Education and innovation: impacts during a global pandemic in a higher education institution

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Abstract.

Research background: At the beginning of the year 2020, there was a shift in strategies and instruments in a short period of time, to respond to a situation of impossibility of face-to-face teaching. Thus, it is essential to reflect on an educational challenge, whose impacts continue on a global scale.

Purpose of the article: The present article aims to analyse how the pandemic situation has been influencing education and learning in Higher Education.

Methods: Having as context a higher education institution located in the municipality of Porto, a case study was developed that analysed teaching and learning methodologies applied throughout the 2019/20 academic year. For this research, a qualitative methodology was used, with semi-structured interviews with five teachers and opinion essays from nine students, with fourteen participants. The analysis was carried out using the Nvivo software, triangulating the perceptions of the two groups of interviewees.

Findings & Value added: The results allow us to conclude that the participants are aware that collaborative work and the use of appropriate technological resources were essential to ensure teaching and distance learning, including the evaluation process, despite mandatory confinement. Globally, the perceptions of the emergence of a new educational paradigm are confirmed, based on the massive use of technological resources, which propelled the innovation of the teaching and learning process. Nevertheless, both groups recognize that distance learning impoverishes the fundamental interpersonal dynamics in Higher Education.

Keywords: *Higher education*; *collaborative work*; *new technologies*; innovation.

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1 Introduction

In the 21st century, the processes of globalization present a whole host of issues and opportunities for the promotion of education. Giddens (p.64) [1] describes globalization as "the intensification of worldwide social relations which link distant localities in such a way that local happenings are shaped by events occurring many miles away and vice versa." Economic collapses, environmental disasters, infectious diseases, migrations and militarization show an asymmetrically globalising world, deepening social inequalities [2] making it urgent "global education policies" [3].

Although the world is economically and culturally interconnected by advancements in technologies and global transportation, formal education continues to leave little opportunity for student interaction and initiative. So, both at the local/ national and global levels, it is important to build a sustainable and inclusive education [4] that is participatory and inclusive, and encourages investigation, debate, and critical thinking, using technology as a powerful tool. Accordingly, we need a renewed educational model, capable of changing students towards active and transformative citizens [5].

In higher education, to make inclusive education possible, the use of active methodologies and new technologies has been encouraged in order to optimize the teaching and learning process [6, 7] facing resistance from a traditional education still rooted. Although there have been recent studies that, "beyond the pedagogical-didactic aspect, point out the urgency of training in new technologies in order to correspond to the motivation and skills of Millennials, their target audience in higher education courses (...) which requires a good handling of them by the teacher, fundamental to the dialogue and exchange of knowledge between teacher and student" (p.129) [7], in reality, this pedagogical teacher training, aimed at innovation and quality of practices, for a long time was not understood as a priority in most higher education institutions. However, everything changed with a global event, the COVID-19 pandemic, which also affected Portugal and the higher education institution in which our study is located. Therefore, we are interested in analysing how the pandemic situation has been influencing education and learning in Higher Education.

Thus, given this change that has occurred in Portugal since March 2020, it is important to problematize the beginning of an educational transformation that we all experience as a global society and that will continue to transform education in 2021. Given the short period of time of this change, there are still few studies published on the subject, so this is a contribution to the reflection and discussion on scientific knowledge in the area.

2 Impacts of the pandemic in Higher Education: Distance Learning

In Portugal, Higher Education undertook the "Bologna Process" in 2006, in accordance with educational principles established at a global level, valuing the logic of action-training, the involvement and cooperation of educational actors and the further humanization of scientific culture. This restructuring imposed some pedagogical and educational challenges. If, until the end of the twentieth century, higher education institutions were given the sole mission of transmitting knowledge, producing research and new knowledge, the resignification of pedagogical practices, with the Bologna commitments, implied the creation of conditions that would ensure active learning and its social utility. This meant a methodology focused on involving teachers and students, as educational actors, deepening interpersonal skills, in collaborative work, with reinforcement of research and dissemination of scientific knowledge [8].

Thus, in the second decade of the 21st century, it became evident the urgent need to rebuild teaching and learning more focused on new technologies, citizenship and

sustainability, in the context of the central issues inherent to the global and local dimensions of the social, economic and educational problems of the new millennium. This new culture of teaching and learning involved more questioning, research, reflection and innovation [9], from the construction of pedagogical alternatives centred on the student. However, the change took place with some slowness, until everything changed in the space of weeks, in 2020, due to the COVID-19 pandemic, which led in Murphy's words (p. 499) [10] to the "identification of the social construction of face-to-face classes as a security threat (...)". This situation led to the interruption of face-to-face classes [11], so it was necessary to plan distance learning, train teachers and provide computer platforms in all educational institutions, including higher education.

