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Was the use of e-learning platforms during the COVID-19 pandemic a factor in the development of digital educational innovation in France ?

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Abstract

The global pandemic caused by the Coronavirus 2019 (COVID-19) forced higher education, research institutions and teacher-researchers in France to develop accelerated use of e-learning in order to ensure continuity of their teaching. Thus, face-to-face teaching was no longer the norm and gave way to other modes of operation. Institutions were closed, emptied of their students, and one could observe either teachers-researchers connecting from their homes through platform systems or from classrooms that were sometimes open on certain campuses, thus allowing teachers-researchers to record themselves and broadcast a course live to their students. Between two lockdowns, under cover of sanitary constraints (mandatory masks, social distancing, hydro-alcoholic gels, etc.), some institutions set up hybrid courses (50% of students were present and 50% followed the course at home with a principle of alternation). In this very particular teaching context, have new teaching practices emerged with regard to the more restricted use of digital tools ?

Keywords, Digital, E-learning Platforms, Educational innovation, Teaching.

1 Introduction

In this scientific article, we will focus on the period from January 2020 to December 2021, during the crisis linked to the COVID-19 in France, according to the official information communicated by the national agency « Santé Publique France »¹. According to Prat (2012), we define e-learning platforms as a set of software tools whose objective is to enable the management of e-learning courses, and designed for the management of courses, the monitoring of learners and the dissemination of learning contents. Depending on the educational activities proposed, it is possible to communicate directly by

¹ Santé Publique France is the French national public health agency. Created in May 2016 by ordinance and decree, it is a public administrative establishment under the supervision of the Ministry of Health. Their mission: improve and protect the health of populations. This mission is based on three major areas: anticipating, understanding and acting.

sharing applications, video-conferencing, instant messaging, etc. or indirectly through blogs or forums for deferred exchanges. We will define digital educational innovation according to the approach taken by Pignier Hondareyte (2021), which consists of making computer applications available for teaching. These technologies are supposed to accompany and reinforce teaching by putting digital technology at the service of pedagogy. In higher education, in particular, this type of innovation leads on one hand to teacher-researchers being trained in the use of digital teaching tools and on the other hand to dedicated support services ensuring the development and maintenance of these tools.

Hybrid learning, which implies the use of a techno-pedagogical environment and relies on complex forms of mediatization and mediation, is defined according to Burton & al (2011), as any training device that is characterized by the presence of innovative dimensions (human accompaniment, modalities of articulation presence - distance...) linked to distance. If pioneering research in the field of computer-assisted instruction was carried out by Kulik & al (1980), numerous research works on the subject have been carried out since the beginning of the 2000s, and this, until today.

Moving from an "hybrid mode" to an "all-distance mode" requires, as Peraya (2008) point of vue, an awareness of the need to reflect on the entire training system and not just on access to content. In this pandemic context, many teacher-researchers and pedagogical engineers have tried to put in place approaches that allow their colleagues to facilitate this transition, notably by providing advice on the creation of multimedia resources and adapted video capsules, on online evaluation while avoiding possible fraud, on creating or following webinars, etc. However, as Peraya & al (2020) points of vue, these emergency measures are not a true adaptation to the potential offered by e-learning.

The hypothesis we formulate is that the intensive use of e-learning platforms during the period of the pandemic made possible the development of innovative approaches to the conditions of implementation of teaching or learning activities, and also to develop new forms of interaction.

2 Pandemic situation

In 2020, if most French institutions had prepared for the lockdown imposed by the Government, and if the majority had finished teaching or set up online courses, Gilles Roussel², the President of the French Conference of University Presidents, nevertheless recognized that : "Enabling students to continue working remained the priority, even if it is not ideal and some students have difficulty accessing digital technology.

The institutions then tried to find solutions: loan of computers, vouchers to increase the internet packages, etc., but it was still complicated, as each individual situation was different. Some people had returned to their country, others were in white areas³. Solutions also had to be found to help and assist students with disabilities. This increased distance during the period of lockdown therefore raises questions about the digital divide and the evolution of digital pedagogy. Moreover, this type of hybrid education was not the object of a well-defined reading grid on which to rely, as this very particular period could not be anticipated according to Bonnery and Douat (2020).

