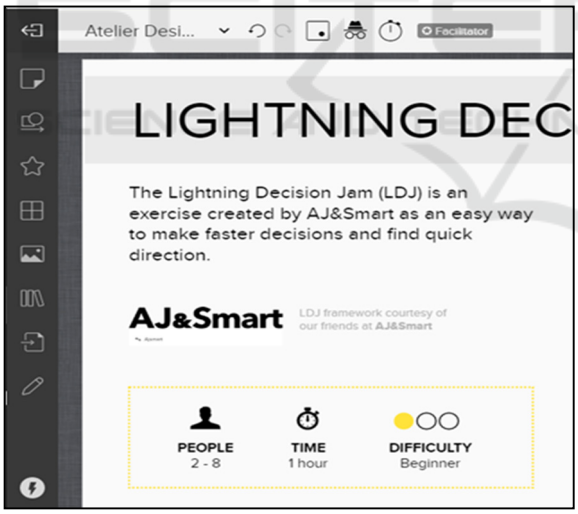

Figure 3: Lightning Decision Jam (LDJ).

It is imagined by AJ & Smart, a Berlin Sprint Design agency, it takes place in several stages and allows:

- Identify and prioritize the problems to be treated;
- Bring out a maximum number of solutions and define the most relevant ones (with more impact and minimum effort);
- Draw up an action plan to be implemented in the short term.

Below are the steps of the workshop process. The workshop begins with what's working: In this step, the different participants use sticky notes to write down all possible ideas related to the theme. Here, the participants list the existing elements that can help to reduce the impact of this abrupt changeover on the teaching and learning process of the students. Figure 4, shows the first ideas generated by the group of teachers participating in the workshop.

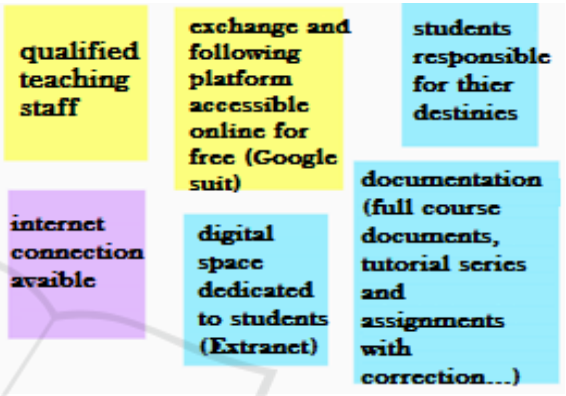

Figure 4: Ideas working.

Then, the participants individually capture all the problems (Regardless of the degree of their importance or their priorities). During this phase, a series of difficulties encountered by teachers during this rapid transition to distancing were identified.

Figure 5 shows a summary of a set of issues affected by teachers during this period of continuity of distance education courses with their votes.

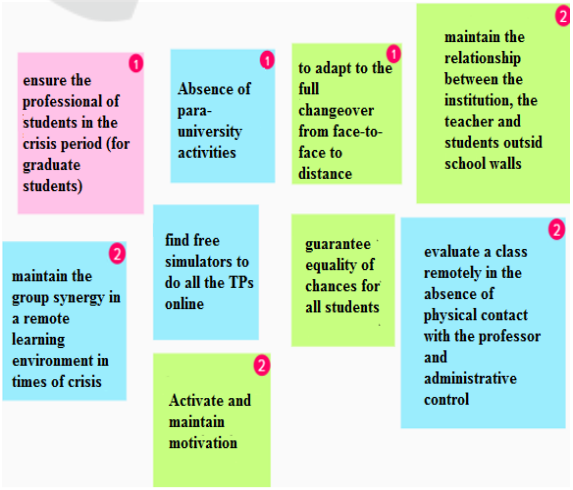

Figure 5: Problems and annoyances with distance learning.

For 3 minutes participants vote on the most relevant issues to be prioritized for treatment. The result ranked from least to highest priority is as follows:

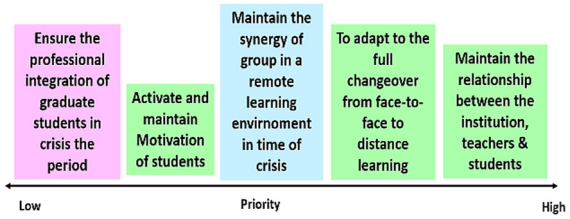

Figure 6: Issues Priorities.

