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Impact of the COVID-19 pandemic on university pedagogy in Benin: Case of Injeps

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Abstract
Education is a lever for the development and fulfillment of human beings in the world. It makes available all the means to increase the capacities of which each individual abounds. Nevertheless, due to its stature, it remains a weak link at the time of disasters and pandemics such as the Spanish flu or COVID-19. Moreover, this study aims to analyze the effects of the COVID-19 pandemic on university teaching methods.
Through mixed research, the techniques of simple random sampling and reasoned choice helped to take into account 105 subjects. At the end of the handover of data collection tools, the results reveal that COVID-19 has led university actors to use ICTs more to accomplish their sovereign mission, especially teachers who had to lead their courses online, given that the the doors of the universities were closed.

Keywords: ICT, mode of teaching, education, pedagogy

Introduction

Introduction and Subject Rationale

According to Ménard (2000), education, "an important lever in the fight against poverty, is the condition for sustainable social, cultural and economic enrichment" (p. 9). This opinion of Médard leads us to attest that education is at the heart of the world, as mentioned in the International Plan (2015) [10], it is a fundamental right and an indisputable lever for economic growth, the eradication of poverty and sustainable development whose lack of resources and poor coordination hinder progress (PI, 2015) [10]. Likewise, the United Nations Educational Organization; Science and Culture, UNESCO (2014) [14] complements this assertion by Plan International by explaining that:

Not only does education have an economic effect by improving incomes and promoting economic growth, but it also has an effect on society as a whole since it facilitates the emergence of good governance and democracy. A quality education enables individuals to better understand the problems facing society and to participate actively in political life (UNESCO, 2014, p.14) [14].

In the same way, several scientific writings had to underline it. Among these is the Universal Declaration of Human Rights (UDHR) which, in its article 26, stipulates that:

Every person has the right to an education. Education must be free, far and wide with regard to elementary and fundamental education. Elementary education is compulsory. Technical and vocational education must be generalized; access to higher education must be open in full equality to all on the basis of their merit (DUDH, 1948).

The usefulness of education emerges from this statement. It is essential for everyone. This is what makes Kant say (1803, p.73) [8], that "man can only become man through education, he is what education makes him". Thus, it is necessary to mature reflections around themes relating to education in order to revitalize the education system and especially, that of developing countries. But this development would only be a reality if diseases hit hard the men and women who are responsible for ensuring this development.

Indeed, the world has always suffered the pangs of health crises at different periods of its history. In recent years, they have become a little more repetitive with mad cow disease, bird flu, Ebola fever. They come, with violence and force, to remind us of human vulnerability and the consequences of our carelessness. The current Covid-19 pandemic, the magnitude of which is unprecedented in our time, highlights the weaknesses of our systems, particularly the education system: lack of infrastructural, technical and educational resources, deep digital divide, lack of training and adequate preparation of actors in the sector, a guarantee of more effective adaptation. It has changed the lives of nearly 1.6 billion pupils and students in more than 190 countries on all continents, among those of primary and secondary school age, the rate of learning poverty in low- and middle-income countries was 53% (UN, 2020). The poor acquisition of knowledge, following the non-completion of programs could add to

the already worrying failure rate. The frantic concern to respect the barrier gestures whose social distancing has led to the closure of schools in order to avoid the spread of the Virus. Closures of schools and other places of learning affected 94% of the school population globally, and up to 99% in low- and lower-middle-income countries (UN, 2020). This initiative decided by the States, to prevent the spread of the virus, undoubtedly has repercussions on the entire education system. These impacts affect and will affect above all the learners, but also the teachers and the way the school operates. According to UNESCO, millions of students are currently unable to attend their classes (a number that is increasing every day), (UNESCO, 2020) [14]. To do this, an innovation has been set up in the education sector. Innovative initiatives, which have enabled the continuation of teaching and training activities – on the radio, on television or in the form of educational kits for the home. Distance learning formulas have been developed thanks to the rapid intervention of States and partners around the world determined to ensure educational continuity, in particular the global education coalition set up by UNESCO. The crisis has also reminded us of the crucial role of teachers and that it is the responsibility of States and other partners to ensure the health and well-being of educational personnel. But these innovations have also shown that the promising prospects opened up to pedagogy and the rapid changes made to teaching methods can only be sustainable if no one is left behind. This applies to children and young people who have few resources or whose environment offers little access to education. This also applies to teachers who need to be better trained in new ways of teaching and to be supported in this regard. Finally, this applies to the wider world of education, including local communities, on whom the continuation of education activities during the crisis depends and whose role will be essential in building back better.