² Gilles Roussel, born on 4 April 1968 in Nancy, is a French computer scientist and academic, president of the University of Paris-Est-Marne-la-Vallée since January 2012 and of the Conference of University Presidents since 15 December 2016. Interview EducPros by l'Étudiant of 15 April 2020 / "Gilles Roussel: The universities are closed to students until September".

³ A white area is, in the field of telecommunications, an area of the territory that is not served by a given network, more particularly a mobile telephone network or Internet.

In fact, students lockdown to their place of residence were in contact with their teachers and other students either by phone, laptop/PCs or tablet through the digital environments made available to them by their home institution(s). Apart from a minority affected by the digital divide, the vast majority were able to continue to work in relatively good conditions, the difficulties stemming mainly from the organization of the day (imposed hours of outings, time spent in the shops, etc.) and problems linked to an unusual overload of connections on the platforms (Digital Workspace, videoconferencing, etc.) and on the Internet network.

When one is used to teaching face-to-face in a classroom, finding oneself behind a computer face-to-face with all or some of one's students can be a bit confusing. The question of the psychological influences or pressures that were experienced or felt by teachers-researchers and students during this period is also important and must be raised, the information and communication sciences (INFOCOM) are an interesting field of exploration to apprehend this subject, according to Jeanneret (2009) with regard to the approaches to technological mediation defined.

It is true that most teacher-researchers use or have used e-learning platforms, but generally without exploiting all the possibilities, often using the codes of face-to-face teaching and without measuring the implications of the constraints of using such systems. The question that arises then concerns the teaching or learning activities that are usually carried out by teacher-researchers, what about pedagogical continuity in the light of the pandemic situation, and the digital resources made available to them without any clearly defined integration procedures.

3 Teaching activities

During the course of a face-to-face or e-learning course, different teaching or learning activities are used, as Musial & al. (2012) indicate, for example those dedicated to study, problem solving, information search, dialogue, production or serious games. According to Tricot (2021), the emergence of digital technology has not led to the emergence of new categories of activities, but rather to the modification of the implementation of existing ones. On the other hand, the media, if they have not modified the activities, have been profoundly modified by digital tools. For example, the study of documents, some medicine experiments, the study of geographical maps, which were unimaginable a few years ago, are now possible through digital simulations and supports that are now available. In the same way, the conditions of implementation of learning processes are modified and impacted by digital tools.

It seems that during the period of the pandemic, some activities were nevertheless more difficult to implement than others, such as, for example, in the context of the study, listening, which during the course is easier to regulate in the classroom than in the e-learning environment, or in the context of dialogue, exchanges, whether verbal or non-verbal, with the teacher-researcher or the other students, which are depreciated in the e-learning environment. Moreover, this period is sometimes characterized by the piling up of digital tools, without taking a step back on their implementation and their pedagogical use in this very particular context.

Thus, this compilation of tools, this technological headlong rush, without any thinking on the meaning of the activities leads to an expansion of the activities and dissatisfaction for the users. It is important to remember that the lockdown was brutal, the teacher-researchers had to react very quickly to this situation and this generated a lot of stress and tension. Faced with the difficulties encountered by the institutions, it was sometimes necessary to find solutions and rely on private sector e-learning

platforms that were often incompatible with the General Data Protection Regulation, while taking the risk, as Cordier (2018) indicates, of adapting to the use of current digital tools.

Although digital tools did not allow new activity to be invented either before or during the successive lockdowns we experienced in France, they did make it possible to realize that some activities were more complex to carry out than others in e-learning. It is also interesting to note that during this period, innovations appeared in terms of the media and the conditions for implementing teaching or learning activities. It is important to note that digital tools should mainly be used to improve and support teaching in so-called "normal" periods and not to be part of a dynamic that aims to permanently support e-learning. In this pandemic context, as Gierdowski & al (2020) point out, students wanted to return to face-to-face teaching, with the quality of teaching taking precedence over the quality of the digital environments offered to them.

