Insights on time, gender and higher education pos-covid

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Abstract— **The pandemic of covid-19 has created the backdrop for a significant change in academic time and, in particular, learning time. This short work in progress paper focuses on the results of a study involving a survey, open interviews with teachers and students and a meeting with students' representatives at one university addressing student's feelings concerning time management throughout Covid 19. The preliminary results suggest that students are more prone to accept the hybrid model, however pointing out some important questions, especially regarding gender issues. The paper concludes with some recommendations for the university to address students' time management in gender equality plans, at different levels.**

Keywords—time, gender, pandemic, higher education, students

I. INTRODUCTION

This work in progress reports preliminary findings from an ongoing research project that aims to understand the main patterns of time use and management by higher education students in the post-Covid period and the challenges they face in fields with a high laboratory content, such as engineering. The aim is to analyse how students cope with the new demands, and also to reflect on the implications this has for the implementation of gender equality plans in higher education. Studies and reflections have highlighted the changes that Covid 19 means for higher education, mainly due to digitalisation and the intensive use of the digital, but also due to the impoverishment of certain social groups and the increased need of students to combine work and study in order to improve their financial situation [1], [2]. The pandemic has shed light on the adaptability of academics and students in higher education to develop online learning and assessment, but also a greater need to considerer digital poverty and issues that interfere with student wellbeing [1], [3].

Even before the pandemic, studies have reported on the excessive number of teaching hours, the overloading of subjects and the dispersion of assessment methods [4], [5].More recently, few studies[have shown increasingly worrying results regarding stress and the increase of mental health problems in the higher education population: stress, overload, feelings of panic and isolation are some of the symptoms noted [6], [7]. Other studies report changes in students' career prospects and a tendency for them to be more contractually flexible in choosing professional jobs where they work from home [8]. These findings are not generalisable and we need consider the differences explained by the social, institutional and personal context. We also must consider the heterogeneity of the higher education population, which is characterised by globalisation and transnationality. Despite the limited ability of studies to establish a link between the pandemic, the way students cope with academic demands and academic success, it can generally be confirmed that academia is currently experiencing a significant change in terms of its traditional structure of times, rhythms and schedules, whose impacts need further study. Whether this is solely due to the pandemic and the accompanying changes, especially in the organisation of lectures during the semester break, or whether it's motivated by trends that were already occurring before the pandemic in the context of the digital revolution and changes in labour markets, what seems to be certain is that the structures and temporal landscapes of academia are changing and posing very specific challenges.

Apart from the motivational issues that other studies have focused on, showing that there are correlations for the increase in social inequalities among graduates resulting from inequalities in labour supply and employment, and due to the general climate of risk and uncertainty in the contemporary world, it's important to understand more precisely what these changes in temporal landscapes are and how they can be addressed in practice. At this point, it is important to talk about gender inequalities and the ways in which female students cope with the new demands and reshaping of school time, especially when they have to study at home .This paper is based on the analysis of the responses to a questionnaire

evaluated at the University of Minho (UM), following other studies carried out at the same institution, in order to assess the impact of the pandemic [2]. Currently, 80 responses from students in different faculties, including engineering, are being analysed. In addition, authors also consider interviews done to teachers, as well as to students.

II. STATE FO THE ART

Academic time has been recognised as an accelerating time, subject to increasing change and driven by forces that are constantly shifting. It has become apparent that most of the studies and reflections have focused on teaching and research time [5]. The studies that have addressed students' time have mainly been focused on secondary and primary education and have taken into account the surplus of school time. [5] is one of the few studies that looks at higher education. According to these authors, student's academic time overlaps with several periods that are often incompatible due to their nature.