As highlighted in the document "Policy Brief: Education during COVID-19 and beyond" (p. 5) [12] "The COVID-19 pandemic has caused the largest disruption of education in history (...) By mid-April 2020, 94 per cent of learners worldwide were affected by the pandemic, representing 1.58 billion children and youth, from pre-primary to higher education, in 200 countries", including Portugal. With the mandatory confinement and social isolation, and the inherent suspension of teaching and non-teaching activities in person, there was a change in educational strategies and tools from pre-school to higher education, in a short period of time. Thus, the teachers of Higher Education were confronted with the urgency of the continuity of the educative practices, which went from presential to non-presential.

Among the guidelines concerning the pedagogical practices, adapted to the particular context of each institution of Higher Education [11] stand out: (i) implementation of distance learning through digital platforms used by teachers and students; (ii) training of teachers and students for the use and profitability of digital platforms in the process of teaching and learning not in person; (iii) collaborative work of planning and reflection on practices in the community; (iv) motivation for the participation and involvement of students in the activities developed and (v) application of assessment tools appropriate to the situation. These were the dimensions of analysis of our work, which we base below, according to the context in Higher Education. In this understanding, pedagogical practices must undertake a quality teaching and learning process, using effective strategies and tools, including **new technologies**. Indeed, a diversity of online resources has been implemented [13,14]. This use of digital media, according to OCDE guidelines, should focus on student motivation, participation and evaluation, so teachers had to undertake, in an intensive way, more training, collaborative work and reflection together [15]. With regard to ongoing teacher training, the basis of ongoing educational innovation in 2020, intensive ongoing training on technological means and digital platforms has been implemented in order to implement synchronous and asynchronous activities [11].

Another factor to be highlighted is the importance of interpersonal relationships in the teaching and learning process, whether in face-to-face, distance, or blended education. This is one of the current concerns about distance learning, emerging as one of the constraints of the pandemic and a priority in education policies. As explained in a UNESCO IESALC document (p. 12) [16], it is necessary to address the effects of confinement during the pandemic, and to "the loss of social contact and socialization routines that are part of the daily experience of a higher education student". Anxiety and depression, which affected many higher education students, especially the most vulnerable or those studying away from their families, have left marks that are hard to overcome. Therefore, it is essential to strengthen interpersonal relationships, since, according to the recommendations from UNESCO/ IESALC (pp. 16-17) [16] "The face-to-face experience is particularly important for vulnerable students who have often had fewer opportunities for interaction (...) that allows them to strengthen their social skills, so that, if the closure is prolonged, they will be more disadvantaged than other students". In fact, the face-to-face work, whatever the type of classes, activities or projects, is considered indispensable for the learning and development

of students and teachers, as well as for the construction of a sense of citizenship and social responsibility.

Finally, there is also the emerging problem of different opportunities in the access and use of technologie**s** by students in the 2019-2020 school year [15]. As reinforced by Mundy and Hares [17] most COVID responses in education only benefit students better-off, with greater levels of connectivity at home, that can easily access distance learning. So, there is growing concern that this would exacerbate disparities since "in technical and vocational education and training systems, vulnerabilities including low levels of digitalization and long-standing structural weaknesses, have been brought to light by the crisis" (p. 7) [12]. In addition to the loss of essential learning and the risk of abandonment of studies, there are also social and professional losses for students who do not complete their courses due to the economic crisis resulting from the pandemic.

3 Methods

This study aims to analyse how the pandemic situation has been influencing education and learning in Higher Education. Thus, with the intention of privileging the capture of the subjects' words and representations [18], a qualitative approach was privileged, more specifically a case study carried out at a IES in the district of Porto in July 2020. This is a simple case study, often used in educational studies [19]. The data collection techniques used were semi-structured interviews with teachers and opinion essays produced by students. A total of 14 participants, teachers (5) and students (9), from different courses (Engineering, Psychology, Education, Law, Management, Tourism, Communication, International Relations and Architecture), were invited to participate. In order to preserve the confidentiality and anonymity of the participants, they were respectively designated T (teachers) and S (students) and numbered.