Indeed, according to UNICEF (2012), 89.9% of the Beninese population owned mobile phones. Still according to UNICEF, more than 50% of the population had a Smartphone. These figures have undoubtedly changed over time. This demonstrates the great place occupied by technology and especially mobile technology in Benin. This great interest of Beninese, especially the young generation, for smartphones and Android is understandable, because the latter constitute an essential and multifunctional tool (Atténoukon et al. 2015). Ten years earlier, Wagner (2005) argued that it is inevitable that technology is at the service of education for better efficiency. Following the same logic, Ahonnon (2014) [1] thinks that ICTs are work tools that teachers, PATS and students no longer think they will do without if they want to be efficient in what concerns them. Two years later, Guénnoun and Benjelloun (2016) working on students' views on the integration of ICT in higher scientific education showed that the integration of ICT in university courses is advantageous for students. and is able to improve the quality of their learning. Digital culture is evolving rapidly and work on educational technology abounds, but the use of these tools to support teaching/learning is still stalling in many universities, including that of Abomey-Calavi (Atténoukon, 2011). Karsenti (2009) [9] postulates to this end that the real problem is that of the pedagogical arrangements made to support the integration of ICT. According to Atténoukon (2011), the result of this situation is that students are not forced to use ICT for their learning. Worse, some do not know how to handle their smartphones and computers well. However, Benin is a developing country and it is in these countries that mobile technology is growing as quickly as possible. (Raballand, 2012) [11].

Nowadays the use of educational technology is well established. In addition, the COVID-19 came in 2019 and forced the actors of the education system and the rulers to accentuate the obligation of the use of ICT in the animation of courses, especially at the university.

It should be recalled that the first case of COVID-19 was confirmed in Wuhan in December 2019 (Chen et al. 2020) [3]. Exponentially, the evil spread all over planet earth, becoming a pandemic on March 11, 2020 (WHO, 2020). This pandemic is a huge global disaster that has claimed 455 million lives worldwide (WHO, 2021).

In Benin, after the establishment of the sanitary cordon on March 30, 2020 to counter the virus, the government put into service the platform dedicated to the animation of online courses on May 11, 2020 (Source Benin Government site). This action by the government received different receptions from players in the university world to the point where two online training courses were organized for teachers and students on the use of the educational platform of each training unit and of research. But in reality, how did students and teachers experience this new way of leading lessons? What impact has this new form of pedagogy had on the university pedagogy formerly used? Better how did the different actors in the university system experience this way of teaching and receiving during this pandemic? In order to answer the various research questions, we postulate that:

- Covid-19 has led to changes in the teaching methods used at INJEPS;
- Covid-19 has led university actors to make much more use of ICT

The objective of the research is to analyze the effects of the COVID-19 pandemic on university teaching methods. Specifically, these are:

- identify the teaching methods used by teachers in academia before Covid-19;
- determine the effects of this pandemic on these teaching methods.

Methodology

1. Type of research

Here is essentially a question of analyzing the effects of COVID-19 on university teaching methods. This analysis was considered to help us understand the Beninese education system. In order to better understand the subject in all its fullness, research of a mixed nature has been envisaged in order to lead to conclusive results. As much as quantitative research makes it possible to explore a broad target by taking into account all its components, qualitative research goes more in depth by bringing out the unsaid that remained unsaid at the level

of quantitative research. The investigations were made on well identified targets with defined characteristics. The following section presents the categories of targets and their respective characteristics.

2. Target populations

Different categories of people constitute the target population of this research. It is a heterogeneous target whose components are:

- students;
- teachers;
- administrative staff;

2.1 Students

The objective of this research can only be achieved if we take into account the subjects in a training situation. Their priority takes precedence in the fact that they are at the very heart of the system, and the subjects on which the teaching methods are used. It is therefore essential to include them in this research in order to obtain reliable results. This research therefore takes into account the students of the National Institute of Youth, Physical Education and Sport.

