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Students' pre and post COVID-19 perception of higher education switch to online: An exploratory study in Portugal

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Abstract

The corona virus crisis has exposed the many inadequacies and inequities in our education systems. This article aims to contribute to the understanding of the relation between the pandemic caused by COVID 19 (SARS-COV 2) and the changes experienced in Higher Education (HE), namely the shift to online teaching mode. The research used a survey questionnaire to collect data. The study focuses on a Portuguese Higher Education institution (HEI). Institutional teacher's performance indicators regarding quality assessment system were used, referring to the 2nd semester of 2018-19 until the 1st semester of 2019-20. The total number of pre-Covid19 students who participated 227 . As to the post-covid19, 288 answered the questionnaire. Overall, the "U of Mann-Whitney test" has found no differences between the two moments, pre- and post-Covid19. Hence, results seem to indicate that the student's perception of the lecturer's performance was not affected by the regimen shift from face-to-face to online.

Keywords: COVID-19; Higher Education; Students' Perception; Online teaching performance.

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1. Introduction

Since the first person was diagnosed with illness symptoms and fallen ill, in December first of 2019, it was not necessary to wait long for The World Health Organization came to declare a Public Health Emergency of International Concern in January, 2020, and very quickly proclaim a pandemic on March 11, 2020.† So, in the short span of three months the pandemic severely affected everyday life, the economy, cultural activities and the whole of society, including education systems around the world. It leads to the widespread closure of schools and universities, which react by switching to an emergency online education mode. On March 5, 2020, the majority of students affected by the COVID-19 emergency measures, 233 million students, were located in China, Japan registered 16.5 million and Iran 14.5 million (UN News, 2020). Worldwide, UNESCO (2020), counted 339,281,976 affected students. As of April 12, 2020, approximately 1.716 billion students were affected due to school closures, according to UNESCO (2020), and 188 countries implemented nationwide closures, while 5 implemented local closures, impacting approximately 99.4% of the world's student population. If the Covid19 pandemic affected people from all countries, level of education, income and gender, it is also true it impacted heavier in those of disadvantaged conditions, namely in the case of education, where they got shut out when their schools shut down.

Moreover, as Schleicher well stresses "This crisis has exposed the many inadequacies and inequities in our education systems – from access to the broadband and computers needed for online education, and the supportive environments needed to focus on learning, up to the misalignment between resources and needs." (Schleicher, 2020, 4) If the pandemic affected teaching, learning and education overall, one has to realize it disrupted a, perhaps, more important realm, socialization and subjectification, which are purposeful domains of, at least, equal importance‡.

To face the pandemic conditioning of education one can really on digital technologies, as they can, in Schleicher's opinion (Schleicher, 2020, 16) offer "entirely new answers to the question of what people learn, how they learn, and where and when they learn". For instance, to access specialised multi-format materials beyond textbooks, bridging time and space. Besides, "intelligent digital learning systems don't just teach students science, but can simultaneously observe how they study, the kind of tasks and thinking that interest them, and the kind of problems that they find boring or difficult. The systems can then adapt the learning experience to suit students' learning styles with great granularity and precision." (Schleicher, 2020, 16) The author is so enthusiastic about ICT that he comes to sustain that "technology does not just change methods of teaching and learning, it can also elevate the role of teachers from imparting received knowledge towards working as co-creators of knowledge, as coaches, as mentors and as evaluators." (Schleicher, 2020, 16) However, he also emphasises that the massive school closing, by apart pupils and students from schooling socialization contexts provided, not only induced a learning loss, as it exposed the importance of learning in close contact with teachers and peers, involving the access to the while and wide variety of educational and social ambience of schooling (Schleicher, 2020, 19). That is why students are poorly committed to exclusively online processes as they are very unlike to pay for it and clearly prefer face-to-face interaction (Schleicher, 2021). "These students go to universities to meet great people, to have inspiring conversations within faculty, to collaborate with researchers in the laboratory, and to experience the social life on campus." (Schleicher, 2021, 4).

