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The Pandemic Crisis: Time for Digitization of Higher Education in Tunisia

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Abstract

Our article highlights the negative impacts of Covid-19 on higher education in Tunisia. The future is uncertain for everyone, especially students who face a world paralyzed by the pandemic. Based on a qualitative study based on the Focus Group method among students, teachers, researchers, directors, a number of parents and members of civil society, we want to know how the Coronavirus has affected education and how universities cope with different changes. Our work focuses on the lessons learned from containment as well as the potential positive benefits to higher education. Our results show that the pandemic has forced universities to explore new methods of teaching and learning, including through distance and online education. This solution has proven difficult for students and teachers, who not only have to cope with the emotional, social and economic challenges posed by Covid-19 by doing their best to curb the spread of the virus. The higher education sector has made remarkable headway through accelerating digitization and the pursuit of distance education during the pandemic, but constraints persist. Our article will provide interested parties with a set of courses of action helping to structure such a policy of transformation towards digital education in a changing university landscape. The challenge is to invent a more flexible higher education that offers active pedagogies by integrating the contributions of digital technology and relying on research, and which can meet the different expectations of students.

Keywords: Digitization; Higher Education; The Pandemic Crisis; Courses of Action; Transformation

Introduction

Education is a right whose realization affects the exercise of other rights. It contributes to the successful implementation of the Sustainable Development Goals and to the foundation of equal, equitable and inclusive societies. Because of the pandemic, universities are exposed to a multiplicity of risks that cannot always be anticipated and that can have harmful consequences and jeopardize the continuity of their activities. When the education system collapses, peace, prosperity and the smooth functioning of societies are no longer assured. To mitigate the devastating effects of the COVID-19 pandemic, Tunisia, like other countries around the world, is encouraged to digitize higher education. Since March 2020, the health crisis has stimulated innovation in the education sector, and we have seen the emergence of modern initiatives that

have facilitated the continuation of distance education and training activities. The pandemic has also claimed that, despite the constraints, digitization is becoming a priority to better rebuild education and manage crises. However, these innovations have shown that the promising prospects open to pedagogy and the rapid changes in teaching methods can only be sustained if no one is left behind. This applies to students who have few resources or whose environment offers little access to distance education. Even for teachers who need to be better trained in and assisted in new teaching methods.

The question that arises at this level: *How should the actors involved in higher education act together to facilitate the digitization of this sector and to prevent the pandemic crisis from degenerating into a catastrophe for any generation?*

This work is an attempt to address the problem posed by enlightening the way in which our country can have a real modernization of higher education through digitization. On the one hand, based on qualitative research through the case study technique, and more specifically, by studying the Higher Institute of Humanities Studies in Gafsa-Tunisia, and the Focus Group method among 27 actors in our society; 10 students, 5 teachers and 2 directors, 5 parents and 5 representatives of civil society, and on some previous reports such as the 2014 report by Bertrand C. *"Supporting educational transformation in higher education"* and that of Sami Hammami *"Risks and opportunities of Covid-19 in higher education in Tunisia"*, we can introduce this ambitious contribution to free speech and creativity and put social actors in a position to imagine digital pedagogy and demonstrate that it is time to bring together efforts and support the transformation of higher education through digitalisation, which is the effective way to manage pandemic crises and meet the needs of learners, teachers and society in general.

Despite the efforts made, the Ministry of Higher Education to this day is unable to put in place a real strategy that can facilitate the access of all students to digital courses. All parties interviewed wanted work to be done to lay the groundwork for a more innovative policy to achieve a digital university that gives all stakeholders in our society a chance to succeed even during pandemic crises.

Methodology

As higher education faces a new crisis and unprecedented threat, this recent situation has required governments around the world to announce the closure of educational institutions to reduce the spread of the global pandemic. At the national level, it was decided to suspend courses on Thursday, March 12, 2020 by introducing the beginning of spring holidays in all academic institutions, as a first preventive measure towards the education sector in Tunisia after the World Health Organization classified Coronavirus as a global pandemic.