2.2 Teachers

These are the teachers working at the INJEPS. The importance of these teachers lies in the fact that they are the main trainers and therefore the operators of the mode of teaching. They are the actors who play a preponderant role in the education system. They are the ones who give the lessons and make use of the teaching method in force for this purpose. They are therefore authorized to provide us with vital information on this method of teaching and the influence of COVID-19 on it.

2.3 Administrative Staff

This is the Academic Director of INJEPS. The importance of this target lies in its function of managing academic affairs and directing the administration's internal affairs. It plays a fairly important role in the education system.

3. Sampling methods and techniques

This section respectively sets out the sampling methods and techniques used in this research and then the size of the sample on which the investigations were carried out.

3.1 Sampling methods and techniques

Sampling is the selection of a number of units from the research population. It leads to the determination of a sample with very specific characteristics. Most often, the sample is made to be as representative as possible. For this purpose, different methods can be used. For this research, probability and non-probability sampling methods were used. Indeed, the probability sampling method based on the law of chance made it possible to identify the students to be taken into account in this research. More specifically, the simple random sampling technique which is a technique of the probability sampling method was exploited. The selection of students was done randomly following the determination of the sample size. This was considered as such in order to promote the representativeness of the sample by taking into account a large number of different people. As for the choices of teachers and administrative staff, they were not the result of chance. To do this, the non-probability sampling method was used; and more precisely the reasoned sampling technique also called the reasoned choice sampling technique. This technique was used because of the importance of the information to be collected. Administrative staff were selected to be part of this research because they are, at the organizational level, best able to provide reliable and on-topic information about the subject under study. The university teachers taken into account are so by their quality of active actors and main users of the mode of teaching in force within the framework of the transmission of knowledge. Ultimately, these categories of targets were taken into account for reasons of reliability and precision with regard to the data to be collected.

3.2 Sample Size

For quantitative research, with the probabilistic method, this research included INJEPS students from the city of Porto-Novo. As for the qualitative research, the administrative staff (the academic director) was taken into account. With regard to teachers, in order to have the most representative sample possible, four (04). Moreover, the sample size for this research is fifty-nine (105) subjects as shown in the table below:

Table 1: Overview of sample size

Target populations	Size	Sampling Technique
Students	100	Simple random technique
Lecturers	4	Reasoned choice
Academic Director	1	
Total	105	

The specific techniques and tools used to collect the data are presented in the next section.

4. Data collection techniques and tools
Data collection techniques were used and appropriate tools were used for the various investigations.

4.1 Data collection techniques
For this research, the techniques used to collect data are: documentary research, questionnaire survey and interview.

4.2 Data collection tools
The tools used to collect the data were related to the collection techniques used. A questionnaire was used as part of the questionnaire survey. As for the interviews that took place, the semi-directive interview guides made it possible to structure them.

5. Data processing
The tools and techniques previously presented made it possible to collect and process the data. The quantitative data collected in the field using a questionnaire administered to the subjects, were processed in the spreadsheet of the office suite of Microsoft Excel 2013.
As for the qualitative data, the interview guides were administered to the corresponding subjects, which facilitated the collection of data. These interviews were recorded using an Android phone and transcribed verbatim.

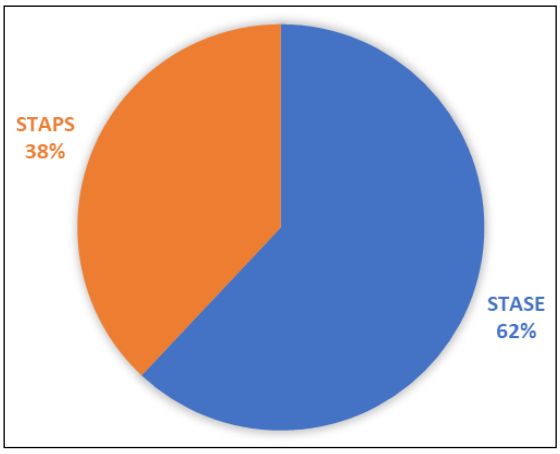
Results
1. Summary of the survey population

Table 2: Summary of the survey population

Target category	Sex		Effective	%
	Male	Female		
Academic Director	1	0	1	0,95
Lecturers	4	0	0	3,81
Students	67 (63,81%)	33 (31,43%)	100	95,24
Total	72	33	105	100

The table above presents the targets that form the sample size, their counts and their percentages within the sample.
Of the 105 subjects that form the overall sample size of the research, the academic director represents 0.95%; the four (04) teachers represent 3.81%; and finally, the 100 students surveyed represent 95.24% of the sample size. It should be noted that the male sex dominates within the sample with a number of 67, that is to say a percentage of 63.81; while the female sex finds itself with a workforce of 33, that is a percentage of 31,43.

