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Equity of Pedagogical Comfort and Distance Learning in Times of Crisis

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Abstract: The objective of this research is to take stock of the proximity or remoteness of practices for the implementation of distance learning (DL) with the requirements of equity educational comfort. This is an exploratory study on the equity of educational comfort that aims to understand the problem of implementing distance learning in the COVID-19 pandemic period in Morocco. Thus, four dimensions were examined: 1) quantity, quality of teachers, and the student-staff ratio at the Faculty of Science and Technology of Settat (FSTS), 2) the pedagogical approaches pursued, 3) the administrative and technical staff, and 4) the material and financial resources made available to the actors. These dimensions have served as an anchor to identify certain characteristics of the implementation of distance learning in relation to the requirements of equity of pedagogical comfort. The results reveal the existence of discrimination, mainly in the form of unequal access for students to the computer tools and materials and the internet connection essential for distance learning. This observation led us to make various recommendations toward an institution that was able to readjust its fairness policies to restore social justice by equipping students from a weakened socio-economic background with means that make it possible to meet the requirements of equity of pedagogical comfort.

Keywords: crisis, distance learning, equity of pedagogical comfort.

危机时期的教育舒适度和远程学习的公平性

摘要：本研究的目的是根据公平教育舒适度的要求，评估实施远程学习（DL）的实践的远近程度。这是一项关于教育舒适度公平性的探索性研究，旨在了解摩洛哥在新冠肺炎大流行期间实施远程学习的问题。因此，我们对四个维度进行了审查：1)塞塔特科学技术学院(FSTS)的教师数量、质量和师生比例，2)所采用的教学方法，3)行政和技术人员，以及4）为行动者提供的物质和财政资源。这些维度已成为确定远程学习实施与教学舒适性公平要求相关的某些特征的锚点。结果揭示了歧视的存在，主要表现在学生无法平等地获得远程学习所必需的计算机工具和材料以及互联网连接。这一观察结果使我们对一个能够重新调整其公平政策以恢复社会正义的机构提出了各种建议，为社会经济背景较弱的学生提供满足教学舒适公

平要求的手段。

关键词：危机，远程教育，教学舒适的公平。

1. Introduction

The COVID-19 pandemic has caused the biggest disruption to educational and training systems in history. It has forced the global academic community to explore new approaches to training and learning, including distance learning (DL).

This method of training, which has changed rapidly, has been used exponentially in all training establishments. However, the sudden transition to this type of learning has changed the system both technically and pedagogically. There are large inequalities, indeed an inequity. Both equality and equity are designed to promote social, academic, political and economic justice [2]. Therefore, to analyze the issue of inequality in distance learning, we question the concept of equity by drawing on pedagogical comfort equity via an analysis of the measures taken to promote equity and the challenges at the heart of the distance learning system. The analysis of the concept of pedagogical comfort equity is justified by the introduction of a new mode of training in a context where the development of the quality of higher education is hindered by massification and the deficiency of the rate of supervision and infrastructure.

In this context, it would be legitimate to examine the quality of a new teaching method resulting from the COVID-19 pandemic. Of course, this quality depends upon external and internal factors. We will analyze internal factors, including those that the university can control. Using our analytical framework, we are interested in allocating resources for distance learning and learning opportunities for students.

We first outline the social and economic procedures for equity as well as the foundations of distance learning as an activity that covers separation in space and time of teaching and learning activities. Second, we describe the methodology that was adopted and used for the various findings that were analyzed and interpreted.

2. Equity of Pedagogical Comfort or Equity of Treatment

According to the social approach, the concept of equity entails not only equality of rights but also the idea of “social justice”, “just proportion” and “just appreciation” of what is due to individuals or institutions [3]. According to the economic approach [4]-[5], equity is defined as a result of a redistribution of resources and burdens related to the educational system to attain an equal distribution of educational resources, learning opportunities, and educational outcomes among all individuals in school, regardless of their profile.