In this context, and to answer a fundamental question: What are the conditions for higher education institutions and training operators to succeed in this digital transformation? We conducted research on the impact of the Coronavirus pandemic on university education, where the Gafsa Higher Institute of Human Studies was taken as a case study, especially since we are teachers at that institution, in parallel, we launched a field research using the Focus Group technique with a sample of five teachers, two university directors, five parents, ten students and five civil society agents to collect data to better understand the current situation and determine its impact on higher education institutions in Tunisia and identify innovative solutions that will be developed to adapt to the current situation by proposing strategies to strengthen academic institutions and human resource skills to create a digital university world will be able to cope with crises by providing training and satisfaction of students who are directly concerned by digitalisation. Our field research results are complemented by a literature review on the subject: reports and studies, press articles, etc.

This empirical research focused on the need for the digitization of higher education and crisis management, which remains a broad question to this day. In our investigations, we note the strong digital concern in higher education institutions in recent years and more remarkably since the outbreak of the pandemic crisis.

What is Digital Pedagogy?

In an increasingly digital world, higher education was becoming a field where digital pedagogy is disrupting the daily lives of universities, teachers and students. Teachers are adopting a recent model of learning by integrating digital tools to evolve their teaching model, bring students to learn, and regain both the pleasure of teaching Ketele Jm, et al. [1]. According to the testimonies the word digital pedagogy can refer to teaching methods and practices. We prefer to designate by this notion the art of digital use in the teaching process, as well as the field that covers the curricula, educational institutes, teaching and training tools, the practices of the actors, and the impact of these practices on learners. In this sense, we are interested in the quality of teaching, innovations and the use of digital technology by increasing the opportunities for learning and interaction with learners, far from the time in face-to-face. Educational intentions with digital must aim to produce, collaborate, actively participate, encourage reasoning, and integrate playfulness during distance learning. In this sense,

the teacher makes the digital technique at the service of the learner Houssaye J, et al. [2].

In Tunisia digital pedagogy is recent and is not applied in all academic institutions, but as soon as Coronavirus appeared, it became a real issue to ensure the continuity of teaching.

The Impact of the Pandemic Crisis on Higher Education in Tunisia

Coronavirus has changed the organization of higher education. UNESCO estimates that 156 countries have totally or partially closed schools to contain the spread of Covid-19, affecting 1.5 billion students worldwide (UNESCO, 2020). At national level, the Ministry of Higher Education has announced the cessation of courses and has asked teachers to develop distance and online teaching support for students, specifying the absence of a blank year and the impossibility of automatic passage. The virus was among all, it deprived learners of their essential right of access to education.

This unexpected scenario offers an opportunity for teaching in Tunisia to upgrade digital tools (the virtual university site, social networks, learning and online platforms, etc.) capable of improving distance learning, to facilitate student access to courses Sami H, et al. [3].

The pandemic crisis has raised awareness of the usefulness of digital tools in the transmission of knowledge requested the Virtual University of Tunis to facilitate the access of students and teachers to the university's platform in order to submit courses and educational materials from teachers from different Tunisian academic institutions cooperation with the latter.

In the face of this unprecedented pandemic crisis, universities have made extraordinary efforts to address the situation. We take as an example the Higher Institute of Studies in Humanity of Gafsa which has engaged in the accompaniment of its students at a distance, has recorded convincing results in a very short time mobilizing so many human and pedagogical resources. It intends to consolidate this tool in the coming years in order to introduce the pedagogical innovations necessary for online learning.

The other opportunity presented by this Covid-19 crisis is the mobilization of researchers through calls for projects launched by the ministry to find technological solutions in support of the Ministry of Health's effort to fight the pandemic. A significant mobilization of researchers, teachers and entrepreneurs has been initiated in order to find innovative solutions to the various problems posed by this pandemic. A digital platform has been developed

within this framework for a virtual fair that showcases the different solutions proposed. This will encourage Tunisian researchers and inventors who could benefit from financial support from national investors who wish to collaborate in the industrial field related to health or digital solutions that facilitate the work of the cells of works within the Ministry of Health.

In addition, this pandemic offers an opportunity for the Tunisian administration to switch to digital administration, the containment obliges universities to minimize the use of paper and deliver different services via internet. Travel authorizations, administrative documents related to thesis or clearance defences or emergencies related to the pandemic are now digitized. Even meetings of the university council and the scientific councils of the institutions are held remotely. This represents a step forward in modernizing the administration, with the hope that these gains will be maintained and consolidated after the end of containment Sami H, et al. [3].