1.2 Distribution of students by option



Graph 1: Breakdown of INJEPS students by option

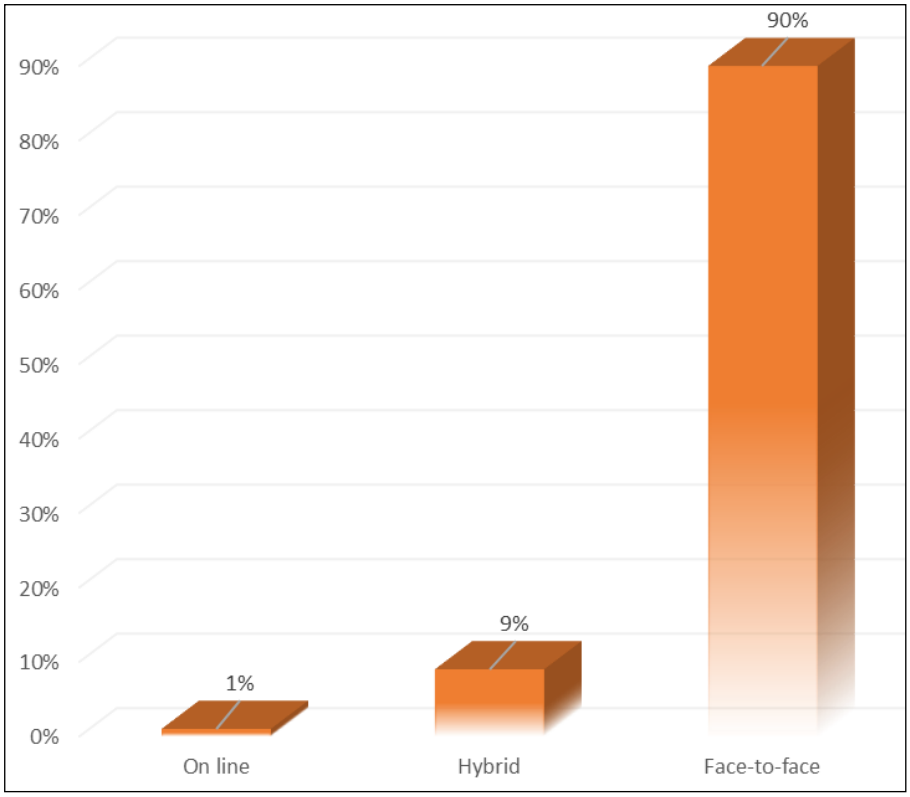
According to the graph above, of the hundred (100) students surveyed, 62% of the total number are STASE students and 38% are STAPS students. It should be noted that the students of STASE are more numerous than those of STAPS.
The next part of our research was devoted to the presentation of the results related to the consequences of COVID-19 on educational practices at INJEPS on the one hand and the socio-educational and pedagogical factors induced by the pandemic which influence the operating mode.

2. Consequences of COVID-19 on educational practices at INJEPS

The results related to the consequences of COVID-19 on educational practices at INJEPS are presented in this section. It addresses the teaching methods put into practice before, during and after the ravages of the pandemic.

2.1 Teaching methods used at INJEPS before COVID-19

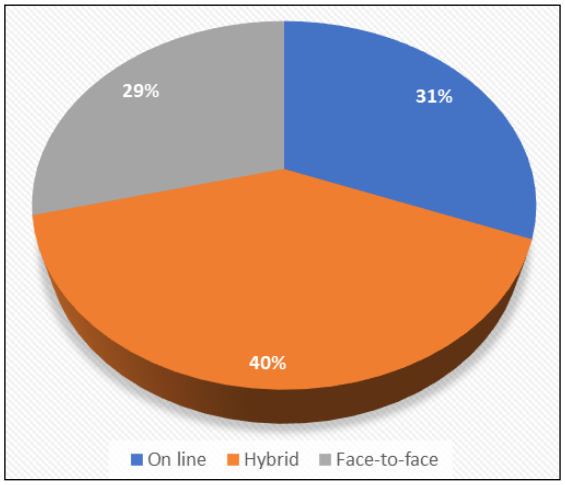
This small section presents the results of the teaching methods put into practice at INJEPS before COVID-19.