According to [1], equity is defined as “the distribution of educational opportunities and facilities between different social groups, between geographical areas and rural and urban populations on the one hand, and the distribution of the burdens and benefits of education on the other”. They distinguish between five types of equity: socioeconomic equity of access, equity of educational comfort, equity of production, educational equity and external equity, or equity of professional, social, and personal accomplishments. The following table summarizes the typologies of actions illustrated with examples:

Table 1 Different types of equity [1]

No.	Equity	Examples
	From the order of social ethics	The degree of opportunity to access various benefits of the educational system
1	Socioeconomic equity of access	The number of registrants by gender, origin, etc.
2	Pedagogical comfort equity	The distribution of students in institutions of different pedagogical comfort (quantitatively and qualitatively different resources) according to gender and origin.
3	Production equity	At equal skill levels at the beginning, the number of diplomas differs or not according to gender, and origin
4	Pedagogical equity	The difference in pre-test between the lower and upper thirds of a cohort decreases or increases over time
5	External or achievement equities	Professional: with equivalent qualifications, opportunities for employment are equal or different. Social: with equivalent diplomas, the chances of receiving social benefits are equivalent or different. Personal: With the same level of education, the chances of developing

- *Socioeconomic equity of access* is concerned about whether individuals or groups in society have an equal opportunity to access a specific education system. According to [1], it is measured by the enrollment rates of individuals and different groups in society in existing programs, sub-systems, or systems.
- *Equity of pedagogical comfort:* complementing equity of socio-economic access. Equity of pedagogical comfort measures the extent to which disadvantaged individuals or groups can benefit from educational opportunities equivalent to those available to advantaged individuals or groups. According to [1], it should be measured by indicators relating mainly to the material and financial resources used, the administrative staff and the teachers in service, to the schools and to the different categories of pupils they accommodate.
- *Production equity or equity in products:* As stated in [1], it is mainly a matter of measuring and comparing the nature of the gaps between the strong and the weak throughout the studies.
- *Pedagogical equity:* The importance of pedagogical equity was highlighted in [6]-[7], which is defined as the reduction of the gap between the strong and the weak in terms of academic performance between the beginning and the end of the educational process.
- *External equity or equity of professional, social, and personal fulfilment* concerns the chances of professional fulfillment at the end of training. Equity of achievement or socio-economic and socio-professional fulfillment also involves asking whether the chances of professional fulfillment are equivalent for different groups in society, for the same level of training, for the same length of training, and according to the institutions attended.

Recall that we are interested in educational comfort equity regarding DL, we will analyze internal factors including those over which the university can exercise control. “Even if at the beginning and at the end, individual inequalities in abilities or skills exist and remain” [8]. It is recommended that the necessary regulation be made by providing vulnerable students with the necessary resources to overcome their shortcomings. Equal treatment measures should benefit the most vulnerable without aggravating the situation between the weakest and the strongest [3], [9].

3. Distance Learning

3.1. Some Identification Elements

The proliferation of terms to designate it is constantly changing, either because of fashion or because of technological innovations to deliver a DL. Specialists in the field are at a loss [10]. A consensus on the definition of DL and its modalities has not yet been established. The fundamental distinction is made from face- to-face teaching in terms of physical and temporal distance. Indeed, distance learning is improved capabilities in knowledge and/or behaviors as a result of mediated experiences that are constrained by time and/or distance such that the learner does not share the same situation with what is being learned [11]. It “allows an individual to learn relatively independently, with minimal time and travel constraints, and with remote support from resource persons” [12]. According to [13], another element is essential to any scientific definition of DL in addition to physical and temporal distance: the technology used to mediate communication between teacher and learner. “Distance education is defined as a method of teaching where the student and teacher are physically separated. It can utilize a combination of technologies, including correspondence, audio, video, computers, and the Internet” [14].

Some definitions combine the three defining elements of DL, namely physical distance, temporal distance, and mediation by technology; similarly, DL is defined as “education that uses one or more technologies to deliver instruction to students who are separated from the instructor and to support regular and substantive interaction between the students and the instructor synchronously or asynchronously” [15].

3.2. The Foundations of Distance Learning

Among the most cited founding theories of DL are those of Moore, Anderson and Garrison and Akyol [16]. They are considered the most credible [17]-[19].

3.2.1. Moore: Transactional Theory

Transactional distance is a theory on which research on DL is based. It is considered to be a very far-reaching theory as it highlights the importance of psychological and communicative distance in DL. There are three basic concepts to explain it:

- Autonomy is the degree of the engagement of the learner in a learning process. The greater the transactional distance, the greater the need for students to be autonomous.
- Structure refers to the different planned elements of a course: content, activities, and assessments. “As structure increases, so does transactional distance”; [20].
- Dialog is the interaction. According to [20], dialog is a form of personal interaction. It usually occurs after course planning and consists of a wide variety of exchanges (written, audio, audiovisual or electronic) with teachers or with other learners. “As dialog increases, transactional distance decreases” [20]. Again, as dialog increases and structure decreases, transactional distance decreases [21].