Now, if the potentialities of ICT are either proven to some extent but remain to be proven to a more sensitive extent, the fact that the "emotional, cognitive, and various core developmental elements' health is, in essence, the result of an 'interactive dance' that requires strong human engagement and contact" (Acuff. & Reiher, 2005, 77), is something not to be forgotten. Furthermore, one must bear in mind that children raised with large daily doses of media exposure may contract

a strong developmental handicap compared to children raised in more limited technological environments that are richer in human contact (Acuff. & Reiher, 2005). The human relationship with parents and teachers seems unlikely ever to be replaceable by the relationship with media, however interactive they may be. It is, perhaps, because of the intuitive perception of such issue that Schleicher (2021), as Director for the OECD Directorate of Education and Skills and Special Advisor on Education Policy to the Secretary-General, recognizes HE institutions must develop a learning environment not devoid of human contact but where digitalisation may expand and complement, without replacing, student-teacher and student-student relationships (Schleicher, 2021). The renowned expert, goes on, somehow paradoxically stressing the benefit of ICT mediated teaching and learning and states that "the COVID-19 crisis spurred an acceleration and deepening of digitalisation in teaching and learning: in course design, instruction, assessment, learning analytics and credentialing, among others , which brings him to say that]there is likely demand among students and prospective students for more flexible study options – online learning and part-time options in particular" (Schleicher, 2021, 4). This seems to justify the admission of new players, IT firms and educational technology providers, like online learning platforms, as well as "microcredentials and recordkeeping through blockchain technologies [that] can provide new opportunities for learners to decide what to learn, when to learn, how to learn and where to learn, and to have their learning gains independently recognised." (Schleicher, 2021, 4). Bearing in mind the prioritization of acquiring acquire labour market-relevant skills, flexibly and affordably, along with re-skill or up-skill, digitalization could open "a rapid and flexible alternative to academic degrees, including certificates, industry-recognised certifications, and microcredentials" (Schleicher, 2021, 4).

1.1. Related research

Acknowledging that students prefer face-to-face interaction creates a somehow contradictory scenery. "The emergency shift to virtual teaching and learning was adopted with patience and flexibility on the part of students and teachers, though there is evidence that neither found the experience to be fully satisfactory."(Schleicher, 2020, 16) Moreover, many difficulties were experienced in those processes relying on on-site or work-based resources and conditions, along with the increase of well-being problems; socialisation, self-esteem, sense of community and sense of belonging disruptions; increasing feeling of isolation; anxiety, frustration and boredom increase; difficulties in balancing work and home responsibilities; as well as "loss of focus" or control and sense of drift, including missing the social aspects of class, the peer contact; let alone that Zoom seems to be quite stressing, as the concentration required in online learning with the lack of social clues (such as body language) induces mentally draining (Scott, 2020). In fact, as the study European Students' Union, that covered 17,116 respondents from 41 European countries, reveals, while, during the lockdown, the dominant method was online lectures with the lecturer lecturing in real-time (59,73%), the majority of students reported that their preferred method of online lectures is, precisely, the one "with the lecturer lecturing in real-time (57,43%), which suggests that most students like to have face-to-face lecturer-student interaction." (Doolan, K. et al., 2021, 2)And the same preferences apply to Seminars and practical Classes and Supervisions, i.e., students appreciated more satisfying the process where the lecturer is involved in real-time, which means face-to-face interaction with academic staff. So being, the main problem here is (and will be?) how can HEIs cope with the challenge of maintaining in-person education, not only during times of pandemic but also, in times of the "book literacy" weakening. Besides, if the main solution of HE was ICT mediation there would not be a problem with drop out and international students decrease, which may seriously endanger HEIs sustainability, namely those depending mainly on private fees.