Graph 1

According to the graph above, 90% of the subjects surveyed said they had opted for face-to-face courses, 9% for the hybrid mode and 1% for online courses. In conclusion, the face-to-face mode is the one most used at INJEPS before the advent of the pandemic.

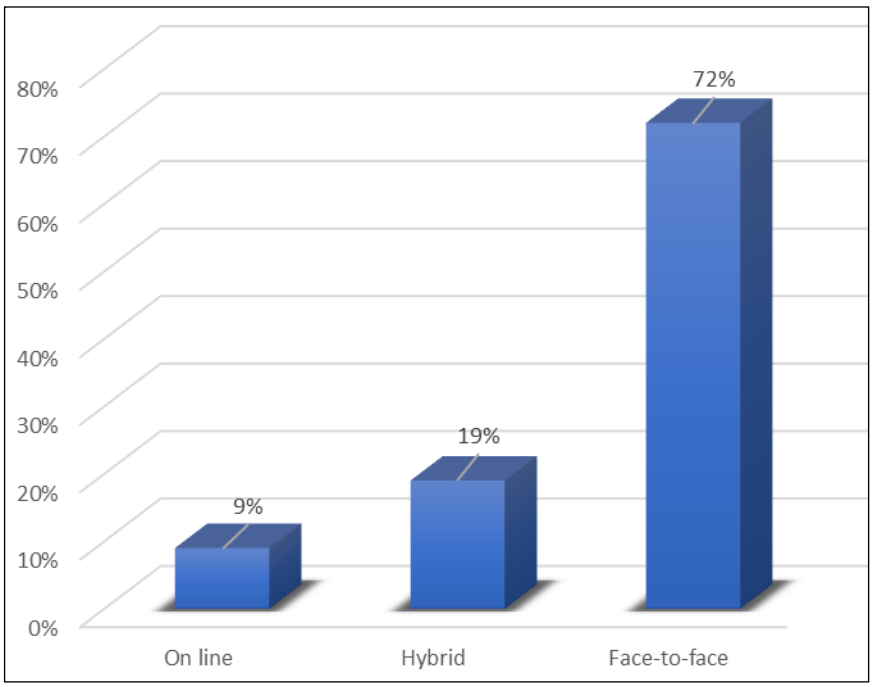
2.2 Teaching methods used during the COVID-19 pandemic at INJEPS



Graph 3: Teaching methods during the COVID-19 period

Graph 3 presents quantitative data related to the teaching methods used during the COVID-19 period at INJEPS. According to these graphs, it appears that 29 students, that is to say a rate of 29%, claim to have continued with the face-to-face mode, while 31 students, with a rate of 31%, have used the online course and the remaining 39 students, that is to say a rate of 40% used hybrid mode. Thereby; the hybrid mode and the online course mode are more exploited than the face-to-face mode during this period.

2.3 Teaching methods used after the strong period of COVID-19



Graph 4: Teaching methods used after the high period of COVID-19

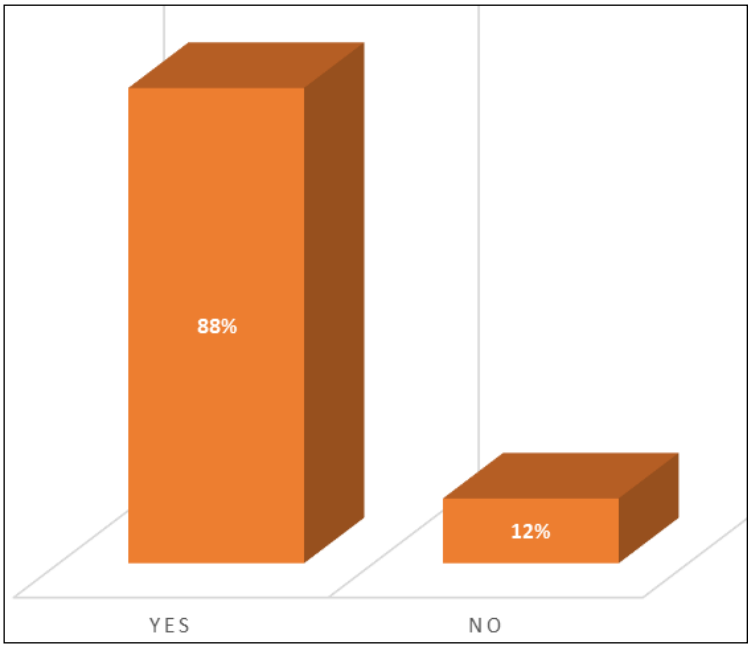
The graph above presents the quantitative data collected in relation to the teaching methods used after the strong period of COVID-19.
Graph 04 illustrates the percentages of teaching methods adopted after COVID-19, the face-to-face system totaled a rate of 72%, the hybrid system 19% and the online system 9%.