4 Pedagogical and digital constraints

During the pandemic, many teacher-researchers encountered difficulties, which were mainly related to the mastery of e-learning platforms and the choice of digital tools best suited to their disciplines, with these difficulties varying according to the level of mastery of the proposed solutions and their reception by the students. The organization of students' work was also complex, due to the constraints that some of them could suffer, whether functional or organizational during the most tense phase of the pandemic. The institutions mobilized as much as possible to respond to these difficulties by accompanying the teacher-researchers through meetings, electronic or telephone exchanges, meetings and personal contacts.

If in 2020/2021 the norm remains mainly face-to-face in French institutions, the development of digital technology has made it possible to institute remote work habits, but the brutal crisis has not allowed the various actors concerned to provide a rapid and efficient response in terms of educational continuity, the constrained obligation of permanent remote use has created difficulties in the face of the more traditional modes of operation used by teacher-researchers before the crisis. The lack of anticipation of an adapted training engineering as described by Peraya & al (2020) leads instead to a form of assisted self-training at a distance. This physical distancing led to a pedagogical but also societal distancing.

If e-learning requires a strong involvement, experienced and expected by the teacher-researcher and the students, the synchronization of digital tools takes little account of pedagogical aspects such as listening, attention and understanding. What can be said about video-conference connections that sometimes turned into audio-conferences in the best case ? The use of e-learning in times of crisis is not adapted to replace the face-to-face/distance model currently used in schools. The weaknesses of the digital tools themselves and sometimes their misuse are discouraging factors for the different parties present in a course.

During the pandemic, students who were not affected by the digital divide often found themselves alone in front of their computer screens, alternating between e-learning courses, videos to watch, personal work and exchanges on social networks. Following online courses all day long is very difficult and restrictive, attention can be less sustained, especially when timetables and programs have not been adapted to cope with the crisis, in these conditions it is more complicated to separate work time from rest time. Motivation is more difficult behind a computer, and contact with other students and lecturers is lacking to work efficiently. While the massive use of e-mail may have been tempting to give the

impression that the teacher-researcher was keeping in touch by sending massive, more or less personalized messages accompanied by an overload of transmitted documents, in reality this approach may have been experienced as intrusive and difficult by some students, as indicated by the survey carried out by the National Observatory of Student Life in France in 2020⁴.

Students had to make decisions all the time, to organize themselves with regard to the different activities proposed or imposed, and some had to build up new reference points. There was a pedagogical discontinuity far from the continuity prescribed by the institutions, as mentioned by Denny (2020), with course content, teaching methods and the learning process breaking with what had gone before. Finally, it seems that students with little responsibility for their training and without a clear plan found it more difficult to take initiatives in the face of this new educational situation, as motivation was less present and discouragement intensified, thereby increasing inequalities between students in a devious manner.

5 New forms of interactions

The quality of e-learning is above all linked to the quality of the pedagogical engineering implemented by the teacher-researcher. At this stage, we will not talk about digital pedagogy, but rather about new pedagogical practices that benefit from innovative digital supports. According to Bernard & al (2009) the exchanges between students and each other on one hand and with the teacher-researcher on the other have greater effects in e-learning. Autonomous learning is facilitated in e-learning provided that the teacher-researcher is strongly involved in helping students plan their work, the activities required and the objectives to be achieved, and that digital tools are put in place to enable rapid assessment (multiple choice survey, quizzes, etc.). Personalized help was sometimes provided during this pandemic period, as specified by Martin & al (2020), notion of time being different from normally experienced.

The involvement of the teacher-researcher in e-learning is therefore very important for the students who feel the difference between the teacher who teaches as usual in the classroom and the one who adapts to a digital environment which is not necessarily the one offered by the institution. E-learning has also made it possible in some cases to interact individually with students who, in the classroom, would not dare to ask questions or even come up to the teacher-researcher. During the pandemic, we have seen a more professional use by students of digital tools such as smartphones, generally more associated with a logic of socialization as described by Boyd (2014). E-learning has imposed new practices forcing some teachers-researchers and students to familiarize themselves with digital tools that they knew little about or used in a simplified way, the use of ICT being a complex process as Breton & al (2002) indicate.