3.2.2. Anderson: Independent Learning

For Anderson [22], the external factors of learning

include the nature of the material to be integrated, the place of learning, and the timing of learning. Internal factors include cognitive, metacognitive, and motivational aspects. The harmonization of all these factors can be explained with the help of three interrelated notions in distance learning:

- Self-regulation, i.e, control of the task to be accomplished. This first notion allows us to specify the proposal of objectives, the management of available resources as well as the organizational support, such as the presence of teachers or other actors. Self-regulated learning should be defined as a concept that determines the functioning and success of distance learning and should thus be the explanatory basis for the entire field of research and practice of distance learning [22].
- Self-direction or cognitive responsibility. It enables cognitive and metacognitive processes to be carried out. It refers to the student's percept [22]. Its two main dimensions are independent learning and collaborative learning. The first refers to the ability to develop a personal plan for one's educational activities, to find the necessary resources, and to be able to carry them out with very little support. The second refers to teamwork where there is a sharing of effort and responsibility with other students.
- Motivation is described as the attitude that enables the learning process to begin and complete all its phases.

3.2.3. Garrison and Akyol: The Learning Community

The theoretical model of the learning community results in a rich and meaningful educational experience. It breaks down the presence into three categories:

- *Teaching presence:* Teaching presence refers to the learner's ability to project themselves socially and emotionally into a virtual space and to see other members of the learning community as real [23]-[24]. "The teaching presence... is the key element in integrating social and cognitive presence during the inquiry process. Simply stated, teaching presence is what the participants (usually the instructor) do to create a purposeful and productive community of inquiry" [25].
- *Cognitive presence:* It is the learner's ability to construct and corroborate meaning in the context of the learning community [23]-[24]. "We define cognitive presence as the extent to which learners were able to construct and confirm meaning through sustained reflection and discourse in a critical community of inquiry" [25].
- *Social presence:* Social presence refers to the learner's ability to project him/herself socially and emotionally into a virtual space and to see other members of the learning community as real [22]-[23] of participants to identify with the group or course of study, communicate purposefully in a trusting environment, and develop personal and affective relationships progressively by way of projecting their individual personalities. Social presence should be developed naturally and progressively through the purposeful and collaborative inquiry process [24].

Garrison and Akyol defend the idea of promoting DL-friendly pedagogies by pointing out that "technology must change pedagogical practices and not simply support traditional practices; these changes require adjustments on the part of both teachers and learners" [24].

4. Methodology

Given the different levels of equity, it is impossible to analyze all levels. For this reason, we have taken the gamble of analyzing equity from an internal perspective by focusing mainly on the equity of pedagogical comfort. We use the concept of inequality to indicate differences for treating students. The social space considered here is the Faculty of Science and Technology, Hassan I University of Settat, which will be the unit of analysis. These inequalities of treatment will be assessed on the basis of the following dimensions: teaching staff, material and financial resources, and administrative and technical staff. The discussion of these dimensions with theoretical insights into equity will thus make it possible to measure the closeness or remoteness of distance learning to the requirements of equity in pedagogical comfort.

Our research was based on a combination of approaches (teachers' accounts of practice, student questionnaires, literature review), which are rooted in different epistemological and theoretical frameworks but share the aim of exploring experience from different perspectives [25]. The data were analyzed according to the following model inspired by the ideas of [1]:

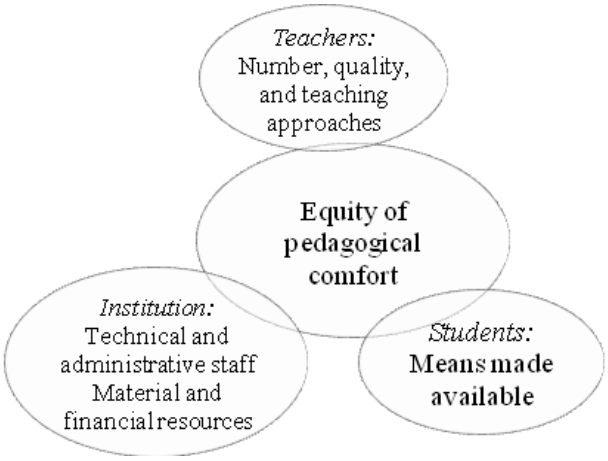

Fig. 1 Dimensions of analysis of the equity of pedagogical comfort in the context of distance learning