3. ICT at university

This section presents the results related to the elements induced by COVID-19 on the teaching method. It discusses the usefulness of the Internet in teaching, the role of social networks and the perception of ICT by educators. The following subsection presents the parameters of the usefulness of the Internet in education.

3.1 Usefulness of the Internet in education

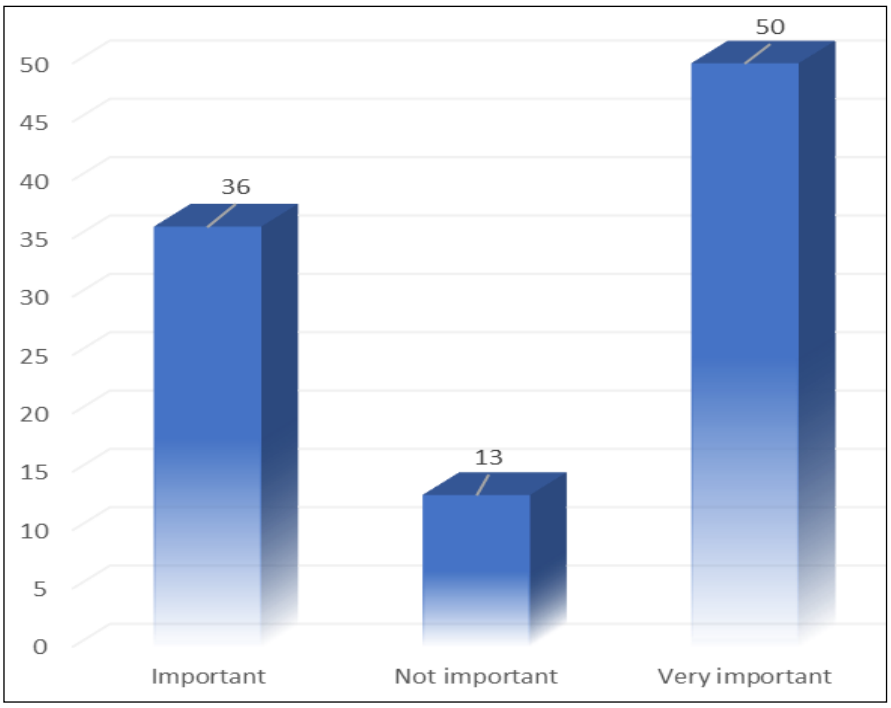
This subsection presents the results obtained in relation to the usefulness of the Internet in the educational process. The graph below represents the responses obtained from students to the question of whether or not the Internet is necessary in education.



Graph 5: Need for Internet in education according to students

According to this graph, it is noted that the 88% of the learners questioned consider the Internet necessary in teaching for a rate of 12% who are against it. It emerges from this graph that the Internet allows learners to cultivate themselves, to deepen their knowledge and is a necessity in the educational process.

3.2 Place of social networks in education



Graph 6

According to the graph above, out of a total of one hundred (100) students, fifty (50) believe that social networks are very important in the educational process; thirty-six (36) say they are important. The rest (13) believe that social networks are of little importance in the educational process.

