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Navigating the Digital Landscape: Assessing the Effects of E-Learning on Students' Learning in Higher Education

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Abstract

The inevitable digital revolution, which would call for necessary changes in order to meet the new needs of society, has led distance education to the developed states in line with technological innovations. But distance learning is often criticized for its lower success rates and negative results on learners' learning, even if its advocates argue for its role in the social opening of higher education. This research proposes to study the effects of distance learning on university students' learning, the challenges and the prospects. It is based on the statistical exploitation of a questionnaire survey. In its design, we have adopted an evaluative approach to the achievement of training objectives, the conduct of courses, and teaching practices. The case of Master 1 educational technology and pedagogical innovation students, which allows us to identify a sub-sample of distance students. To do this it was more important to bring the same type of survey to a category of the same characteristics but from a face-to-face teaching, in order to explore the results of satisfaction in each mode of teaching and establish answers to our research problem. From the results of the quantitative analysis, we found that in face-to-face learning students are more satisfied with their learning than in distance learning. The results show that the satisfaction gap is not very large, which explains why distance learning students are moderately satisfied with their learning, especially since they do not plead a practical insufficiency of the teachers. In addition to an average satisfaction with the course, including ambiguous results regarding the clarity of the course plan, and the management of space, and even an insufficiency at the level of communication, which leads to the lack of human contact (teacher/student) expressed by these students. Nevertheless, we observe that distance learning has only partially impacted the learning of the M1 educational technology and pedagogical innovation students.

Keywords: ICTE, Distance education, Distance learning, appreciation, EEE, objectives.

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1. Introduction

Today, we live in a globalized world marked by the advent of Information and Communication Information and Communication Technologies (ICT) which have revolutionized the flow of information and information and the sharing of knowledge, a world in constant change. Digital technology has important in contributing to the development of solutions for the personalization of learning and its diversification with computer science as a lever for the development of It is therefore necessary to accompany this evolution and to draw on the experience of other countries.

It is therefore necessary to accompany this development and to take advantage of the benefits that could be derived from the use of ICT in the implementation of various teaching and learning tools. learning tools.

Indeed, the need to make room for ICT in education no longer seems to be a matter of debate per se, and almost everywhere in the world there is agreement that it is an essential movement in the improvement and development of education throughout the world in general and specifically in Moroccan education. In the university environment there are three main ways of integrating Information and Communication Technologies (ICT).

Firstly, the teacher can use the technologies as a support for their teaching. Secondly, learning can be hybrid, Secondly, learning can be hybrid, some lessons will take place in a classroom and others will be virtual. Lastly, teaching can be entirely distance (online).

The specific objective of our research is to analyze the process of teaching learning process, specifically to study its effect on the level of learning among university learners, to identify the challenges and issues including the success of distance and learning outcomes, recommend best practices to convey the objectives of distance learning practices to convey the objectives of distance learning.

2. Context, problem, and research methodology

We will present the context of the research; the research problem and we will dwell more on the methodology that we used.

According to Aktouf (1987), methodology can be defined as the proper use of methods and techniques. The methodology must allow good choices to be made about the means and procedures within the framework of data collection, in order to answer the research question.

Thus, in this part of the dissertation, the means and procedures chosen to answer the research question will be presented. Thus, we will present the context of the research, the research problem and the methodology that we adopted to carry out the different parts of our research.

2.1. Context of the study

The concept of distance education (DE) or, in other words, distance learning (DL) is widely used nowadays. Indeed, several notions relating to the use of ICT in the field of education or training in general coincide and refer to similar or different realities: distance education (DE), distance training (DT), open training (OT), virtual campus, online training, e-learning, multimedia training, blended or hybrid training, educational technologies, etc. It depends on the context.

In the context of higher education, distance education has undergone a rapid evolution from its cradle, the so-called 'traditional' university campuses (UTs), to distance education universities (DUs), which are non-campus universities designed according to an industrial model of design, production and dissemination of distance learning (Keegan, 1994).

In the United States, a 1997 report by the National Center for Education Statistics found that about 60 per cent of US public institutions offered distance education courses. As a result of this trend, traditional universities, by renewing their interest in distance education and increasing the number of courses offered at a distance, have become, over the years, truly bimodal and even multimodal universities. Furthermore, in the late 1990s, the emergence of virtual universities, which offer only web-based courses, was an important milestone in the evolution of distance education in higher education.