The next phase consists of rewording the problems in the form of challenges. Four main challenges are taken up:

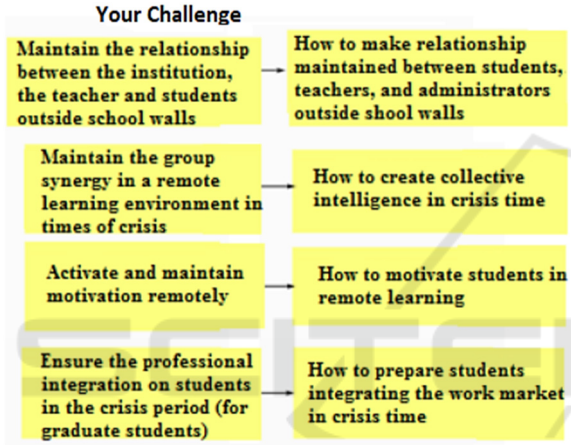

Figure 7: Rewording the problems in the form of challenges.

In the following, analysis and discussion of the results of the survey are presented and recommendations from the design-thinking workshop are proposed.

5 ANALYSIS OF RESULTS, DISCUSSIONS AND RECOMMENDATIONS

The results are presented in two sections. The first section deals with the results of the analysis of the questionnaire while the second one tackles the results of the Design Thinking workshop.

5.1 Presentation and Analysis of the Data from the Questionnaire

In this section, the results of the analysis of the questionnaire will be presented.

In answer to the question "How has Covid-19 impacted your student life?", more than 70% of the respondents answered that the pandemic has impacted their student life in a negative way. The same observation is confirmed by (Hantem, 2020) in a study on "The Conditions of Distance Education during the Confinement of COVID19".

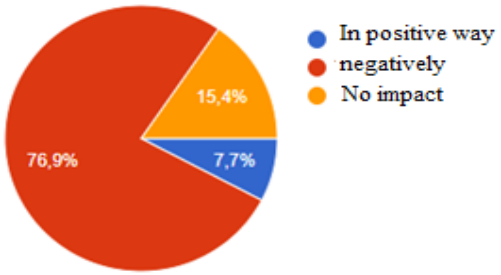

Figure 8: Impact rate of Covid 19 on students' lives.

Answers to the question "Have you experienced any difficulties in taking your online courses?" showed that the majority of students, about 87.5% (see Figure bellow), found it difficult to take courses online. This may be mainly due to a lack of interpersonal skills with the teacher. Several studies have shown the importance of the teacher's support and relationship with the school to motivate learners, even if they are anxious (Elmelid et al., 2015).

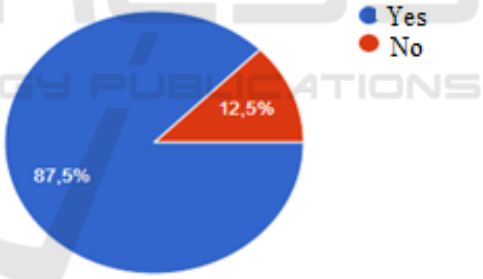

Figure 9: Rate of students with difficulties in following distance learning courses.

It is obvious that the context of the pandemic and confinement has triggered almost instantaneous pressure and feelings of isolation and anxiety in many students, which may negatively impact their motivation (Liu et al., 2014) and increase the difficulty of working independently away from direct teacher support. This difficulty can also be explained by the difficulty of organizing Supervised Work or Practical Work sessions as face-to-face sessions due to the low quality of interaction and follow-up.

Also, this can be explained among other things by problems related to the connection (sometimes unstable/noisy).

Possible difficulties are confronted when using ICT outside the classroom like the dissemination and availability of techno-pedagogical resources for mediated self-learning (video capsules, documents, etc.) to students (Enfield, 2013) and the possible pitfalls related to students who do not have access to an Internet connection due to an unexpected connection problem, or to the slowness of downloading videos and documents. In these cases, it is possible to provide recordings of the session (it is possible to do so on Google Meet or Zoom) and make them available to students online so that they can access them freely via the Internet for offline viewing. However, the implementation of these supports requires technological skills on the part of teachers, as the literature confirms (Ruiz & al., 2006).