The condition of "Campus off, education on" (Malkawi, Bawaneh, & Bawa'aneh, 2021), through online processes, due to the Covid-19 pandemic urged a plethora of research covering issues from health and medicine, biology, genetics, psychology, sociology, economics, security measures, politics and, among many other fields, and of course, education. Research has approached the issue, of what should be called Emergency Remote Teaching (ERT) (Almusharraf, N. M. & Khahro, 2020; Rubin, 2020), from two complementary perspectives: either focusing on stu-

dents' perception of how the switching to online reveal (dis)satisfaction with the new regimen (focus on the switch, FOS); or focusing on the students' perception considering the institutional measures taken to restructure themselves for giving support to the teaching and learning process (focus on the restructure and support, FRS). In line with the above-quoted reports, we admit that all the experiences that shape socialisation and subjectification have been severely curtailed.

On the side of the first type of approaches (FOS), we can count a very recent study that covered several Portuguese Higher Education Institutions, from all regions of the country, involving 2718 students, ranging from undergraduate courses (46.5%) to integrated Masters (38.6%), Academic Masters (8.3%) Professional Masters (3.5%), as well as PhD courses (2.2%) and Specialization courses (0.9%) (Flores et al., 2021). The students were from various areas of knowledge, namely Engineering, Education, Medicine, Psychology and Law and attended the 1st (36.8%), 2nd (26.7%) and 3rd (23.1%) years. The study reported that only a minority of respondents (5.9%) declared having experience of distance teaching and learning. It should be stressed that 96.9% of students reported having their computer, while 96.0% said they have access to the Internet at home and 47.7% reported having adequate conditions at home for distance teaching and learning. When questioned about how they adapted to the closure of their HEI, 38.6% of the participants say "badly" or "very badly", invoking difficulties in concentrating, being at home, reduced quality of contextual resources, negative feelings and emotions, lack of interaction and socialization with colleagues and teachers, lack of support and guidance, the abrupt change of routines and habits health and well-being issues, as well as work overload, time management, inadequate assessment, among others. Those that declared having adapted "well" or "very well" (37.5%), referred to the benefits associated with online learning, the support and follow-up, the existence of good conditions, resources and equipment, the effective response from the HEI, the better results obtained in the assessment and the health and well-being issues. Nevertheless, they also admit the reduced ability to concentrate, difficulties in managing schedules/time, teachers' lack of adaptation to new tools and methodologies, work overload, the quality of learning due to the lack of access to laboratories, the lack of practical classes and the suspension of internships. As to their evaluation of the overall experience of distance learning and teaching, 40.7% said "good" or "very good" and 40.8% said "bad" or "very bad". This study suggests a not dramatic transition experience to distance teaching and learning by students of HE., although 75.6% referred tiredness and 70.9% stress, resulting from their effort of adaptation to the new condition, along with difficulty in concentrating (72.7%), time management (66.0%) and management of requested tasks/works (65.9%), the lack of support from teachers (43.9%) and the difficulty in responding to their solicitations (43.0%). Besides only 23.9% said they felt comfortable with distance learning, while a lesser percentage (17.4%) admitted feeling motivated and only 33.8% indicated that they were coping well with distance teaching and learning experience. It is very relevant to stress here that, when asked about how they would like the next school year to be, the majority (56.2%) mentioned preferring mixed teaching (online and face-to-face) and 36.5% mentioned face-to-face teaching only, while only a minority preferred only distance learning (7.3%).

From the second type of approach (FRS), we can count a wider number of studies. Malkawi, Bawaneh and Bawa'aneh (2021), for instance, have considered 15,000 students enrolled at UAEU during the academic year 2019/2020. They have found that the satisfaction level and attitudes of undergraduate students towards eLearning and virtual classes, in exceptional circumstances of COVID-19, are strong in general with varying degrees between several items. Moreover, the results indicate there are statistically significant differences in students' satisfaction level and attitudes towards eLearning and virtual classes for the independent variable of educational level. No significant difference for the independent variables of students' gender, residential location and college were found. The authors highlight that the university has taken proper procedures, provisions and support regarding education and e-learning for enhancing students learning and maintaining their safety. Very relevant for our current purpose is the comment about the requirement of further proper investigation on the long-term impact of e-learning, as it is admitted that long-term e-learning could have an adverse effect on learners and educators.