At a time when the use of distance learning is a revolution in itself, according to the company Cisco, a world leader in Internet and Intranet networks and services, e-learning is destined for a secure future. This learning system, with more or less gaps to fill, can be adopted on a large scale and have an added value throughout the educational process, shared by (Khalid Chegraoui, Senior Fellow at the Policy Center for The New South). A desire to promote the persistence and success of ADF students has led various higher education institutions to set up peer-to-peer interaction and support mechanisms (Jegede, 2002; Deschênes et al, 2003; Papi, 2013), sometimes simply proposed and other times imposed on students, notably in the form of cooperative or collaborative learning situations (Dillenbourg, 1999; Henri and Lundgren-Cayrol, 2001; Walkiers and de Praetere, 2004; Berlanga et al., 2009; Lal et al., 2012; Webb, 2013).

In Morocco, the introduction and use of information and communication technologies (ICTs) was seen as a lever to ensure the country's insertion into the global economy. Projects have been launched in the areas of e-education, e-business, e-government, e-trade and the generalisation of ICT in society. Morocco, according to Driss Louiz (Friday, May 8, 2020) “The Ministry of Education has, for over a decade, introduced the teaching of information technology and communication (ICT) for university students (ICT module for semester students (5) ...). A large proportion of school teachers have benefited from in-service training provided under the GENIE (Generalisation des technologies d'information et de communication dans l'enseignement au Maroc) and by the Centre marocco-coréen de la formation (CMCF)”.

Likewise, for a country such as Morocco, distance learning constitutes a clear deficit, especially in the face of a spontaneous demand, given the situation in Covid-19.

Moreover, distance learning has always been practiced, albeit in a limited way, for continuing education and some professional diplomas, which do not require compulsory attendance, except for diligent work, courses and exercises, with a system of evaluation also at a distance. In particular, Morocco has always invested in online teaching and collaborative platforms that allow training to be provided while overcoming the spatial, temporal and organizational constraints associated with face-to-face training. Convinced of the contribution of ICT to improving the quality and efficiency of their services. However, despite this, this form of education has never been convincing in Moroccan society, either for its results, its performance or its manifestations. Given the exigencies of the situation, and the force of things in the digital age, distance education must become part of the Moroccan institutional system.

2.2. Research Issue

Distance learning is the fortune of ICT, a digital boom, needing good augmented and digitally supported pedagogy to achieve qualified and satisfied distance learning. Thierry Karsenti, an expert in educational technologies, states that “technologies have a real impact on learning, we still need to develop the art of teaching with technologies”, or as Lameul said: “There are no good or bad technologies but more or less good pedagogies using technologies” (Lameul, 2008, P80).

So, the aim is, on the one hand, by directly addressing the learners of higher education, it seeks to highlight the challenges of learning and distance education. Also, to highlight the obligation to move entirely to the distance teaching-learning method in order to guarantee a follow-up of the institutional learning pathway in case of impediment, which has a dissatisfying effect on the

level of learning among a large part of the learners. Emphasis was placed on the link between the level of learners in distance learning and teaching practices called pedagogical innovation. Mr. Khalid Chegraoui stated that we need to review our curricula and our evaluation and grading systems for final exams, to reduce sanctions and increase efficiency, through competency-based approaches and flipped classrooms... This will give learners more opportunities to develop their creativity, innovation, and self-reflection skills.... This will require a new pedagogical and didactic approach to ensure learning success and satisfaction.

On the other hand, the question of dissatisfaction has long been one of the issues addressed by several researchers in the context of distance learning, with a view to learning satisfaction whether it is a level (competences, attitudes, skills) that is still not up to expectations, compared to face-to-face or face-to-face teaching.

In France, Albéro and Safourcade (2014) compare the representations and expectations of students in a master's degree in computer science and management who follow this training at a distance and in person.

The survey shows that different dimensions of learning are valued by the students: they are more informational for distance students and more social for face-to-face students. Moreover, while distance students appreciate the flexibility of the distance learning program, they seem to regret, paradoxically, a more limited capacity for initiative within the program, compared to face-to-face students.

Thus, statements made in course evaluation questionnaires at the end of the semester and during exchange commissions between student representatives and teaching staff reveal a relative dissatisfaction with the work to be carried out at a distance, which is perceived as a constraining and not always useful addition (Freund, 2014).

For Albero (2000) few learners are really prepared for autonomous learning and the difficulties they experience can lead them to give up quite quickly. They find it difficult to break away from the dominant model in which they have received all their training and have acquired skills that allow them to experience less frustrating (or more satisfying) academic and lecture-based teaching.

Adding to the evidence Summers et al (2005) who also argue for less satisfaction coming from the modes of evaluation of the teachers as well as from the exchanges between the students. Other studies have found positive effects of distance learning under certain conditions, depending on their motivation for this type of teaching and their expertise in online training.