The content analysis, starting from the literature review, fits the interpretative paradigm and was performed using NVivo software version 12 Pro. After the organization of the materials, the thematic analysis of the participants' discourse [20, 21] and the subsequent triangulation of the opinions and perceptions of teachers and students were carried out.

4 Results and Discussions

This study, in accordance with the general objective defined, sought to know the impacts, advantages and/or disadvantages, of the new model instituted through the voice of teachers and students who, since March 2020, have lived the experience of distance learning. The analysis of the materials focused on the following dimensions.

4.1 Distance Learning and Digital Platforms

Despite the abrupt integration of distance learning in IES, most teachers consider that the experience was positive, as it allowed them to resume the teaching and learning process quickly, and that it awakened their desire to know more about the pedagogical potential of digital platforms:

"It was a universe that I wanted one day to explore, and the need gave me some time to acquire knowledge and create a basis of trust for the use of digital platforms for teaching (...). It is not comparable. Before March I did not know and had never used the platforms I now master. In the past I only used Skype. Currently, I use with domain the platforms provided by the University: Teams and Zoom" (T1).

In general, the teachers interviewed value the access to the digital platforms Teams, Zoom and Moodle, the latter privileged in the realization of tests, as well as the respective training made available online by the institution, as a strategy of IES that allowed to resume the process of teaching and learning quickly:

"I tried to learn as much as possible in the training sessions made available by the university about the evaluation tests performed by Moodle. I think I still have a lot to develop in this field! From all aspects, I believe that the difficulties and challenges arising from the moments of evaluation in the online mode have made me critical of this option. I clarify this position. The online evaluation must be done in a closed system, otherwise there can be many irregularities. Except for this situation, I consider the evaluation using platforms an added value" (T2).

The number of training sessions was not previously established, it varied according to the previous knowledge and the specific needs of each teacher. Those who already mastered the new technologies and the use of digital platforms, as they did not feel much difficulty in integrating into the new teaching and learning model, attended a smaller number: "*on the whole, two training sessions on Teams, Zoom and Moodle after March 2020 (...). I'm a resourceful user although I recognize that I need to strengthen my skills in less explored areas*" (T3). In contrast, teachers who had never had contact with the digital platforms used, attended more sessions and considered that, although brief, the training gave them the basic skills to ensure distance learning:

"Before March 2020 I had participated in a workshop on digital platforms for education. After March 2020 I must have carried out 5 training sessions provided by the University"(T2).

"These trainings were fundamental to be able to realize the synchronous activities (...). The competence has changed significantly; that is, of total ignorance to be able to ensure distance teaching in approximately 1.5 weeks" (T4).

The triangulation of these data with those of the students, however, made it possible to realize that, for various reasons, including training, integration into the digital ecosystem and especially distance learning, did not occur in a uniform way for all teachers, this excerpt from an opinion essay is in this regard revealing:

"The digital platform was selected by the university, in my opinion is a VoIP platform that allows the use of different resources, which were not explored. For my part, I didn't feel any difficulty in using the selected platform, I did not need training, but in some teachers, it was notorious the lack of training" (S7).

With regard to the group of students, despite the fact that they belong to the so-called "Y" generation, that is, to the generation created in the course of the digital-computer revolution IES was concerned to correct any asymmetries in the efficient use of the platforms, and to minimize any differences in capacity in the access and use of new technologies, [10] and therefore provided access to the digital platforms and their training to all students, in order to develop the necessary skills to ensure a quality teaching and learning process. As we can see, regardless of the digital skills previously developed, students valued this effort of the institution:

"Despite all the adversities the university (...) did very well, in providing all the necessary materials, since the formation of how to use the programs for the distance classes and the programs themselves" (S2).

"So, we gradually overcame the challenges... the first was to understand what the platforms could do for us. And the help and collaboration of the tutorials and the University were important to draw attention, to the fact that some colleagues would have more difficulty using online resources, but I had no great difficulties, because I am passionate about technology" (S3).

4.2 Technical requirements for distance learning and teaching

Both teachers and students stressed that distance learning is based on a set of technical requirements, which, if not ensured, can condition the quality of the teaching and learning process, compromise the effectiveness of the model and deepen inequalities. Among them, the most mentioned were: i) the quality (coverage) of the network; ii) the potentialities of the digital platforms; iii) the possibility that both the camera and the microphone of the students may be turned off and iv) the possible inoperancies resulting from imponderables or unforeseen events of different nature.