The authors distinguish:

- Time characterised by scheduled time, which is divided into formal scheduled time - defined by organisations - and informal scheduled time - defined by the individual [5, p. 124];

- Timeless time, which is characterised by immersion in the task and goal setting associated with individual enjoyment and develops in little or no formal way [5, p. 124];

- Timeless time, like the previous one, contains the immersion factor, but in this case is associated with external obligations rather than individual desires, often related to specific tasks [5, pp. 124–125];

- When a task is incomplete and its deadline is approaching, people feel time pressure because of the urgency to complete it [5, p. 125];

- Wasted time is time spent waiting, unproductive and useless;

- Time as a goal refers to tasks and moments that aim to lengthen or shorten time in the midst of a competitive context [5, pp. 125–126].

In practice, the authors say, all these times are difficult to coordinate because they involve demands that take place in the same physical time (measurable in hours) but imply different performance conditions. The literature on the impact of the pandemic and increasing typification is still producing results, but it is interesting to see that while it develops much on how the intensification of online teaching may have been crucial in changing academic practices, it does little on the issues of times and rhythms and how these relate to the current conditions of teaching at the university. In our view, the analysis of times and temporalities is now central to all academic fields, and particularly to engineering, as these fields relate to the nature of knowledge and the importance of the practical and laboratory dimension. Some research is beginning to highlight that for online learning to become a reality, blended instruction needs to be considered to enhance learning [5].It is even more important to pay attention to how gender equality plans specifically address the impact of the pandemic from a gender perspective. For a few years, there has been a consistent emphasis on the need for public policies to raise awareness of the increasing and unequal difficulties in the use of female students' time. [3] emphasizes the importance of public policies, awareness raising and social action to reduce women's "inequality of opportunity" resulting from time allocation [9, p. 58]. [4] says that reconciling work, family and studying becomes exhausting and "unsustainable", so it is important to contribute a good "support and encouragement network" [10, p. 12] to enable these women to have the right to study. The authors note that "36.1% of respondents consider the variable "family" as the main obstacle to entering higher education" [11, p. 11] and that 10.2% also mention "domestic care" as an obstacle [11, p. 12]. The same authors conclude that this double burden (family and work) and the need to compensate for the family budget limits or completely prevents women from having time for studying" [11]. It is sough that women's productivity is affected by telework because they also are responsible for most of the housework and care for dependents [12]–[14].It also confirms the need to include more specific measures in the GEP that consider the different areas of students' lives and that have an impact on time management and thus on academic outcomes, what would allow to ascertain the results of other studies reporting that women consider that the pandemic affects the time available for doctoral studies and emphasise that "managing family demands" is one of the difficulties [15]–[17].

III. METHOD

This study is exploratory and was conducted using a non-probability sampling technique by sending the questionnaire to the entire student population of UM. We know that different degrees have different demands, including time management skills. The same applies to working students/full-time students, or students with disabilities. However, in this study we try to reach as more students as possible. So, the survey was published online and distributed by the students in social networks and in the UM institutional email. The questionnaire was sent to all students of the university, including under graduation, and PhD. Despite the efforts, only a total of 84 responses were received and analyzed up until now. Of these 84 responses, 83% are full-time students (62 women, 8 men) and 17% are working students (4 men and 10 women). 30 are from the School of Engineering (22 female and 8 male).

In order to explore some of the issues raised in the survey in more depth, an additional meeting was conducted with associations of students in the university. This meeting was composed of representatives of the UM student's associations in several fields of study (*núcleos - 18*) who were invited to participate for debating the topics mentioned (covid effects on time uses and representations, and expectations regarding professional paths). This meeting was organized with the active participation of the ombudsperson office. Other interviews were done to teachers and students, but in this paper, it was only possible to consider few of them (4 students and 2 teachers). As regards the survey, it is also important to add that, with a total number of 19632 students, our sample represents only 0.43% of the total number of students and is therefore not representative. Thus, corresponding only to a preliminary analysis, this paper is able to provide mainly hypotheses that will be further explored in next phases that will imply to increase the number of answers to the survey, interviews to students from engineering and interviews with teachers and course directors in two Portuguese High Education Institutuions (see tables I, II and III).