Following the testimonies of the various interviewees, we see that the university education system in Tunisia was not prepared for a sudden and prolonged interruption of face-to-face courses. At this level we can quote some testimonies:

« I am well aware that there are a significant number of applications and digital alternatives for teaching in Tunisia, but these solutions are not yet effective and optimal, compared to what we experienced when our children tried to adopt these tools but they found difficulties such as poor connection especially in the interior regions (*Gafsa, Kasserine, Kebilli, Kairouan, etc.), the lack of knowledge of new communication and information technologies on the part of students and teachers, plus the majority of students do not have the financial resources to acquire computers or pay internet bills, …* » (A. S, father of a student, age 54, Gafsa).

« I am a teacher, really I was shocked during the spread of the epidemic and with the cessation of classes, our institute informed us to use the site of the virtual university to put online the courses to our students, facing the explosion of digital on the one hand, and the crisis on the other hand, we have not received the appropriate training by doing our mission arbitrarily and with great difficulty, most teachers have not been able to cope with this new model of teaching » (B. M, university teacher, 35 years old, Sfax).

Digital is a real help for the continuation of teaching, but distance learning does not replace neither the class and its teachers, or enrichment through group work and more generally human relationships that facilitate interaction between teachers and learners. Digitization makes the teacher's mission too difficult, it cannot effectively monitor

and support students, nor ensure the skills acquired especially that the majority of students are not motivated; they do not make a real effort to make the distance learning process succeed.

« As students, we prefer face-to-face education that makes us more accountable, motivated, and serious. The culture of digital education is still far from our minds, and if a large number of us are not interested in face-to-face courses, do you think they will be interested in distance courses? I don't think so. During the period of confinement my colleagues did not give importance to this teaching, even they did not try to access the courses, they refuse this kind of learning, … » (M. F, 20 years old, student, Gafsa).

The pandemic crisis has transformed the daily lives of students and teachers, making digital technology an important element for the survival and vitality of universities and the commitment of all stakeholders. This revolution in education is recent and we know that there are still efforts to be made. In Tunisia, digital education has made progress, but so far it is not adapted to the entire world. Here, we come to a worrying aspect, the increase in educational inequalities, already glaring, so the digital face some constraints. We explain some of them:

- A low level of computer and digital equipment. Few homes have computer tools such as tablets or computers that are needed to follow teachings remotely. Not all families are connected to the Internet or do not have the necessary equipment. In some houses, there is only one computer for several students. Therefore, it is difficult to plan the use of this device according to the educational programs of the universities. In addition, the mobile phone can hardly be used to take online courses, especially if the session lasts a long time.
- Free connection to the virtual university platform for students makes it easier for students to access this platform. However, the large number of students and teachers who can connect to this platform makes access more difficult. Thus, students have more and more access to the internet via mobile phones. However, with the high costs of connecting via the GSM network, students are having difficulty downloading digital resources. In addition, it is difficult to follow the courses, because it requires a good internet connection. A small number of students have unlimited monthly subscriptions in the form of Wifi. So, in these conditions, it is illusory to think of a success of distance education Sami H, et al. [3].
- Distance learning never replaces a "live" teacher. Teachers and students are not easily familiar with the new form of digital pedagogy, they have difficulty adapting to this changing world. Most students are anti-digital, disobedient, and irresponsible.
- One of the problems that arose when considering this

alternative was the safeguarding of equity among all students in all universities. It is true that in our country, some students do not have computers, smartphone PCs or tablets, which suggests a difficulty for the latter to follow the distance courses properly.
- Students faced the pandemic behind the screens of their computers. Some follow the new mode of teaching by regularly transmitting their work online, while others have postponed the courses or not doing them all. They are against virtual university and digital education.
- University teaching during the period of confinement took several steps, from a pedagogical accompaniment equipped to a simple deposit of pedagogical support on the platform dedicated to the absence of any form of accompaniment.

Higher education institutions have taken advantage of this crisis to try to make a technological shift. Students completed their online courses during lockdown. With the decline of the cases of contamination, they passed the exams as usual in the universities respecting the health protocol. The data collected show that the constraints mentioned above had a negative impact on the psychology of the students and subsequently on the review and examination process.