On the same line, Ahmed and Osman (2020) emphasized the role of virtual education using the WizIQ platform at Sultan Qaboos University for enhancing students' motivation and improving their attitudes towards learning in addition to increasing their academic performance. The study also confirmed that virtual environments contribute to improving student participation and interaction in learning. In this case, results even indicate that students enjoyed e-learning and virtual classes and that they would prefer using e-learning and virtual classes in normal circumstances, as well as they, assume that E-learning and virtual classes increase the interaction between students and the instructor. Although they say that E-learning and virtual classes increase their anxiety, tension, fear about grades, worries about exams (preferring regular exams more than online) and not being comfortable doing assignments through e-learning and virtual classes. Noteworthy is the fact that they say requiring training programs to help them efficiently use e-learning platforms and virtual classes. In the authors' opinion, their study gives ground to the necessity of providing mechanisms that increase students' interest in virtual learning and appease students and teachers' difficulties. Something that aligns with Molotsi (2020) recommendation of the necessity of rethinking exciting and interactive e-learning processes.

Almusharraf & Khahro (2020) focused on 283 students enrolled at one higher education institution, attending English as a Foreign Language (EFL), attitudes and perceptions toward experiential online learning in the switching to the online environment during the COVID-19 pandemic, in the Kingdom of Saudi Arabia (KSA). The study reports that students are satisfied with the university staff and faculty members choice of specific online platforms, along with the grading system, assessment options, training workshops, online technical support, and the Synchronous Computer-Mediated Communication (SCMC) in language learning, entailing interaction between two or more learners concurrently transfer through a computer interaction. Authors refer that regarding a range of factors from conditions, resources, teaching methodologies and support, none received an average mean score below 3.5. Exceptions that don't contradict the trend are the 3.1 average related to "I recommend learning using ONLY online classes in the future" and "The Zoom used for online course delivery was the most effective teaching platform.", along with 3.13 in the case of "The GoToMeeting used for online course delivery was the most effective ". Besides the study found ANOVA correlations between the predictor "I recommend learning using ONLY online classes in the future." and the dependent variable "I am satisfied with the online classes as they helped me achieve the course learning outcomes." Overall, the study points to students' positive appreciation of Emergency Remote Teaching (ERT) (Almusharraf & Khahro, 2020), during COVID-19, supposedly due to the faculty rapid adaptation to online, entailing an e-open book exam, oral exam, case studies, assignments, and project presentation. It is the firm opinion of the authors, based on their study' indications, that HEIs should offer online, blended, and face-to-face classrooms to meet up with many students' perceptions and increase its enrolment rate locally and internationally. They also believe to have proven that the online environment has a mediation with self-efficacy and self-regulated learning. Particularly, blended courses were rated the most preferable.

Thus, they see ERT, while being a temporary measure, with substantial potentiality if integrating innovative online techniques of promoting interactive instruction. In fact, research has shown that the integration of Learning Management Systems (LMS) in Higher Educational settings can often enhance teaching and learning experiences (Al-Shorman & Bawaneh, 2018; Bawaneh, Zain, & Salmiza, 2010; Falloon, 2011). An example of this orientation is the study of Wahyuni & Pratiwi, 2021), which have analysed 108 students from four faculties at IAIN Langsa, focusing on satisfaction with online learning through End-User Computing Satisfaction (EUCS). They applied five EUCS indicators to determine the level of satisfaction: as to the content, 67% reported to be satisfied; in the case of the accuracy of the online learning 54% said to be quite satisfied; pertaining the form of online learning 48% answered that they were quite satisfied; as to the ease of use (the convenience of the access of online learning) 79% said they were satisfied; finally, regarding punctuality of online learning just 26% reported being satisfied. The convenience of access to online learning seems to be the highest rated indicator, while accuracy is the lowest, which left something to reflect upon.