Students' responses to the question "Compared to the form of classroom instruction, do you find that distance education requires effort on your part ...?", show that 38.5% of students say that the transition to distance education requires more effort on the part of the student. The same rate represents students who find that the switch requires little effort on their part. 15.4% felt that the switch did not affect the effort required and 7.7% said that online courses require less effort than face-to-face courses (see Figure 10).

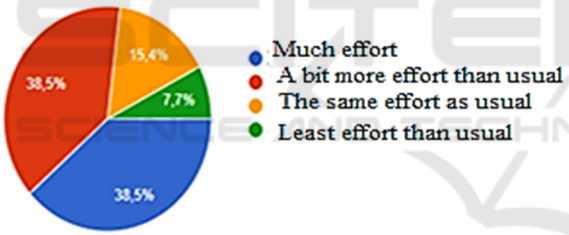

Figure 10: Rate of effort required.

In view of these results, the switch, judged "triumphant" (Villiot-Leclercq, 2020), in a short period of time from a face-to-face teaching mode to a synchronous distance teaching mode during the day, may have developed a cognitive overload of the students and increased the investment effort and the assumption of responsibility in autonomy of the work and tasks to be done by these learners.

With regard to knowledge control, the answer to the question “What modes of knowledge control would you consider most appropriate in the current situation?”, shows that more than half of the participants (53.8%) felt that the online MCQs were the most appropriate form for taking assessments during the Covid era. Individual or group assignment seems to present another assessment alternative appreciated by 30.8% of the students surveyed.

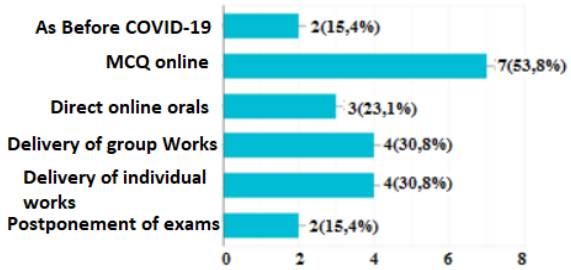

Figure 11: Evaluation Methods.

The pandemic context is entirely new and stressful. In this situation, everyone is looking at the tools at his disposal and the assessment methods that seem the simplest, to reduce stress and pressure. We hypothesize that this explains the high rate of students who have preferred multiple choice questions or delayed group or individual assignments to complete and return their work quickly.

As far as online and real-time oral assessments are concerned, they should be designed by teachers in such a way as to discourage students from consulting their materials, by proposing numerous questions and limiting the response time. Naturally, students will find these types of assessments dense and a bit difficult, but they are appreciated by 21.3% of respondents, perhaps because they consider them reliable and fair means. This feeling is found in other publications (Bolarinwa, 2015).

Respondents' answers to the question “To what extent did the distance education arrangements put in place during the period of confinement allow you to maintain a link with the faculty?” Show that 46.2% of respondents expressed that they sometimes encountered difficulties in communicating with faculty. 38.5% said that there was no change in the level of communication with their professors and 15.4% felt that the distance learning devices put in place facilitated communication with their professors (see figure below).

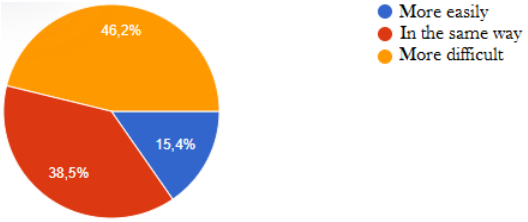

Figure 12: Exchanges and communication "Student/Teacher".

These rates show that the scheme has offered a category of student’s flexibility and ease of exchange with their teachers. This can be explained by the

availability of the exchange applications implemented on their smartphones, tablets and other mobile devices. In addition, these exchange tools offer functionalities to manage discussion channels, chat and collaborative workspaces. Students can therefore access the discussion group at any time to ask for help or discuss any difficulties encountered.

The frequency of these contacts should be adapted to the requirements of the situation (Johnston & al., 2005). For example, professors must ensure that they respond as quickly as possible to the students' requests in order to maintain a feeling of follow-up and proximity with the student and, especially, to get out of isolation, a feeling that is strongly felt during confinement (Zorn, 2020).