The narrative of practices is a narrative method used in social sciences, evaluation, and education sciences to document and understand exemplary or innovative practices [26]. As highlighted in [36], the narrative gives access to a discourse in which practical, experiential, and professional knowledge is intertwined

and updated as the actions unfold. In the context of our study, the objective is to understand the practices of teacher researchers in the ADF mode. Thus, the preferred data collection and processing methods are based on individual semi-directed narrative interviews with seven teacher researchers from different specialties. These interviews focused on their ADT practices. More specifically, the following questions were addressed in the interviews:

1. Your reaction to the announcement of containment and the adoption of distance learning.
2. Your response to your institution's request to ensure pedagogical continuity at a distance: what pedagogical approach, material means at your disposal, training on learning platforms, communication with the administration, etc.);
3. Difficulties encountered (digital training, material resources, teaching methods, and evaluation);
4. Supported by your institution or left to your own devices.
5. Consequences of this mode of teaching on students' learning.
6. Changes in your practice since the beginning of the lock-in;
7. What do you get out of it today?
8. And any other aspect that you consider important.

This data collection aimed to identify the conditions for implementing ADF in times of crisis in relation to pedagogical comfort equity. The statements made in these narratives have been integrated directly into the discussion and the interpretation of results.

The analysis of the teachers' narratives of practice was complemented by a literature review and questionnaires administered to 49 students distributed as follows: 23 students enrolled in a Master's degree (46.9%), 4 students enrolled in a Bachelor's degree (8.2%) and 22 students enrolled in a DEUG (44.9%). 69.4% of the students surveyed were pursuing technical studies and 30.6% were pursuing scientific studies.

An analysis of secondary sources of information, mainly reports from the Higher Council for Education, Training and Scientific Research, provided a rich basis for our study: Higher Education Reform, Strategic Perspective; Higher Education: Efficiency and Challenges of Open Access Institutions [27] and Initial Vocational Training, Keys to Refounding.

5. Interpretation and Discussion of the Main Results

Are the qualifications of the teaching staff sufficient to meet the requirements of equity of educational comfort? According to UNESCO, quality teachers are essential for sustainable global development in that they are the most influential and powerful catalyst for equity [28]. According to [1], the quality and quantity of teachers are generally perceived as important factors in ensuring educational equity because of their impact on student achievement. This dimension of equity, which is under the control of the training system, directed us to statistics on the number and quality of teachers in controlled access institutions, their access to and control of digital resources, and the different pedagogical approaches adopted, to adequately respond to the desired quality of training concerning the requirement of equity of pedagogical comfort in the context of ADT. Institutions with regulated access mobilize teacher-researchers whose numbers are constantly changing. This progression is slow compared to the increase in the number of students.

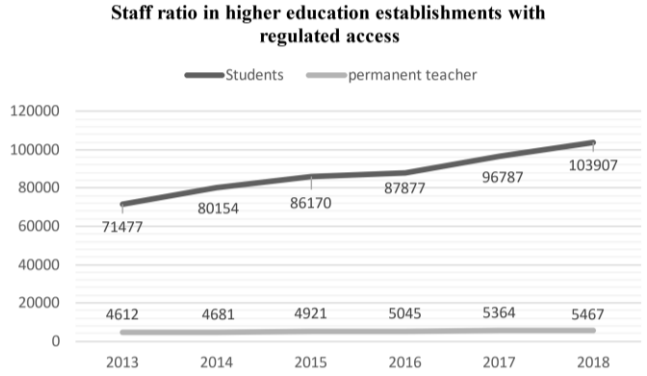

Fig. 2 Staff ratio in higher education establishments with regulated access (Department of Higher Education)

The increase in student numbers from 2001 to 2018 coupled with a staffing level that is not keeping pace has meant that the staffing ratio in regulated access has risen from 7 students per permanent teacher-researcher to 19 students in 2018. Despite the increase in the number of students, the latter benefit from sufficient supervision, and the supervision rate maintained in the institutions with regulated access remains reasonable and reaches international standards (19 students per teacher in France). Concerning the distribution of the 5,467 permanent teachers according to grade, almost half of the teaching staff are of the highest grade (Professeurs d'Enseignement Supérieur), which means a highly educated and experienced teaching staff (INE-CSEFRS 2020 Report). According to the statistics (2016-2017) of the official website of FSTS, the number of permanent teachers is 164 more than half are PES (90), PH (37), PA (34) and P2C (3). Under these conditions, the effective implementation of pedagogical comfort equity will not be problematic in a distance learning mode where a teacher is in front of a limited number of students and the student is in front of a quality teacher.