Based on 25 studies comparing the satisfaction of distance students with that of face-to-face students, the meta-analysis by Allen et al. (2002) concludes with rather ambiguous results. The general results argue for a preference for face-to-face training, which nevertheless remains moderate. However, the authors also indicate that this relatively modest difference may also be linked to the contexts of certain studies where failing face-to-face training is replaced by distance education. Fenouillet and Déro (2006) based on a comparison of 35 studies of courses mainly in Anglo-Saxon universities, also indicate a lower satisfaction for distance students compared to face-to-face students, while the academic performance of the students is identical.

Furthermore, statistics on distance education generally argue for an internal efficiency that is often much lower than for face-to-face education (Potshnick and Capper, 1998; Ben Abid, 2000). Ben Abid-Zarrouk (2010) further indicates that in the case of online education, the exam pass rate among those present is not significantly lower than in face-to-face education, without further considering drop-out.

Other researchers find reasons for this low satisfaction finding, among them Carr (2000) indicates, for example, a lower satisfaction of distance students because it takes them much longer than full-time students to complete their training. Rivera and Rice (2002) point out that the least satisfied distance learners are mainly those who have a lower command of technological tools.

From the above, and for all these reasons and others, we assume that the question of satisfaction is a very relevant issue in the teaching context where, at universities, student learning remains unsatisfied in distance mode more than in face-to-face. One can imagine in the case of a requirement for entirely distance learning because of the confinement, how the learning results will be impacted. In this respect, complaints, testimonies, dissatisfaction, and concerns have been expressed by students, parents, and teachers, regarding the learning results, and their performance with respect to this mode of teaching.

Azeddine Mraizika (Professor at the Sultan Moulay Slimane University in Beni Mellal) stated that with the physical distance between the teacher and the learner “the understanding and validation of notions and concepts related to the pedagogical content are thus impaired due to the lack of direct contact, reactivity and interactivity which are necessary elements for the transmission of certain knowledge and know-how”. At the university, it seems that commitment and motivation also play an important role when analyzing the statistics on student attendance at the various courses offered. According to a survey by the Haut-Commissariat au Plan (HCP),

the number of students attending these courses on a regular basis has dropped from 56% to 51%, and on an irregular basis from 13% to 11.3%, while 3.3 have dropped out completely. Distance learning needs a particular way of ensuring human presence at a distance through motivation, interaction and feedback, its success depends on it.

For each of these 'new' media, researchers have found it difficult to find credible evidence that they lead to a high rate of teaching success (Clark, 1995). Clark (1982) provided evidence of a strong oppositional relationship between feedback and learning when students report learning a great deal. Indeed, when questioned more specifically, it appears that they learned very little or even that their learning was disrupted by the teaching.

In this respect, our main research question is as follows: What is the impact of the distance learning operation on the level of learning among university learners? In other words, how has DE impacted the acquisition and achievement of objectives among learners in the Master TIEP course at the Faculty of Education in Rabat?

On the other hand, distance learning has been able to overcome the failure of the educational system, and save the situation, but it has some shortcomings which impact on the acquisition of learners during this period of continuous distance learning. Unfortunately, the level of acquisition among learners is not satisfactory, it is decreased in a large part of the learners. Seeking reality from this, and seeking to answer our research question we put forward the following hypothesis:

Distance learning (DL) only partially impacts the learning of university learners.

This general hypothesis can be broken down into 3 secondary hypotheses:

- H11: The effectiveness of DE is less advantageous than face-to-face.

- H12: Learners are dissatisfied with the way EAL is conducted.

- H13: Distance learning practices do not meet learners' needs.

2.3. The scope of the study

Our study focuses on the case of Moroccan university distance education, we chose the Mohamed V University, Faculty of Education Sciences (FSE) Rabat, targeting students who benefit from a fully distance education. The force of things because of Covid gave us this opportunity to experience distance learning, which was already a very interesting state of treatment that is surfacing in recent years in Morocco, which seeks to provide training while overcoming the spatial-temporal and organizational constraints associated with face-to-face

training. This case was not only easy to observe, through the directivity to formal experiences, but also had all the characteristics useful to answer our research question.

Certainly, the scope of our study refers to the experience of distance education in measuring the circumstances of containment, but to make it in a general way the evidence of the future of this type of education. In this sense, (Ajhoun, 2010) argues that digital education is no longer a choice, it is a necessity to accelerate the insertion of Morocco in the information and knowledge society.

The Moroccan university has resorted to e-learning since the early 2000s in order to adapt to new technical, educational and professional requirements. The massification of students and the high rate of training and supervision are the main constraints from which the Moroccan university suffers, and which distance learning proposes to remedy with concrete solutions.