Karsenti (2003), argues that devices that offer students a certain degree of autonomy are more likely to support them. However, a significant rate (46.2%) of participants found it difficult to exchange with their teachers, leading us to wonder about the reasons for the reduction or even absence of this exchange flexibility. This could be the result of both a lack of motivation among these learners to share and/or exchange with others, induced by the constraints of the pressure and stress caused by the pandemic and the confinement, or they found themselves faced with exchange situations where their teachers were less available, trying to adapt to these modes of communication.

In order to understand the appropriateness of integrating e-learning into the training curriculum in the normal, non-pandemic case, students were asked: “In non-pandemic and no pandemic times, do you prefer one mode of delivery?”

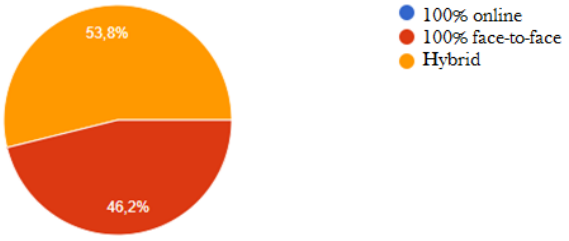

Figure 13: Choosing the Type of Learning Outside of COVID-19.

53.8% of the participants in the questionnaire responded favourably for hybrid teaching. This result shows that this category of students is interested in this type of learning, perhaps with the aim of seeking the possible balance between face-to-face and distance learning.

Such an environment provides pedagogical resources for learners to use outside the classroom in order to optimize class time and increase practice time, as the literature attests (Lebrun, 2015).

The shift towards distance learning was characterized by urgency and lightning preparation. This cursory and rapid preparation of distance learning activities may contribute to a greater fear among some students of reliving the same distance learning scenarios in the usual (non-Covid) case. This may justify the rate of 46.2% who chose 100% face-to-face outside of the pandemic.

Apart from the inconveniences caused by the pandemic, the answer to the question: “Will you take advantage of the confinement period to learn new knowledge/skills online (outside of school)?” shows that some students (53.8%) of those interviewed took advantage of the period of confinement at home to learn new knowledge and skills including languages and digital training, given the important place that digital technology occupies in the daily practices of these young people qualified as "digital native" (see figure 14).

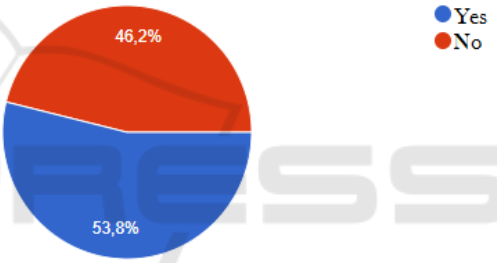

Figure 14: Learning done outside the school program.

"Do you think that a learning experience in an outdoor/open space could be a complementary alternative to virtual and/or classroom modes of teaching?"

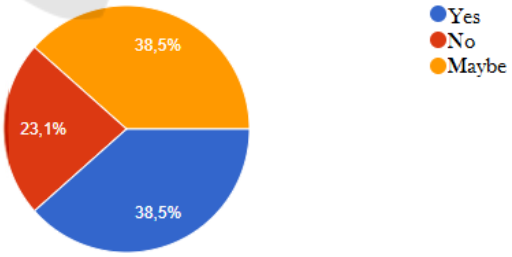

Figure 15: The opening of the learning space.

In the era of the COVID-19 surely the notion of place will no longer be the same; it will be mutated to new agile spaces (open space, forest learning, etc.).

The COVID-19 pandemic, which paved the way for a very worrying health crisis, has had a considerable impact on the Moroccan economy (Aissaoui and Aissaoui, 2020). In this context of

crisis of Covid 19 completely unpredictable, students from around the world were suddenly put in a situation of professional uncertainty. This explains the high rate of students “69.2%” who answered positively to the question: "Do you think that the health crisis imposed by covid-19 will influence your professional plan?".