The process of implementing ADF in a technical and scientific institution has gone smoothly. However, as pointed out in [29], "distance learning requires a minimum of technical and cognitive mastery, and this process requires the conjunction of several elements: access to the tools, the willingness and ability of the user to integrate them". In this respect, the teachers did not find it very difficult to use the Moodle platform or the Zoom application made available to them or to teach their courses from the virtual classrooms dedicated to this mode of teaching: "We were able to

adapt without too much difficulty"; others showed a strong capacity for adaptability: "Certainly at the beginning, difficulties with the digital system were overcome and now it seems much more affordable"; Some teachers stated that "the period of adopting the distance learning mode allowed me, at the beginning, to explore the tools and approaches of such a mode and then to try to improve my practices (without any great theoretical basis), by adopting a material, which I consider efficient (which is the graphic tablet), and by trying to make the digital supports of the contents to be taught available to the students in advance".

5.1. Teaching Practices

Forced DL has destabilized teaching practices. In some articles and in a concern for efficiency combined with a lack of digital competence, most teachers have opted for lectures. The practices inherited from the classroom tend to be perpetuated through distance learning [30]. They add that the forms of pedagogical continuity of the health crisis seem to have been implemented mainly from a diffusional perspective, focusing on access to content [31]. As far as technical and scientific education is concerned, the nature of the content does not lend itself to a lecture. For most teachers, the course was conducted interactively, as evidenced by the student opinions (Figure 3):

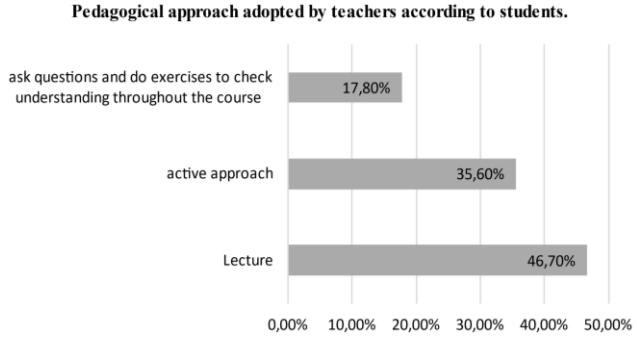

Fig. 3 Pedagogical approach adopted by teachers according to students

"From a didactic point of view, for a mathematics course, I believe that the use of a whiteboard (using the graphics tablet) on Zoom (or sometimes on google-meet) has simplified my task of teaching at a distance (moreover, most students preferred the use of a whiteboard course to a presentation with slides).

This becomes more interesting during the TD sessions where the "construction" of solutions is more important than the solution". The animation of these activities as well as their evaluation requires strong interaction from the students for regulation constraints or even remediation to practice a differentiated pedagogy to correct the inequalities of students' learning.

Such evaluation and regulation were possible in some contexts, while in others it was difficult; "Pedagogically, the lack of feedback from the students (in general) and the difficulty of managing the group (virtual classroom) were a big obstacle to evaluating the success of a distance learning session"; "My course is usually interactive; I always give the students the floor. From my point of view, this mode of teaching seems to be beneficial for the students, but it implies an extra effort on my part because when I ask questions, I only have the list and I say a name taken at random; this allows me to evaluate if these students follow the course and if they have understood. Interested students simultaneously interact"; "The content was organized between activities and be carried out in scheduled sessions and others to be done by the students independently. The interaction of the students was very satisfying to practice using a pedagogy of differentiation".

Differentiation requires providing each student with tailored support. In face-to-face mode, the teacher is an expert in learning; he or she is someone who takes information from the classroom, who observes, adapts, regulates, who uses tools but also modifies them little by little, and who is capable of creating mutual aid, interaction, cooperation, and therefore of eliciting the common [37]. In remote mode and in the absence of a living link, differentiation pedagogy supposes to weave a link of trust between the teacher and the student to secure the latter to disclose his learning deficiencies; Ensuring this accompaniment and weaving this link of trust proves to be possible thanks to the limited number of students on the one hand and the active pedagogy practiced on the other hand. This will make it possible to identify students with learning difficulties and consequently subject them to the same learning and assessment conditions. Our findings suggest that teaching practices within the FSTS will be able to contribute effectively to supporting student learning and thus meet the requirements of pedagogical comfort equity.