Among the universities active in this field, we mention Cadi Ayyad University in Marrakech and Mohammed I University in Oujda. However, the integration of e-learning in higher education has encountered difficulties at the beginning, but some universities have been able to overcome them through international cooperation, others through the integration of MOOCs.

Mohamed V University in turn has experimented with distance learning via MOOCs such as MOOC UM5. On the other hand, the experience of distance learning in confinement has been a considerable support to the development of e-learning in higher education in Morocco in general and Mohamed V University in particular. We will evaluate this experience and specifically assess the learning of students with regard to this distance learning, to determine the impact of the latter on the learning of university students.

2.4. The target population

As our study aims to highlight the sincerity of things regarding distance learning practices, we have chosen to focus on the following to analyze the impact of this mode of teaching as a vector of educational transformation, on the one hand through the need for training in computational thinking in a world that has become digital, and on the other hand through the demand for e-learning. To detect the failures and dysfunctions that lead to unsatisfactory learning outcomes, the choice of our study population would depend on the characteristics of the variables involved in this relationship. This population concerns students in higher education, who had a distance learning experience as part of their specialized training, specifically we took as a reference the Master of Education Technology and Pedagogical Innovation. The choice of these students is justified by the sole fact that they are the first students to have the opportunity to have this

experience of distance learning. Therefore, their perceptions and evaluation help to answer the research problem of our study and give a vision to the educational designers on the effect of their practices on their students.

2.5. Quantitative study

The objective of the quantitative study is to test the hypotheses and the research model. To collect the quantitative data, a questionnaire survey was chosen.

3. Results

Having defined the theoretical framework and the methodological bases of our study, we can now proceed to the analysis of the results. We will start by checking the validity of our research hypotheses. We will then interpret each of our findings. Finally, in the last part, we will provide a general critique of our research and define new perspectives.

Analysis and interpretation of results

In order to analyze the results of our study we will make some kind of comparison between the results of the students from the distance learning class population (EAD Class) and the students from the face-to-face class (PE Class).

Here we will calculate the relative difference between the two populations using the index method and check the difference between two relative variables.

And then we interpret the results.

The calculation of the relative gap, by using an index according to the following formula: [(Value(EAD) - Value(EP))/ Value(EAD)]*100

In general, as shown in Figure 1 and table 1, more than half of the students (54%) stated that they had achieved the objectives of the distance learning courses and that they were satisfied with their level of learning, of which about 58% of the students were satisfied with both the teaching and the course presentation, while less than half of the respondents (40%) stated that they were not satisfied. In addition, more than half (58.3%) of the students reported a lack of clarity in the course outline and content in this mode of teaching.

According to the answers analyzed in table x and table and graph x, we find that 66% of the students in the ADE class state that ADE remains a valid winning mode of teaching in cases of impediment, while 54% say that it will develop and take its place in the world. In addition,

more than half of the students in the PE class (68%) say that PE will grow thanks to ICTs and still holds its position ahead of distance learning, which cannot replace it.

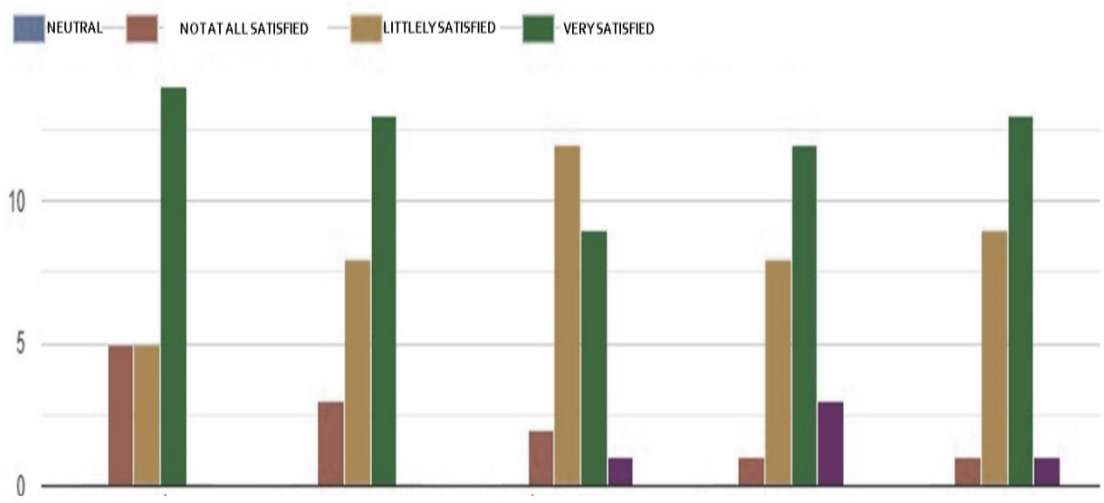

Figure 1. *Graph representing the satisfaction of the respondents of the EAD class*