According to Denny (2020), a form of professionalization of the relationship is observed between students and the teacher-researcher, with a focus on preserving the link, before initiating contact, they better assess how the requests could be appreciated. In the distance mode, these relationships have allowed for the emergence of new interactions such as immediacy, with students needing social connections with each other that they have created or recreated through digital tools. Teachers-researchers have also felt this need for immediacy and have sometimes joined them on these platforms, as shown by Hazard & al (2020) hence the importance of providing for collaborative teaching activities, working groups and thinking groups using e-learning platforms.

⁴ French National Observatory of Student Life – Survey from march to July 2020 Link : <http://www.observatoire-national.education.fr/enquete/la-vie-detudiant-confine/>

The pedagogy based on the flipped classroom evolved in e-learning during the pandemic period, work done in e-learning, the smooth running of virtual exchanges and the digital activities proposed were mainly concerned. This was reflected in a reduction in the length of virtual courses to make them more intense and dense and in very short course videos similar to the video capsules in MOOCs. The use of digital media, as specified by Peraya & al (2020), has been developed to vary the forms of resources and the modes of retrieval of student work as well as access to content in an attempt to replicate the traditional classroom model online.. New forms of activities, rarely used in class, have also been proposed, such as online simulation activities, collaborative projects or digital challenges. Collective writing activities have been simplified with digital tools, whereas they are much more complex to implement in a classroom with many students, or even in half a class.

6 Conclusion and perspectives

When the global pandemic caused by the Coronavirus 2019 (COVID-19) broke out in France, higher education and research institutions had to adapt very quickly to the situation. The use of the e-learning platform and digital tools has made it possible to respond in part to the pedagogical constraints, but many difficulties have also arisen. From a pedagogical point of view, the first thinking were on the teaching conditions, the methods but especially on the notable comparative differences between face-to-face and e-learning. Apart from a few blunders such as for example a lack of mastery of video-conferencing systems, instant messaging and the overuse of e-mail and a saturation of the work transmitted, the experience was rather positive.

Although teacher-researchers are not destined to become e-teachers and the vast majority of students have expressed their wish to return to face-to-face teaching as shown by Martin & al (2020), the periods of successive lockdowns have made it possible to highlight the disadvantages and advantages of e-learning. The continuity of educational work in a period of crisis brought out difficulties not only of a technical nature (mastery of digital technology, use of platforms, organization of schedules, etc.) and human (psychological aspects, digital divide, etc.). But also positive approaches in the relations between students and with the teacher-researcher, more particularly in the more personalized relations and exchanges, time management being different during this period.

In e-learning, these relationships have allowed for new interactions such as immediacy, with students needing social links with each other and with the teacher-researcher. Flipped classroom pedagogy has evolved into e-learning during the pandemic period, resulting in a reduction in the duration of virtual classes. The use of digital media has also developed, allowing for a variety of resources and new forms of activity.

The work done through the e-learning platforms was generally appreciated by teachers and students during the pandemic period. Each of them identified in a very relevant way what constituted an added value within the framework of the courses given in a regular or hybrid way. However this mode of operation must continue to be generalized as far as possible in order to accustom students to its practice and teacher-researchers to develop pedagogical approaches that meet expectations of e-learning.

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6 Author biography



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After a 15 years career in the French Ministry of Defense, Frederick BIGRAT first worked for 3 years at the Institute of Research for Development (IRD) as a systems and network engineer, then at the French Atomic Energy Commission (CEA) for 3 years as a digital project manager. After 4 years at the University of Paris1 Panthéon-Sorbonne and 3 years at the Foundation for Scientific Cooperation Sorbonne Universities as Director of digital projects, Frederick BIGRAT is since September 2017 the Director of the Interuniversity Service in charge of digital infrastructures and innovation at the Sorbonne (SIRIS), which is attached to the Chancellery of the universities of Paris.

He holds a PhD in Information and Communication Sciences and is an Associate Researcher at the Center for Interdisciplinary Analysis and Research on Media (CARISM - EA2293), which is the laboratory of the French Press Institute (IFP) of the University of Paris-Panthéon-Assas.

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