As is recognized, the quality of network coverage is essential for distance learning, however, network coverage in our country varies from place to place. This circumstance, as one of the students underlines, besides directly interfering with the quality of this teaching model, potentiates asymmetries in the access of students to classes, deepening inequalities.

"In the second model of teaching, it is no longer so practical, because sometimes, depending on the quality of the internet connection of each one, stability is affected. // This was registered with certain teachers, where it was not possible to have a class on a regular and continuous basis, and this is a very negative fact, because sometimes, it became imperceivable the understanding of the class by the students, constituting a great difficulty and also, a great challenge, the same was registered with certain students" (S6).

The potentialities of digital platforms are another of the unavoidable requirements of distance learning, it is not by chance that students, taking into account the potentialities of the platforms used, express themselves in favour of their continuity: "*in a distance model we have to keep what all users and beneficiaries converge, things like the good computer platforms used, as well as the greater presence of summaries and documents that specify what is the object of study at that moment*" (S1).

As the excerpts below reveal, both teachers and students were unanimous in recognizing that the possibility of keeping the camera and microphone turned off constitutes a right for students, however, in both groups it is considered that this circumstance is not only harmful to teacher-student communication, and vice versa, as harmful to student motivation:

"In addition, they often have some constraints in connecting the camera. Sometimes there were students without a functional camera and microphone, and this created greater obstacles to communicate with them and became less practical to help them synchronously" (T2).

"I thought it was hard not to have the cameras on. Although I understood that for some it would be difficult and an invasion of privacy, I tried to turn my camera on to feel more present"(S3).

Finally, especially for students, some constraints arising from imponderables or unforeseen events of a different nature have also been mentioned, which can effectively compromise the proper functioning of the model:

(...) occur more unexpectedly on digital platforms since simple events such as solar storms, absence of electricity, or even an unexpected end of the data package hired, can limit absolutely all the work in progress, thus, to the weakest part, the student, he can only count on the delicacy, sensitivity and common sense of the respective teacher, something that does not always happen" (S1).

4.3 Difficulties of teachers and students

The analysis allows us to affirm that distance learning had a set of impacts, perceived by both groups of participants as difficulties, namely: the difficulty of concentration and apprehension and the difficulty of attention. The following excerpts are very informative:

"Compared to the face-to-face classes (and possibly due to the fact that more motivating mechanisms were not used) I felt some difficulties in staying focused and in absorbing the transmitted themes" (S2).

"(...) regarding attention I had to develop strategies such as warning relatives that I would be in class, looking for an isolated corner not to find distractions, the perfect excuse to escape that extra effort that was needed to accompany the teachers' explanations" (S3).

The opinions in this regard were not, however, consensual. One of the professors contradicted the previous opinions, thus configuring what in grounded analysis is called "negative case" (pp. 273-285) [22].

"In the online version I think the concentration of students has even increased. In fact, by insisting on active and participative pedagogical practices the students became more attentive and participative" (T5).

Among the difficulties identified by both teachers and students, the decrease in motivation and the decrease in student participation, which were identified as two of the main changes induced by the distance learning model, are also noteworthy:

"In fact, due to the health crisis, from March to July there was a greater complexity in producing motivation for the new education system" (S5)

"In the period from October to March a great part of the students interacted in the classes, participated and showed a great interest and connectivity with the classes and teachers, with the change in the format of the classes the students lost the will to interact because it was a new scenario, thus diminishing motivation, including mine (...). The main difficulties and challenges, that I observed in me and in other colleagues, the willingness to interact in class, not to be distracted and in some classes the time to take the tests or even the difficulty in learning the subject" (S8).

"In distance learning the participation of students and collaborative work, configured a challenge for teachers" (T3).

"Making a synchronous class dynamic is a bigger challenge than the face-to-face class. First because the students were not predisposed to turn on the camera (...) Once this constraint was overcome (and only 60%), the challenge of participation arose" (T1).

According to the students, this decrease in motivation and student participation generated by distance learning, was due to a set of material factors: such as the dependence on technical resources and the private context in which study / work tasks take place, identified as enhancers of distracting activities in the course of classes (synchronous and asynchronous):

"(...) for example, it is very complicated to maintain the same performance when the classes and family life are together, there is no separation of places, the willingness to have classes decreases, mainly because there are greater distractions and lack of human contact" (E8).