Table 1. *The future of face-to-face education EP*

What do you see as the future of face-to-face education (PE)?			
		Workforce	**Percentage**
validated	EAD remains a mode of teaching in case of impediment (example of confinement), we will hear less about it, and we will return to traditional training as soon as the impediment disappears.	4	16%
	The EP is bound to be replaced by the EAD in the coming days.	2	8%
	Will not expand too much: PE will remain the traditional preferred method of training.	2	8%
	will inevitably grow through TICS and still keep its position ahead of the evolution of ADE.	17	68%
	Total	25	100%

4. Discussion

The quantitative analysis of our research shows that, in general, more than half of the students surveyed stated that they were satisfied with both the achievement of objectives and the teaching practices, in addition to an average satisfaction with the course, with ambiguous results

concerning the clarity of the course plan and the management of space. These satisfaction results themselves remain lower than those of the PE students.

To conclude, let us attempt to group together some of the student arguments that the impact of distance learning on student learning has been rather weak, negative, or positive:

- Arguments for a rather low impact:

Average satisfaction scores for the majority of quotes

  - Average appreciation of this mode of teaching and the way the course is presented.
  - Disadvantaged involvement and lack of motivation in a distance learning course
  - The physical and human environment is only moderately conducive to the success of the distance learning course
  - The availability of the teachers in relation to the agreed timetable of the course
  - The correspondence of the course load to the requirements defined in the plan
  - The intervention of the teachers during the course is moderately articulated
  - The provision of learning activities to help them achieve learning success during distance learning courses

- Arguments for a rather negative impact:
  - Lack of clarity in the distance learning course plan
  - Space management seems difficult in the absence of human contact
  - Some students state in open or multiple-choice questions difficulties hindering their learning during the distance learning course such as limited internet access and inadequate devices to adopt during learning.

- Arguments for a rather positive impact:

Generally related to pedagogical practices and organization better adapted by the teacher thanks to ICT:

  - Time management and facilitation practices during the session
  - Diversification of teaching methods during the session
  - High satisfaction, which would come from teachers' practices and modes of evaluation.

From what is said above we can conclude that distance learning has only a partial impact on the learning of university students, which confirms our main hypothesis.

Conclusion

In this work, we have studied an approach to the adoption of distance learning in higher education. This contribution aims to address our research problem related to the impact of distance learning on university students' learning. We started with a literature presentation of the state of the art on distance teaching and learning in general, theories, practices, models. And to explore answers to our research problem we opted for an exploratory study based on a quantitative analysis of data collected via two online questionnaires. The first one concerns the EAD class, and the second the EP class.

The objective of our study was to evaluate EAD at the UM5, specifically the Faculty of Education (FSE), by targeting the students of the Master of Education Technology and Pedagogical Innovation (TIEP) who had recourse to EAD. This is to highlight and explore the effects of distance learning on students' learning. Obviously, this evaluation had to be done through the students themselves on their assessments of the achievement and learning acquisition towards this teaching, in close connection with the environment of unfolding, and the teaching practices. This research is set to identify the relationship between distance teaching practices and student learning, and subsequently see if there is an effect of these practices on the learning acquisition of university students. At the same time, he compared the results of his students with those of students having the same course while following their training in the classroom.

Finally, from the collection and analysis of the results obtained we were able to conclude that the students in the EAD class are moderately satisfied with the achievement of their objectives and their learning. In addition to being generally satisfied with the practices of the teacher, they are only dissatisfied with the course of distance learning because of the lack of human contact and the absence of communication between these actors (teachers, students), as well as the presence of problems related to the connection that disrupts the course. Thus, we note that this environment is not yet up to the level of the hopes it raised, because it remains less advantageous than face-to-face teaching.

Our work has enabled us to validate our hypothesis and confirm that distance learning has only partially impacted on student learning. To put it differently, the will to adopt distance learning in the Faculty of Education was strong, well it succeeded in this experiment despite the difficulties that hindered its implementation, and the learning was not totally negatively impacted. But for the results of the survey to be relevant, it wanted to opt for a relatively strong

sample in EAD to gain a high respondent rate. According to Philippe Dessus (July 2021) “The reason why so much importance is given to students' opinions about the teaching they receive is because it is assumed that the quality of their learning will be directly related to their opinions (i.e. the higher their opinions, the more they have learned, and vice versa)”.

Conflict of interests

The authors declare that they have no conflict of interest.

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