Again Tunisia, September 2020, Coronavirus, another very dangerous wave after all, the pandemic crisis and events beyond our control exist. The date of the academic year was the first of October, but until the 19th of October, the students did not yet resume their academic life. A plan B is useful for universities that recently decide to cope with the crisis by organizing the rhythm of the courses; two weeks the courses will be at the universities with respect to the health protocol (distancing, no more than 30 students per group, use of sanitary products, etc.) and one week remotely and online. Universities give teachers the choice to adopt the digital tools they master and want to accomplish the learning mission and help students to have the training remotely and safely. The return to the university benches may again cause a rebound in contamination.

All the efforts adopted by the Ministry of Higher Education and universities will not produce the expected results, especially since the pandemic is still evolving and the constraints of digital education persist, and even teachers do not have the necessary skills until today. There is no action taken by the ministry to offer a true alternative method of distance learning until the hour. The question at this level is: *How does our Tunisian society as a creative, progressive society still lag behind in digital education? What strategies and initiatives are possible to promote digital education and adapt to the current pandemic crisis and any other possible crisis in the near future?*

Pedagogical Transformation and Innovation in Teaching is a Necessity: The Way Forward

Supporting Pedagogical Transformation

In an era of globalization, and with the spread of the pandemic, our country is experiencing major changes that are affecting the life of higher education institutions and the practices of actors. Thus, pedagogical questions concerning the way of teaching, the teaching devices and the different courses are being raised: *How can we facilitate the success of a more diverse student audience by reducing failure during the pandemic crisis? How to promote digital pedagogy? What strategies are helping to innovate digital education systems?*

Digital pedagogy is currently a key factor for the success of our students and the attractiveness of our universities and higher education in Tunisia during the global pandemic crisis. Indeed, it is necessary to unite the efforts the efforts of all actors through a systemic approach and a strong common responsibility Adangnikou N, et al. [4].

A Systems Approach and Accountability Logic: In order to achieve pedagogical innovation in Tunisian higher education, a systemic approach, respecting the principles of globality and coherence with general policy is important. Certainly, actions must be taken on the different levels of the university system (institution, educational programs and training strategies, training of actors and the use of digital technology).

In addition, it is a question of responsibility, promotion of initiatives and support should be implemented Bertrand C, et al. [5]. The Tunisian government, the ministry of higher education as well as the presidents of the universities should combine efforts and work in collaboration to implement a real strategy for pedagogical transformation in education. It is essential to give the actors the freedom to organize themselves according to their skills; to give them responsibility; to respect opinions; to accompany the actors and give them time to adjust their missions.

It is the role of the Ministry to make this dream a reality through a policy based on these objectives:
1. Improving the quality of training for success in digital higher education.
2. Evolving digital teaching and e-learning practices to respond to higher education missions in times of crisis and to adapt them to different audiences and new needs.
3. Put the digital training mission at the heart of the institution's policies with a rebalancing in relation to research by professionalizing the actors to ensure this mission.

Students as Ambassadors for Digital Pedagogical Transformation

Our field research shows that it is important to involve students as modern actors in the process of modernizing digital pedagogy through the evaluation of teaching, the expression of their learning methods and their needs, and participation on development boards.

Professionalizing the Teaching Activity

Professionalizing the teaching activity means becoming aware that teaching is a profession that requires specific skills that develop throughout one's professional life and that must adapt to crises Endrizzi L, et al. [6]. It consists in well organizing teaching and training and regulatory issues.

Research teachers are considered as research professionals, for which special training and skills are requiring, which require recognized organizations and division of labor to practice. The challenge is therefore to professionalize this activity in order to better recognize it and, more broadly, to contribute to rebalance the training and research missions of institutions Bertrand C, et al. [5].

In Higher Education Institutions: In order to facilitate the consolidation of the notion of the pedagogical team, a teaching excellence bonus (TEB) allows valorizing activities of development of the quality of digital teaching. A training quality bonus (TQB) allows recognizing the quality of the pedagogical teams to create innovative pedagogical methods that are optimal in all conditions. In addition, it is necessary to give more time to the teacher in the form of time off for research is better than a bonus to achieve recognition of the pedagogical investment.