5.1.1. The Learning Process

The issue of learning has become more acute with ADF. From the students' perspective, the change in the usual teaching environment has presented them with some difficulties. These are mainly due to the break in the living relationship with the teachers: "The absence of a face-to-face session allowed us to ask questions at any time during the session; the time is reduced to 45 minutes instead of one hour, which has a greater impact on the time for questions at the end of the session". In addition, the closure of the halls of residence and libraries deprived some students of adequate space to study: "The architectural constraints of housing, especially for the most disadvantaged populations, have had a major impact on the possibility of taking advantage of distance learning. Living in insalubrious housing or in a restricted space does not allow large families to guarantee, in the context of confinement, the conditions for the learner to concentrate in an adequate environment, thus contributing to the difficulty of following courses, whether they are

broadcast by the Internet or by television channels" [31]. Also, the influence of the family context in its socio- and cultural dimensions constituted a learning barrier. The "digital divide" materialized by the inequalities of access to the internet and the unavailability of computer tools deprived students from disadvantaged socio-economic spaces to pursue their learning. Our survey shows that for 28 (57.1%) of the students, the overall parental income is less than 5000 dh ($50). With such an income, there are at least 6 (12.2%) students out of 49 who have a shared computer, 6 (12.2%) students who have no computers, 22 (44.9%) students who have a poor internet connection, and 6 (12.2%) students who have no internet access due to lack of infrastructure.

In such a context, teachers were overwhelmed by the social injustice that excluded some students who lacked resources. The discomfort felt by most of the teachers concerning this situation deserves to be emphasized in contrast to others who state that they do not do social work. Faced with such a situation, the students testify that most teachers were committed to proposing learning solutions by making available to all students the necessary materials (courses, TD, practical work, books, recordings) for the continuation of the courses.

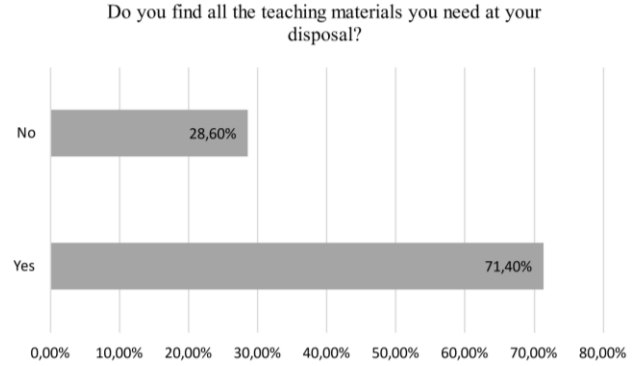

Fig. 4 Opinion of students concerning the teaching materials made available to them

Distance learning has a strong impact on the learning capacity of many students. For this reason, the supervisory authority reduced the session time by 15 min/h. The workload was lower than normal.

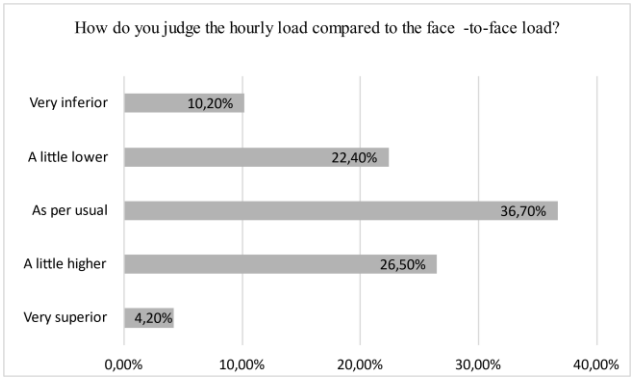

Fig. 5 The hourly load during distance learning

Our survey reveals that 41 students consider the quality of the theoretical courses average to good. For the tutorials, more than two-thirds of the students considered that the quality was average or poor. For the practical work, 32 students stated that it was of poor quality.

Concerning the evaluations, many students expressed their dissatisfaction with the context of the examinations. Indeed, "We are evaluated at a distance and it was a real ordeal, everything was under a timer, so there was a lot of stress and it was not' fair at all, in the classroom we take our copy and work as we want while managing our time in our own way, but with the timer there was no personal freedom.

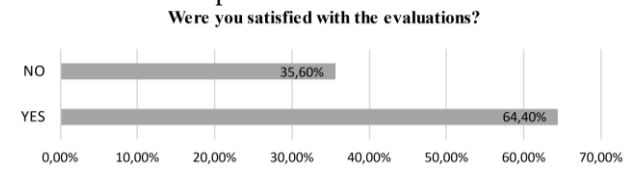

Fig. 6 Satisfaction of students with the progress of the evaluations

Therefore, it is clear that the effective implementation of socio-economic equity of educational comfort in a distance learning mode requires equipping students from disadvantaged social backgrounds with the resources inherent in this type of education.