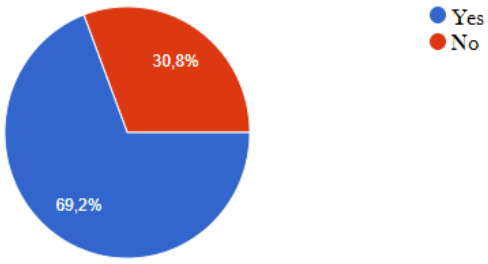

Figure 16: The impact of Covid on professional insertion.

Obviously, the situation varies from one institution to another and between regions. Nevertheless, it is clear that Covid19 has had an influential impact on the course of study despite the efforts made and the initiatives put in place to help students benefit from "pedagogical continuity" at a distance close to that delivered in normal circumstances. The pandemic has not only affected the process of knowledge transmission but has given rise to new challenges. These range from maintaining the link between student and institution, the development of new skills adapted to new contexts, the need to create new forms of partnerships with companies to ensure and facilitate professional integration in times of crisis to the creation of start-ups and digital companies.

5.2 Recommendations

This study highlighted a number of interesting findings related to the negative effects of the COVID-19 pandemic and the shift towards distance education on students' lives. For the majority of the participants in the survey, the current conditions have strongly impacted the follow-up of courses, the efforts to be made to adapt communication with the teaching and administrative staff, and have strongly favoured the feeling of uncertainty about their professional future and their integration into the job market.

Faced with this context, Moroccan higher education institutions find themselves obliged to act to remedy and/or mitigate the negative effects of such a situation on the operation of teaching and learning by adopting a participatory and mobilizing strategy of all actors: Teachers, Students and Administrators, to respond to a massive societal demand and its challenge: how to continue to share knowledge and help learners to remain in the dynamics of knowledge building?

In this section, some proposals for the creation of a student experience adapted to the context of COVID-19 coupled with the digital technologies, based, as mentioned in the previous section, on the Lightning Decision Jam (LDJ) method as a working tool are presented.

From step 6 entitled "Generation and generation of ideas / solutions", all participants (professors) in the workshop propose a number of ideas and solutions. The results of this step are shown in Figure 17.

Figure 17: Generation of ideas and propositions.

Above are the main ideas that were generated during the LDJ (Lightning Decision Jam) workshop. The main proposals concern the adoption of a hybrid mode (online/offline) of teaching and coaching based on the development and use of new solutions (virtual classroom, sound slideshows, virtual library, etc…) to create new user experiences.

Next step is about prioritizing solutions proposed as illustrated in the figure below:

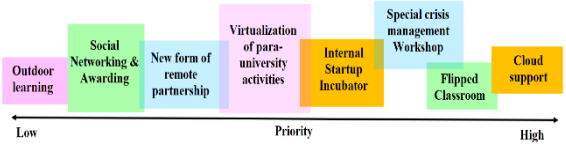

Figure 18: Prioritize solutions.

This crisis will constitute an opportunity for reflection about solutions to be implemented in the short, medium and long term.

To this effect, a number of solutions to be implemented were listed, considering the degree of impact and efforts required for their applicability,

taking into account the student as a central actor in the process of learning.

The last step concerns deciding what to execute based on the effort/impact. Solutions are classified on four categories: what to do now, what to make as a task, what to make as a project and what to delay later.

The comparison of the results with the literature and the results generated during the LDJ workshop allowed to propose the following recommendations.

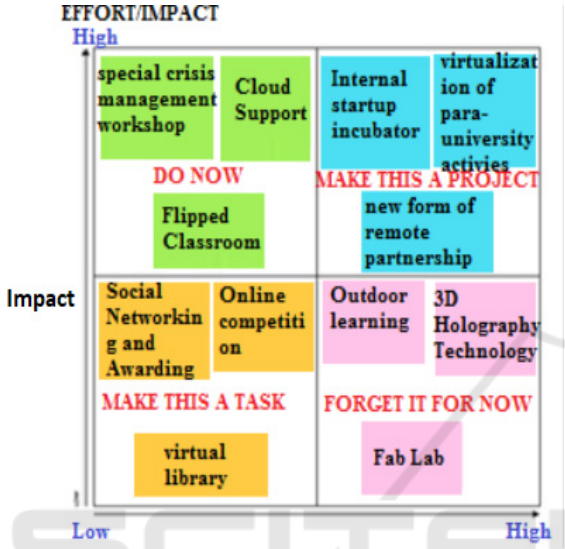

Figure 19: Decide what to execute.