TABLE I.   STUDENT'S DIFICULTIES FOR MANAGING TIME

Gender /Situation	Difficulties for organizing time				
	None *N (%)*	*some*	*Many*	*Total* *N*	*Total* *%*
Total	21 (25%)	53 63%	10 12%	84	100%
Female	14 19%	49 68%	9 13%	72	100%
Male	7 58%	4 33%	1 8%	12	100%
Fields of study					
Sciences	3 38%	5 62%	0 0%	8	100%
Law	1 25%	2 50%	1 25%	4	100%
Management	1 17%	5 83%	0 0%	6	100%
Engeneerring	10 33%	17 57%	3 10%	30	100%
Arts and Humanities	1 20%	4 80%	0 0%	5	100%
Escola Psychology	0 0%	1% 100%	0%	1	100%
Social Sciences	5 21%	13 54%	6 25%	24	100%
Education	0 0%	5 100%	0%	5	100%
Total	21 25%	53 63%	10 12%	84	100%

n= 84

TABLE II. RESPONDENTS BY GENDER AND FIELD OF STUDIES

Fields of study	Male		Female		Total	
	n	**%**	**n**	**%**	**n**	**%**
Sciences	0	0%	8	11%	8	10%
Law	1	8%	3	4%	4	5%
Management	1	8%	5	7%	6	7%
Engineering	8	67%	22	31%	30	36%
Arts and Humanities	0	0%	5	7%	5	6%
Escola Psychology	0	0%	1	1%	1	1%
Social Sciences	2	17%	22	31%	24	29%
Education	0	0%	5	7%	5	6%
Total	12	100%	72	100%	84	100%

TABLE III. RESPONDENTS BY STATUS

Status	Male		Female		Total	
	n	%	n	%	n	%
student (full time)	8	67%	62	86%	70	83%
worker/student (with formal status)	1	8%	7	10%	8	10%
worker/student (no formal status)	3	25%	3	4%	6	7%
Total	12	100%	72	100%	84	100%

IV. RESULTS

A. Time management and online and face-to-face modalities in post covid

When asked about time management, 63.1% of students said they had 'some' difficulty organising their time *"(...) with assignments and tests, all at the same time, in a period of 2 or 3 weeks"*. 25% said they had no difficulty and 11.9% said they had 'a lot' of difficulty. A higher percentage of working students (71.43%) had "some" difficulty managing their time than full-time students (61.4%). 58% of the men said they had no difficulties, while women had "some" or "many" difficulties (68%). In line with this theme, 9.5% believe that women are more affected by the pandemic because they must do more housework and care work despite being students. Overall, respondents rate their pace of life as "fast". The proportion of female students (19.4%) who perceive their pace of life as "too fast" is higher than that of men (16.7%). The results vary between social sciences and engineering, as in Engineering, more people refer to task overload (7), lack of motivation (4) and time management (3 respondents), while in social sciences there are more people referring to time Management (7), in first place..

The same applies to status: working students say they perceive their pace of life as faster than full-time students. 56% of respondents said they would rather" earn more even if they had less free time", but there are gender differences: the proportion of women (44.4%) who answered that they would rather "have more free time even if they earned less" is higher than the proportion of men (33.3%). 60% of respondents said they felt affected by some of the difficulties faced by students. The adversities arising from this atypical situation largely coincide with those felt prior to the pandemic, as both men and women indicate that they have great difficulty managing their time and creating a routine in the new teaching format (online and in person). The decision on the preferred mode of learning appears to be linked to time management. Among the advantages of distance learning: the compatibility of studies and other activities (family, leisure, sports) and the cost efficiency and time savings when travelling: *"reconciliation between studies and other family tasks, saving time in commuting"*.