5.2. Administrative and Technical Staff

While the role of teachers is decisive in the design and implementation of distance learning strategies, it is also important to mention the support and involvement of administrative and technical staff in the pedagogical, administrative, and technical implementation of distance learning. The digital learning environment (DLE) consists of the applications and software supporting teaching, training, and learning activities. Learning platforms and interfaces enable course management, data, resource, and information exchange between the trainer or supervisor, and learners, both collectively and individually. We assume that a better management of these platforms could reduce the dysfunctions that hamper the learning process and especially the resolution of technical problems encountered by teachers and learners.

The health crisis had a strong impact on the work of technical and administrative staff, who were faced with an increased workload that increased work pressure and stress levels. For many teachers, the support of the technical staff was less present and evident from a distance, if not completely absent: "We feel that we were left to our own devices to ensure our courses and help our students overcome this crisis in the best conditions". The lack of technical assistance led the administrative staff to ask the teachers of the computer science department to provide training to the teachers. The lack of technical assistance led the administrative staff to ask the teachers of the computer science department to provide training to the teachers, "the vice-dean in charge of pedagogy at the FSTS also provided me with valuable assistance"; "in general, the

institution's support was weak"; "despite all the efforts made by our institution, we had the feeling that we were left to our own devices throughout the lockdown".

5.3. Do the Financial and Material Resources Made Available to the University Guarantee a Democratization of Student Success?

Working conditions are an important determinant of a more general conception of justice underlying the socio-economic equity of educational comfort [1]. According to the GEM report [38], higher education is free in Morocco, both for nationals and foreigners. Subsidies are given to 20% of students from disadvantaged backgrounds. The state is the main source of funding for universities. The subsidy granted to each university by the State depends largely on the number of students, the fields, and the type of training provided. Universities also mobilize their own funds, which can represent up to 40% of their overall budget, through continuing education, research recognition, or international cooperation projects. The vast majority of Moroccan students receive scholarships from the government. These grants are awarded on the basis of social and educational merit. Accommodation and meals at universities are subsidized by the state.

The student pays a small fee, and the fees have been frozen for several years... Universities also offer their students scholarships to study abroad (tably in the framework of European programs (Tempus, Erasmus Mundus and Erasmus+) [38].

The health crisis has put a strain on public authorities and their ability to ensure educational continuity through ADF. Distance learning has entailed significant costs to ensure pedagogical continuity; the costs of designing content, hosting online platforms, purchasing hardware, acquiring connection equipment, electricity, and internet. In view of these costs, and despite the consequences of the crisis on economic growth, the Education, Vocational Training, and Higher Education sector saw an increase in budgetary allocations of 32% between 2017 and 2020. The finance bill 2021 proposes a budget of nearly 72 billion DH.

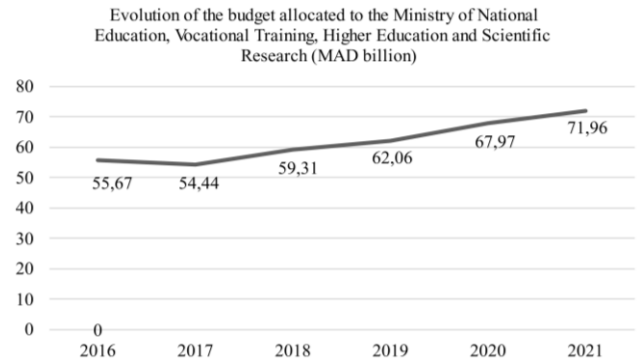

Fig. 7 Evolution of the budget allocated to the Ministry of National Education, Vocational Training, Higher Education, and Scientific Research (Ministry of Economy and Finance and Administration Reform)

As soon as the COVID-19 pandemic began in March 2020, the Department of Higher Education and Scientific Research put in place a series of measures:

- Provision of more than 110,000 digital resources to students in the form of digital documents (PDF, PPT, WORD, etc.) as well as video and audio recordings.
- Support for teachers in the use of remote platforms to strengthen interactivity with students (Moodle, Google classroom, Microsoft Teams, Google Meet, Zoom, etc.)
- Recourse to the Société National de Radio diffusion et de Television (SNRT) for the broadcasting of courses on the ARRYADIA channel within the framework of equity Establishment of a digital platform allowing students access to university courses broadcast on the Arryadia channel.
- Use of regional radio stations to broadcast courses Establishment of the possibility of access to digital resources from several foreign partner countries (Great Britain, France, Switzerland) within the framework of bilateral partnerships.
- Partnership with telecom operators for free access to digital educational resources hosted on institutional sites and on several servers installed on the national territory. VOLUME.3 Activity Report of the Ministry, September 2021 Department of Higher Education and Scientific Research.