In order to act more efficiently, it is more judicious to start by implementing actions that will allow maintaining this pedagogical continuity at distance to anticipate new similar periods of crisis, and to re-think the traditional mode of learning.

- To do Now:

Cloud support: One of the difficulties observed in this new experience is that the students are bombarded with digital resources. Consequently, a strategy for managing and sharing resources in an efficient way has to be put in place, sharing resources at the right time so that the learner is not lost in an avalanche of information or tasks to be done in a determined amount of time. As highlighted in the literature, learners need to be provided with open-access, consistent, engaging and good quality online resources (Bishop & Verleger, 2013; Enfield, 2013; Sales, 2013).

Flipped classroom: Indeed, this period, questioning the practices of pedagogical teams and students, should lead to further reflections on new pedagogical devices that will eventually modify the "classic" organisation of training and teaching methods (Zorn & al., 2020). If the technological and digital evolution has allowed the creation of virtual spaces of exchanges capable of enhancing the students' learning, it is also judicious to implement a rigorous integration of those technologies into teaching processes in order to allow students to optimize the learning task in an autonomous and organized manner. In fact, specialists affirm that the inverted classroom provides a learning context, focused on more learner-centred pedagogical devices with active and collaborative learning approaches. The aim is to seek possible balances between teaching and learning, between face-to-face and distance work, between information and knowledge, between knowledge and skills (Lebrun, 2017).

Special crisis management workshop: This situation may create pressure as well as an anxiety in a large number of individuals, which may affect quality of students' motivation (Liu et al., 2014). Hence, educative interventions in crisis situations must be accompanied by coaching or support sessions in the management of crises. The objective is to allow both students and teachers to develop competences that enable them to confront such a crisis situation and to reduce feelings of isolation and stress. Furthermore, school and teacher support can help to motivate the students, despite their anxiety (Elmelid, et al., 2015).

Some other recommendations with less significant impact or which require more effort or a larger budget in order to be implemented have been suggested:

- Social networking and online competitions
- 3D Holography Technology, Fab Lab or Outdoor learning.

6 CONCLUSIONS

At times of crises, lessons have to be learned and many opportunities to be exploited. Pandemic COVID19 presented a forced switch to digital technologies in all of its forms. More than ever, the educational institutions are called on to benefit from these new dynamics and open up pragmatically to the evolution of training modalities and support for learners and the distribution of the teachers', administration's and learners' roles.

Through this research work, it has been concluded that despite the fact that the majority of students have expressed a sensitive interest by connecting regularly to the dedicated platforms and have been involved in performing the tasks asked to do, it is important to recognize that some students are unable to adopt and adapt to this new learning mode. Coaching and

support should be provided to the students in order to remedy the difficulties they have encountered. With all of the technological solutions that seem realistic and effective, the face-to-face learning experience remains an indispensable vector for the transmission and the sharing of knowledge. The teacher-student and student-student interaction is an essential component that must not be neglected, in order to promote the satisfaction and efficacy of the students' learning.

In this context, attention must be focused on pedagogical devices, providing a dynamic management of learners' groups, favouring more and more the techniques of communication and animation, by relying on the good choices of didactic instruments and pedagogical organization such as: collaborative learning, resilience development and crisis management skills workshops, reverse pedagogy, and many more.

Thus, the continuity of sharing knowledge and helping learners to stay in the dynamics of building knowledge should be sustained to keep and develop the human relations between the various actors and to face challenges of future competitiveness and concurrence and to adapt to transformations in Moroccan society.

Finally, it is to be noted that many studies have concluded that academic motivation is intimately linked to learning. In cognitive psychology, "academic motivation is essentially defined as a student's commitment, participation and persistence in a task" (Tardif, 1992). Several other factors, such as a learner's perceptions and conceptions of himself and his environment, which encourage him to commit, participate and persist in a task (Viau, 1994) (Careau & Fournier, 2002), or social objectives such as: getting a job, (...), and succeeding in his professional life (Eccles& Wigfield, 2002). To this end, a study of the impact of Covid-19 on the motivation of these learners is important, taking into account the behaviour of the students and the environment in which they were placed during this unprecedented period.

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