Discussion

To the question of knowing the mode of teaching used before the advent of COVID-19, through graph 2, we find that 90% of the subjects surveyed chose the "face-to-face course" option, 9% opted for the “hybrid mode”, 1% opted for the online course. From this fact, it can be deduced that the face-to-face mode is more practiced in the establishment. Indeed, the courses at INJEPS are more face-to-face both in STAPS and STASE in a theoretical and practical way. This observation is confirmed by a member of the administration in these words:

[….] in each era, its dispositions.... the courses at INJEPS were face-to-face, they were done in a theoretical but also practical way. (Academic Director, field data, 2021).

From this extract, it appears that before the pandemic period, the INJEPS adopted the face-to-face learning mode, which is reflected in the presence of teachers and students in the classrooms. Indeed, the face-to-face mode is characterized by constant support from the teacher due to his physical presence and his ability to meet the needs of students in the classroom with a view to high-level performance at the end of the course year. More importantly, the face-to-face mode promotes interaction between students and teachers. This result corroborates with the conclusions of the work of a study by the Higher Institute of Blended Learning Professions (ISTF) in 2019, when they affirm that the face-to-face mode is more effective and opted for by learners. Following the same logic, the School and Society Committee (CES, 2019, p.11) thinks that "face-to-face teaching refers to a method of teaching where a teacher exchanges in real time and face to face with his students”.

Still in the same logic, the conclusions of the work of Rhéaume (2020), show us that the face-to-face mode has both advantages and disadvantages. Because according to this author, the face-to-face mode offers provisions such as "accessibility to content by students in the same way", "the preparation of the course which does not require the teacher to change materials or new planning" and “an interaction between the students and the teacher”. Ultimately, face-to-face courses allow students to put the knowledge acquired into practice and compare it. It is in this same logic that one of the teachers tells us that:

[...] the courses provided are not only theoretical but also practical in order to allow learners to self-assess on the knowledge received and to familiarize themselves with their field of specialization and to be in permanent contact with their trainer in if necessary […] (Lecturer 03, field data, 2021).

But it should be noted that face-to-face pedagogical courses do not only have advantages, it is important to mention the disadvantages caused by this face-to-face mode in all its application. This is what Rhéaume (2020) points out, when she states that the disadvantages include changes made in the event of closure of physical

places, the physical situation favoring the meeting of students in the same room. This is to tell us that despite the great efficiency of the face-to-face mode, it is also full of limits.

The proof is that the data collected from graphs 03 and 04 show that during the COVID-19 period, administrative actors had to adopt other teaching methods in order to allow students to continue their course while respecting barrier gestures. This is confirmed by a member of the administration with this extract:

[...] during the scale of the pandemic, it was deemed useful to set up a new system that could allow learners to have access to knowledge while of course respecting the barrier gestures [...] classes with a workforce high were distributed by group for course rotation […] (Academic Director, field data, 2021).

It should be noted that long before the advent of COVID-19, courses were given in face-to-face mode with a rate of 90% (graph 02), but the latter dropped considerably during the strong period of COVID-19 for a rate of 29% (graph 4) while the hybrid mode went from 9% "graph 2" to 40% "graph 4" and the online course mode went from 1% "graph 2" ' at 31% "graph 4". The advent of COVID-19 has further developed and adopted online teaching to the point that the government has organized training for teachers through the platform dedicated to each of Benin's four universities.

The various data collected from graph 05 show that after the strong period of COVID-19, face-to-face, hybrid and online teaching continue to be implemented within the establishment. On the other hand, the methods of implementation differ, because as to see closely the observation is that the face-to-face mode has gone up the slope after this fierce period.

However, considering the teaching methods linked before and during the strong period of COVID-19 (graphs 2 and 4) on the one hand and those linked to the teaching methods adopted after the strong period of the COVID-19 pandemic 19 within the establishment on the other hand (graph 6), there has been a significant return to face-to-face teaching after the strong period of COVID-19. Starting from an application of 90% before the pandemic, the face-to-face mode had a low application rate (21%) during the high period and clearly evolved towards 72% after the high period of the pandemic.

This known low rate of application is explained by the fact that certain activities carried out within the establishment required face-to-face teaching but because of the spread of the virus, it was impossible to carry them out. An administrative staff confirms it in these terms:

[…] at a time when the pandemic was wreaking havoc, several measures were taken by the government to reduce the rate of contamination and this was evidenced by the closure of establishments […], after the resumption of classes on the side of STAPS, several practical courses have been suspended with the aim of avoiding physical contact between students and teachers due to the physical activities that dominated the most in their training (judo, gymnastics) […] Academic Director, field data, 2021.