But also, to the human factor, more specifically to the lack of formation of some teachers, (already mentioned) and to the absence of more diversified active strategies, today an unavoidable recommendation for teaching in general, and for distance learning in particular:

"(...) the lack of preparation of classes had as consequence, the lack of motivation and the difficulty in understanding and then in the application of the scarce knowledge transmitted" (S7).

"(...) other teachers could not achieve with the new technological means a learning that would motivate all students, thus making it difficult to capture new knowledge. Whether for the long hours of classes, or for the archaic system (...), for the new platforms implemented it is essential to integrate more diversified active strategies that can capture the students in a positive way (...) contrary to the extensive theoretical classes only of exposure, which are summarized in a loss" (S5).

These students now know from their own experience that distance learning to be effective from a pedagogical point of view, requires the replacement of traditional expositive methodologies by more active ones.

"In this modality of distance learning, active and participative classes should be given, with some activities to do during the class, so that the students stay more attentive, collaborative and participative, because if there are distractions in person (e.g. cell phone), behind a computer the distractions are even greater" (S9).

An example of good distance learning practices, based on active methodologies of collaborative work with groups of students and the teacher, on a digital platform, is described in the following text:

"After March 2020, regarding the theoretical component, there was a need to reduce the duration of teaching moments and practical activities needed to be adjusted to distance learning and had to be reinforced with asynchronous activities. Small work groups were also created to be carried out collaboratively between students and with the teacher (considering the resources made available by the platforms) for monitoring by the teacher of the work to be carried out" (T4).

This professor goes further in his analysis, placing the evaluation of the student (self and hetero) in the process of teaching and distance learning, as recommended by the United Nations [12] and UNESCO [16] when he states that "*the work developed in small groups (collaborative) has allowed a more personalized relationship with students. Tasks where the student was asked to play an active role (collaborative development of tasks or self or hetero evaluations*) "(T4)

Despite the fact that the majority of teachers participating in this study sought to better integrate into distance learning, through the introduction or deepening of active teaching and learning methodologies, some teachers admitted that little has changed in their practices:

"Everything is the same (...) blackboard, which became a digital whiteboard as a possibility of manual writing and making available to students the recordings of all the sessions and handwritten pictures produced, for asynchronous study (...). In fact, the transposition to non-presential was done with a minimum of changes in the modus operandi due to the digital whiteboard" (T3).

4.4 Advantages and disadvantages of Distance Learning

The participants in the study recognize, however, that distance learning also has some virtues or advantages. The following have been identified in the group of teachers:
- generates greater availability to establish bilateral interactions;
- creates conditions for establishing a more personalized relationship with students;
- allows the reduction of expenses and of the inconvenience of travel;
- promotes greater student involvement/responsibility in the teaching learning process;
- facilitates collaborative work, whether between students, between teachers or between teachers and students.
  In the group of students, many others have been identified:
- allows more individualized work/teaching;
- promotes greater availability of time for study and preparation of work;
- saves time and money;
- It allows more classes to be attended (to student workers);
- allows courses to be attended (by students living far from the institution);
- allows attending classes from home (not consensual);
- promotes self-management of class attendance time, review and clarification of doubts.

In these lists of advantages, we would like to draw attention to two things, first, the existence of some coincidence between the advantages identified by the two groups; second, the recognition by teachers of "greater involvement of students in their learning process" and "self-management of time", recognized by students, for being considered essential conditions in the *apprenance* processes, of the predisposition to learn that Carré speaks of [6].

As usual in these cases, some disadvantages were also identified among the teachers (1 case): i) the decrease in the quality of the group work - justified by the fact that the result will translate more the sum of the parts than a whole; ii) the decrease, or even cancellation, of the informal conversation with the students - a disadvantage reiterated by seven students; iii) the increase in the number of hours consumed in the preparation and after classes and iv) the lack of perception of the students' non-verbal communication.

Among the disadvantages of distance learning identified, it is worth mentioning the fact that, due to the right of privacy mentioned above, it can hinder, or even prevent, the perception of students' non-verbal communication, as this excerpt of a teacher's speech underlines, it is an essential condition for the teacher to perceive individual and group interest and stimulate students' attention: "*losses are associated with the difficulty in perceiving students' non-verbal communication, which in face-to-face classes contributes to the notion of the attention and interest we are getting from students*" (T1). This study allows us to affirm that this lack of communication is closely articulated with the difficulty, or deficit, of students' attention. This is one of the greatest challenges facing teachers today in the various educational systems.