Actions at National Level
- Such a competence repository helps to distinguish the different facets of teaching activity, and could become a tool in the recruitment and evaluation of teacher-researchers.
- In the field of research, the awards as a strategy of distinction at national level is a modern way to introduce new continuities and new methods and innovation in research and training programs, and in addition to having teaching teams with innovative skills can cope with crises such as the pandemic crisis today.

Training and Accompanying Teachers and Researchers is a Priority: According to the results of our investigations with teachers and researchers it is necessary to invest in teaching capacities through the establishment of an effective system of training and accompaniment of teachers and researchers to digital pedagogy current to have good teachers. This system should be included in the establishment policies as

a means to support a training strategy and as a component of the human resources policy. In addition, it must become a requirement for teachers since it is a driving factor for their professionalization on the one hand, and to facilitate the recognition of the act of teaching by being able to manage crises on the other hand. As researchers, we recommend that universities concerned about a more efficient modern higher- performance digital should offer professional development opportunities for their teachers, give them the opportunity to learn through the accompanying persons, continuing training, cooperation with other teachers both nationally and internationally.

In this sense, we must make a development axis, with human and financial resources in line with this priority.

Centers for Structuring, Training and Accompanying Teachers: The Ministry of Higher Education should set up centres for digital pedagogical development in all regions of Tunisia and maintain a link with the field and rely on competent staff (educational engineers, pedagogical advisors in particular). Their involvement in research, which makes it possible to have multidisciplinary approaches beyond the teaching sector alone, is an asset. The missions of these centers would be:
- Support the implementation of strategies for the evolution of educational practices, especially with digital technology
- Ensure the training of doctoral students: Teaching training for contractual doctoral students in charge of teaching is poorly developed in Tunisia. Not all doctoral students become teacher-researchers. Any contractual doctoral student in charge of teaching should benefit from compulsory training, provided within the pedagogical development centers.
- Provide in-service teacher training especially on digital and innovation and crisis management;
- Promote digital educational innovation through research teams
- Support the exchange of good practices in digital pedagogy and distance learning between students and teachers, teachers and experts, between Tunisia and abroad.
- Train staff responsible for training and support teachers-teachers in the position of trainers and pedagogical advisers. This method of training will facilitate the professionalization of these actors to help them respond to the diversity of modes of intervention and crises.

Digital is a Lever for Pedagogical Transformation

The university should enable students and teachers to understand the digital world. It is in this context that our institutions should test the use of digital tablets and possible uses in order to develop digital at the university: collaborative work, digital workspace, differentiated pedagogy Crozier M, et al. [7]. The aim is to enable students to learn with new tools, by setting up training activities, various productions, to involve them in their learning with a tool that most master Albero BP, et al. [8]. The proposed activities are numerous and focus on the idea of creativity:
- The provision of resources for student training, including the articulation of digital spaces and libraries, the issue of Learning -Centers
- Students' digital and informational skills required in the construction and management of their professional career.
- Monitoring emerging technologies and their evolving uses that may lead to new pedagogical practices.
- The digital at the service of pedagogical transformation and crisis management in the digital university in Tunisia through these courses of action.
- Promoting student success through digitally-renewed pedagogy.
- Train and support teachers and teaching teams in the use of digital in their teaching practices.
- Better recognize and value, in the career development of teacher-researchers, their investment in integrating digital technology into their teaching practices.
- Give a strong impetus to research on digital pedagogy and especially to research in e-education the digital agenda should be integrated into a more comprehensive approach to pedagogical transformation.
- Implement a National Digital Strategy in Higher Education and Research.
- Investment in digital: interconnected rooms, inverted classrooms, electronic boxes, a pedagogy lab, create a digital university that supports digital projects.
- Develop digital infrastructure in all regions (Internet network, phone lines, offer computers at low prices for students, reduce Internet bills for students, one computer or tablet for each family, etc.) to ensure justice digital and deal effectively with crises.

Today, digital technology appears to be a powerful factor in initiating a process of transformation. It is essential and dynamic, in line with the evolution of social practices, especially those of students. It is the current means that leads to imagine new forms of learning in times of crisis and contributes to the promotion of student-centered pedagogical models. It opens up new possibilities for the organization of courses, for the flexibility of learning time and space Endrizzi L, et al. [9]. It allows new modes of interaction between actors by transforming their respective roles within "learning communities". It allows free access to training resources. It gives every learner the opportunity to build his or her own personal learning environment.