The massive adoption after the strong period of the pandemic is confirmed by one of the teachers:

[…] This year, the effects of the pandemic have diminished, which has led us, with the agreement of the authorities, to return to the face-to-face system and respect for barrier gestures is mandatory … hence our impartiality on the non-wearing of masks by the students [...] (Lecturer 03, field data, 2021).

Respecting the mandatory barrier gestures not only protects students but also teachers. Moreover, the return to the face-to-face system is the basis of the considerable drop in the application of the online system after the pandemic period. It should be noted that we go from a percentage of 31% during the high period to that of 9% after the high period of the pandemic. It is to be deduced that the online system has taken off thanks to the advent of COVID-19. This drop in application may be caused by the difficulties encountered on the various sites (Zoom, Whastsapp, etc.) used for the actual realization of the courses. Among these we can cite the low connectivity, the lack of adequate tools for both teachers and students. One of the teachers interviewed comes back to us in relation to this phenomenon, stating that:

[...] we all know that in our country there is a connection problem that arises, especially since just to have fun, you have to manage to have a connection and to this is added the costs packages that are constantly increasing and yet the connection is not reliable and does not even last… there are other learners who do not even have a computer tool (android or laptop computer) […] (Lecturer 04, field data, 2021)

Like the face-to-face and online mode, the hybrid mode experienced a decline after the COVID-19 period, that is to say a rate of 39% during the period for a rate of 19%. Nevertheless, it is still used within the establishment. This is confirmed by one of the teachers:

[...] personally I was already in the habit of sending the course materials in advance to my learners so that they could soak up the content and when I came, we confronted each other...all this is done by observing the barrier gestures issued (Lecturer 02, field data, 2021).

The analyzes previously carried out made it possible to study the parameters around the teaching methods at INJEPS. It has therefore been deduced that the advent of the COVID-19 pandemic has worked for the application of the online and hybrid system.

Although the online mode is not an asset for teaching within this establishment, it is therefore urgent to study the parameters and provide trainers with the appropriate tools and materials for its full use at INJEPS.

Conclusion

Education is a means made available to promote human development in a more harmonious and thorough way (Delors, 1997) [5]. But when it finds itself persecuted by a global scourge, it must hold on by taking steps to adapt for the good of all. It is in this light that Criblez (2019) asserts that reforms are necessary because "*when society*

changes, education must adapt even if the changes made in education do not always take the form of reforms".
The advent of the COVID-19 pandemic has had many repercussions on development sectors, particularly education. Based on this influence on the education sector, this research has set itself the task of analyzing the effects of COVID-19 on university teaching methods.

The research carried out has made it possible to identify the teaching methods used by teachers in academia before Covid-19. Three modes of teaching are put into practice in the establishment: the face-to-face mode, the hybrid mode, the online mode. The face-to-face mode required the physical presence of learners and teachers, the online mode did not require any physical presence (use of IT tools), and the hybrid mode was only the union of the face-to-face and the online mode. The advent of COVID-19 has led to new resolutions being adopted, with the rise of online courses and a drop in face-to-face courses. From the presence of teachers and learners followed by interactions during learning, we have moved to a virtual visualization characterized by the Internet. Distance education, in general, is characterized by the separation or physical distance between the teacher and the learner during lessons (Rumble, 1997). Fenouillet and Dero (2006) [6], through their study, offered a summary on the question of the effectiveness of e-learning as a teaching method, which made it possible to affirm that e-learning can be considered equivalent to face-to-face if adequate means are deployed.

This same research has made it possible to determine the effects of this pandemic on these teaching methods. The results obtained revealed a change in the procedures for transmitting knowledge through the integration of ICTs, which formerly remained a neglected part of education. ICTs should be put at the service of learning languages, sciences, and serve as mediums between teaching and the learner on the one hand, and between the learner and knowledge on the other hand (Guennoun and Bendjelloul, 2016) [7]. This adoption of ICT can facilitate the effective implementation of the hybrid mode in teaching at INJEPS.

However, the integration of ICT can only be effective if learners and teachers have adequate means for its use. Thus, it is important to first ensure the accessibility of these computer tools, to address the problem of the exorbitant cost of the connection.

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