Despite these budgetary allocations and measures taken, the body of texts that we have designed for the purposes of this study shows that the infrastructure does not allow for an effective response to the requirements of socio-economic equity and educational comfort. Indeed, in Morocco and according to the NAEP 2019, an inventory of the situation of institutions in terms of ICT equipment and Internet access reveals limited capacities that do not allow for an adequate response to the crisis through the implementation of distance education accessible to all. Distance education has the merit of guaranteeing pedagogical continuity but without providing the logistical means and content necessary for quality teaching. Several actors consider that it has marginalized a considerable number of students from households with neither computers nor tablets and even less internet connection [39]. Another report stressed, however, that considerable efforts have been made to adapt infrastructures to the requirements of equity in the context of distance education. "As regards higher education, the Department of Higher Education and Scientific Research notes that universities have their own electronic platforms that allow teachers and professors to make their courses available to students with a coverage rate that varies between 80% and 100%" [40]. Adding to these data, the Ministry, which was initiated as part of the strategy "Morocco Numeric 2013", has offered students computers at preferential

rates. Concerning the FSTS, it has made available to its teachers' various tools to support distance learning. The Moodle platform allows teachers to have and manage online spaces for tutoring students around personalized educational content and interactive learning activities. It has also enabled students to have spaces dedicated to their courses, thus having access to educational resources (course materials, videos, etc.) and tools to interact with the group and the teacher. The FSTS has chosen the ZOOM application to organize remote exchanges (online meetings) and teaching (virtual classrooms, videoconferences, etc.).

Furthermore, we can argue that social inequalities in students' access to platforms and digital tools have negatively impacted the quality of the teaching-learning process by causing learning losses for some students. Therefore, special financial support measures are strongly desired.

6. Conclusion

The introduction of ADF has brought the debate on equity in higher education to the fore again. Our aim is to take stock of the situation of distance education concerning the requirements of equity of pedagogical comfort in the context of distance education. Four dimensions were examined: the quantity and quality of teachers and the supervision rate at the FSTS, the pedagogical approaches used, the administrative and technical staff, and the material and financial resources made available to the actors. A documentary analysis of national and international reports, reinforced by teachers' accounts of practice and focus groups with students, provided relevant input to our study. The results of this analysis suggest that distance education at FSTS meets most of the requirements of pedagogical comfort equity.

First, the number and quality of teachers meet these requirements, as evidenced by the student-teacher ratio of 19 students per teacher.

Second, the adoption of pedagogical approaches, which are for the most part interactive, makes it possible to practice differentiated teaching toto reduce learning disparities. In terms of the contribution of administrative and technical staff to the achievement of economic equity of pedagogical comfort, the opinions of teachers and students are mixed and the two actors do not have the same interpretations.

Finally, about material and financial resources, an effort is requested from the public authorities to provide students from low socio-economic backgrounds with the means to meet the requirements of socio-economic equity in educational comfort.

These analytical results highlight the efforts made by decision makers to meet the requirements of equity in pedagogical comfort. Considering these findings, this research contributes to enriching the current debate on equity and distance learning. It made it possible to present the elements of the context in which this research occurred. We were able to obtain as much information as possible from teachers, students, and the institution to make a rich analysis and interpretation of the implementation of FAD and the requirements of the equity of pedagogical comfort in a university context.

Also, like all studies in humanities and social sciences, our research has certain limitations. It is important to emphasize the need to consider our results with some caution; First, given the different levels of equity, we have anchored our analysis on the equity of pedagogical comfort while the other levels of equity can offer a deeper understanding of the role of equity in creating an environment favorable to student success and the restoration of social justice. Then, our study was conducted in the Faculty of Sciences and Techniques of Settat, an establishment with regulated access and with a scientific and technical vocation; on this level, it is difficult to claim a generalization of our results. Indeed, the results can vary widely in other contexts and mainly in open access faculties.

In the same vein, it would be wise to observe in the long term how the adoption of equity requirements impacts the distance learning process and offers more chances to students from disadvantaged social classes to succeed in their learning.

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