Among the disadvantages of distance education and the advantages of face-to-face education, there is the quality of teaching and the interaction with peers and/or teachers in the classroom. Respondents also point out the social isolation as a disadvantage of distance education. Considering the advantages and disadvantages of online and in person modalities, 54% of respondents prefer the blended learning model. Among the factors in favour of this model are the time saving; money saving (in transports and in house renting), however students also point out the isolation, fear of missing out of the groups, and have to deal with family demands. Combining this data with the finding that the increased housework and care work associated with distance learning is a disadvantage that affects women more than men, we can say that the condition that causes women to spend more time at home will also burden them with housework beyond academic work, which we believe should be considered in gender equality plans. Overall, it the respondents that answered to open questions for suggestions say that: there is a need to *"educating for time management and training"* (5), and that

there is also a need to "*rethinking teaching methodologies and improving timetables*" (8).

B. Desirable working time model

The professors to whom we spoke to in the fields of engineering, computer science, information systems, civil engineering, and textile engineering all report the same trend, stating that students (different genders) do not want so much as before to be in the classroom or travel to the classroom, preferring to be remote whenever possible, and also demanding more practical activities in the virtual world. This data gives support to the idea that COVID 19 has changed the manner people understand and experience time, and manage to separate" free time", from "occupied time". It also confirms conclusions obtained in other studies, as regards the preferences for telework, when arguing that there is a "need for companies to consider long-term telecommuting policies that provide the flexibility to meet workers' preferences and needs" [8,n.p].

Interestingly, and despite the limitations of the data we are using, we find relevant differences between male and female students as regards the working time preferences, including in engineering. When female students are asked about the type of working hours that would best meet their expectations, female students still tend to prefer working outside of their homes, on a 9-to-5 schedule, justifying that this way they can better combine with family needs. Male students are very few in the sample, but they are more likely to emphasize the possibility of telecommuting, and work at distance. The preferred working time regimes are only a small detail of the representations and valorizations of time of young people. At the same time that time regimes are changing and showing a great diversity of styles, it is noticeable that some gendered patterns as regards time valorization are still structural both in terms of the experience of time while student, at the university; and as regards the expectations, and mental designs of personal and professional futures.

V. DISCUSSION AND CONCLUSION

In spite of this the answers obtained to the questionnaire, the results cannot be understood as representing the universe of students of the university where the study is being developed and if a larger sample was collected maybe the conclusions would be different. However, it can be stated that there is a growing need to study times and rhythms, in general, and also from a gender perspective, bringing into the discussion the features, as well as the difficulties in articulating time and managing different everyday demands that arise from gender equality, and that can be linked to several spheres, including the mobility patterns and transports used from and to university. Before an academy that is increasingly feminine, across all the areas [18]–[20], there is also an interest in further deconstructing future models of organising school and work time in the context of new occupations and new modalities of work that don't require physical presence in a particular space.

Existing equality plans were based on principles that have changed with the pandemic and will be critical to building the new academy and the new world of work that is increasingly transformed by artificial intelligence.

Considering how these new time landscapes will entail a profound adaptation of school timetables and structures (combining timetables, practical and theoretical lessons, absenteeism, etc.) are key challenges for decision-makers [18].

The number of students from engineering participating in the study is yet low, and the majority are women, what constitutes a limitation to assume definitive conclusions. More information is needed concerning the weight of other important variables, such as the academic degree, condition before parenthood/motherhood; fulltime student/working student. In any case, the majority of the respondents are women, what is per se indicative of the relevance that the time scarcity and time management have on their lives. This is all the truer considering that there are still differences in the way female and male patterns are created and reproduced at school, in the family and in the world of work, even in STEM areas. It's therefore time to look at how gender equality plans can help to strengthen the democratic character of the new alternatives created by digitalization across different scientific areas, and more closely on engineering. Further analysis is being done considering the join effects of variables that affect students experience and increase their difficulties in time management in the context of the project in development. This research will contribute to the existing body of knowledge concerning gender and time uses at the university, having the potential to inform further steps in Gender Equality Plan, as well as other decisions involving time frames and schedules.

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