The introduction of digital technology in education opens up new possibilities for development in terms of pedagogy and the opportunity to reaffirm the institutional role of the university in times of crisis Albero BP, et al. [8]. It is time to put digital technology back at the centre of education rather than confining itself to lecture classes in the amphitheatre to manage the situation during crises.

Conclusion

- Promotes an interesting vision: *"Digital education is important for managing crises such as the Covid-19 pandemic crisis which is gradually evolving. It is necessary to put the quality of digital education and e-learning at the forward, for that we must rebuild the University of Tomorrow, boost research, invest in digital, focus on the student, better cooperate to ensure a true inclusive digital educational transformation and develop a creative and modern education for all*. Our research has clearly demonstrated that our universities are facing many obstacles to ensure their role during this period of pandemic crisis due to digital delay, as it offers us the opportunity to mention some courses of action that could be adopted in order to modernize pedagogy and implement a digital education that will be able to manage all situations during crises [9,10]:
- The risks of this crisis are multiple for the education sector. It is necessary to think about the sequential return of students and the disinfection of classrooms and academic institutions in order to reassure teachers, students and administrators in the pursuit of face-to-face teaching without major health risks.
- The pandemic risks leaving students with psychological tensions which can result in an abundance of courses or unusual behavior in institutions, psychological monitoring cells must be set up to accompany and support students in distress.
- The Tunisian government should put in place a sustainable, well-funded framework able to assist higher education institutions in their efforts to improve the quality of education and invent effective and inclusive digital education for all.
- Each institution should put in place a strategy to support and improve the quality of education to promote the e-learning process, by devoting sufficient human and financial resources to this mission.
- Tunisian universities after the experience of digital teaching during confinement and in order to prepare for possible confinement, should encourage, appreciate and take into account the feedback given by students, which could make problems detected early in the e-learning environment and improve it more effectively.
- Continuing digital professional training in education should become a priority for higher education teachers.

- School heads and policy makers should recognize and reward (e.g. through scholarships or prizes) teachers who contribute to improving the transformation to digital pedagogy and effective distance education.
- Higher education institutions should support teachers in develop their skills in e-learning and other forms of teaching and learning in the digital age, and should exploit the opportunities offered by technology to improve the quality of teaching and learning.
- The increased mobility of students and staff, the international dimension of study programs, an international academic experience, and intercultural skills, transnational courses and degrees, and international partnerships should become indispensable elements of higher education in Tunisia.
- To mobilize all actors, practitioners and decision-makers around these issues, the Ministry of Higher Education should set up National Days of Pedagogical Innovation and Crisis Management in Higher Education (Journées nationales de l'Innovation pédagogique et la gestion des crises dans l'Enseignement supérieur) (JNIPGC).
- To mobilize all actors, practitioners and decision-makers around these issues, the Ministry of Higher Education should set up National Days of Pedagogical Innovation and Crisis Management in Higher Education (NDPICM).

The Tunisian government should promote the implementation of these recommendations, by encouraging:
- Pedagogical approaches and innovative teaching and learning methods.
- Professionalization of teachers, researchers, trainers and staff.
- Regular data collection on issues affecting the quality of digital education and effective e-learning modalities for crisis management.
- Create a Tunisian academy of digital education and pedagogical modernization.
- Prioritize initiatives to foster the development of teaching skills, the design and implementation of programs that meet society's needs during times of crisis, and the strengthening of partnerships between higher education, business and the higher education research sector, in order to develop a common strategy during the pandemic to manage the situation well and emerge victorious.
- Create a National Digital Strategy in Higher Education and invest in digital to develop a strong creative modern Tunisian education manages all possible crises.
- Several tools can be used in distance learning, such as the Class Room platform.., and videoconferencing applications to facilitate synchronous meetings with students, examples include: Skype, Zoom, Google-team, Microsoft team. These tools offer students the opportunity to ask their questions, interacting with their

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colleagues and teachers.

- The virtual university must improve the capacity of this platform to allow easy access and faster connection.

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