Students, for their part, have identified the following disadvantages: i) the impersonal nature of the classes; ii) the difficulty of interaction between peers and between students and teachers; iii) the absence of separation between private and academic life, identified above as generating disinterest in the classes; iv) the absence of interpersonal relationships outside the context of the class; v) the lack of adequacy of some teachers for distance learning; vi) potential imprecision in the evaluations; vii) the reduction of feedback on the work done (formative evaluation); viii) the excess of work requested by certain teachers (sometimes without previous preparation).

In this context, we would like to draw attention to the fact that both teachers and students consider distance learning to contribute to "overwork". And, on the other hand, to question the aforementioned "decrease in feedback on the work produced", as we know this situation is not an exclusive characteristic of this model of teaching and learning, the absence of formative evaluation also occurs, with some frequency, in the face-to-face teaching system.

4.5 Face-to-face or distance learning

This study also allows us to affirm that, despite valuing the distance learning experience in the 2019-20 academic year, students clearly prefer face-to-face teaching, the following excerpts constitute evidence of this option*: "face-to-face classes are actually more stimulating, after all, the academic environment is, has always been and always will be an inspiring environment, essential to obtain a good collaborative work "*(S1);" (...) *face-to-face teaching is relatively different from distance learning, the dynamics are undoubtedly different, // in the first (face-to-face) model of teaching, it is much more practical to ask a question, and easier to follow the class. "*(S3). Some students justify their preference based on the quality of face-to-face teaching at the institution they attend*: "(...) I believe that the teaching and learning instituted at the university, is based on active methods totally adapted to classroom classes. Thus, and in this sense, participation in face-to-face teaching is simpler and more motivating "*(S9). Others, based on the assumptions *that "the entire teaching and learning process is prepared to be face-to-face" and that "the university is a place for the*

*training of citizens and not only for academic training"(*S7), argue that the university, as a space for the training of citizens, necessarily requires face-to-face education.

Some teachers and students, however, recognizing some potentialities of distance learning, do not reject any of the models and support the implementation of a blended system: *"I believe that there are advantages in distance learning, in small and medium-sized classes and with more solid pedagogical practices. That is why I advocate a hybrid system and not entirely online "(*T1);*" I believe that the use of digital platforms that can be complemented with face-to-face teaching, namely Moodle, should be maintained in the next academic year 2020-2021 (…), Teams and Zoom, so that teachers could share study material with students"* (S6).

In short, after the experience lived in the 2019-20 academic year, it appears that teachers and students participating in this study, prefer either face-to-face or blended teaching, thus confirming the importance of interpersonal relationships in the pedagogical relationship.

5 Conclusion

The pandemic crisis of COVID-19 forced our societies to integrate into the digital ecosystem, so higher education institutions were forced to resort to distance education, one of the most remarkable ongoing experiences in education, on a global scale. The replacement, as an emergency, of the face-to-face teaching model by the distance learning teaching model, forced teachers and students to a sudden change in practices and resources. In this framework, fulfilling the objective of analysing how the pandemic situation has been influencing education and learning in Higher Education, this study sought to know the impacts, advantages and/or disadvantages, of the new model established, through the opinion of teachers and students.

Overall, the experience is considered positive, by the combination of training, technological resources and collaborative work, in the continuity of teaching and distance learning, after the interruption of classroom teaching. In this sense, the awareness of the emergence of a new educational paradigm is visible, based on the massive use of technological resources, which led to the innovation of the teaching and learning process. However, although most students recognize that some teachers have tried to respond positively to the demands posed by distance learning, they also consider that the decline in motivation and participation seen in this model was in part due to the lack of preparation/training in the use of computer platforms and the pedagogical and methodological options of some teachers.

As an advantage of distance learning, teachers highlight greater involvement and responsibility of students in their learning process. Both teachers and students report more individualized work and savings in time and money. In the disadvantages all indicate overwork and teachers add the decrease of attention and especially the lack of perception of students' non-verbal communication. Research shows that distance learning has not contributed to overcoming the difficulties of students' attention, nor to stimulating an ecosystem of attention, which is by nature face-to-face.

After the analysis of this experience of distance learning in Higher Education, a question arises: what is the privileged teaching model for both teachers and students for the future? In our view, the full answer to this question is still premature. However, this study allows us to state that, although some advantages to distance learning have been recognized, the majority of students expressed a clear preference for the face-to-face education system, justified with individual and social arguments. In summary, taking into account the results of this study, the team considers that the purpose of the research has been achieved, but also recognizes that they open a set of clues to be developed in future studies.

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