Approaching the theme from the side of the experience of seventeen lecturers and educational consultants, from the University of South Africa (UNISA), who studied the Certificate in Technology in Distance Learning and E-Learning using a virtual learning environment (VLE), Molotsi (2020 found that VLE is an enabler to content delivery, not bound to a specific time frame or location, which helps develop digital skills, motivated participants to design and offer fully online modules. Hence, the author recommends that university staff be empowered to use other VLE interactive tools, so to promote students' participation and engagement.

2. Materials and Methods

2.1. Subjects and sampling

The study focuses on a Portuguese Higher Education Institution, relying on data obtained from students' voluntary and anonym answers to the quality assessment system, at the end of each Semester under the allowance of the Dean within the institution's Code of Research Ethics. Considering the pre and post COVID 19 moments, we count overall 14 subjects, imparted by the same lecturer. The data pertains to 6 subjects' curricular areas from pre and 8 from post-covid19, covering two semesters from each condition. Subjects' areas A and B appear three times; all the other (C, D, E, F) only two. The total number of pre-covid19 students was 286, but only 227 (81,3%) answered the questionnaire. As to the post-covid19, 393 students, of Undergraduate and Master courses, were considered, although only 288 (72,6%) answered the questionnaire.

2.2. Instruments

The data report students' answers to a questionnaire on teaching staff performance, grouped by lecturer-subject, on a scale from 1 to 5 (1= strongly disagree, 5= strongly agree), referring to only one lecturer and six subjects' areas. The teacher's performance indicators used by the quality assessment system were drawn from the 2nd semester of 2018-19 until the 1st semester of 2019-20. The institutional teachers' quality performance assessment uses the following criteria: 1. Clarity in the exposition of the subject and in answering the questions (c1); 2. Encouraging active and critical involvement of the students in the lesson (c2); 3. Encouraging students' self-learning outside the lessons (c3); 4. Availability for the clarification of doubts outside the classes (c4); 5. Overall appreciation of the teacher's quality in the teaching/learning process (c5). New criteria were then added from the 2nd semester of 2019-20, namely: 6. Availability of the teacher to support the development of the student's work; 7. The teacher's promotion of the spirit of initiative, responsibility and autonomy in the development of the work; 8. Overall assessment of the quality and usefulness of the teacher's supervision. As we don't have answers for indicators 7 and 8, we, consequently, excluded criteria 7 and 8, as well as criterion 6, once data from pre-covid19 was missing. We had only access to the means for each indicator.

2.3. Plan and procedures

This study applied an Ex Post-Facto exploratory plan. We aim to understand the relation of the pandemic caused by COVID 19 (SARS-COV 2) and the changes experienced in Higher Education (HE), namely the shift to online teaching. After the change pre-post-COVID regimens we intend to compare the data from pre- and post-covid19, so to seek differences that may indicate any disruption caused by the non-contact teaching regimen, either total or partial. The study focuses on a Portuguese Higher Education institution (HEI), relying on data obtained by the students' voluntary answers to the quality assessment system, at the end of each semester. The data was collected in April 2021, directly from the HEI quality assessment system with permission from the teacher and the proper administration.

Following a focus on the switch (FOS), our research question is: "Are there differences in students' perceptions of teachers performance between pre and post COVID19 conditions?". Consequently, we state the following hypotheses: H_0^a: There are no students' differences of perception globally regarding teacher's performance?; H_0^{b1}: There are no students' differences of perception regarding teacher's performance when considering the indicator c1 (Clarity in the exposition of the

subject and in answering the questions); H_0^{b2}: There are no students' differences of perception regarding teacher's performance when considering the indicator c2 (Encouraging active and critical involvement of the students in the lesson); H_0^{b3}: There are no students' differences of perception regarding teacher's performance when considering the indicator c3 (Encouraging students' self-learning outside the lessons); H_0^{b4}: There are no students' differences of perception regarding teacher's performance when considering the indicator c4 (Availability for the clarification of doubts outside the classes); H_0^{b5}: There are no students' differences of perception regarding teacher's performance when considering the indicator c5 (Overall appreciation of the teacher's quality in the teaching/learning process).

3. Results

3.1. Descriptive analysis

In Table 1 we can see data collected. The subjects are coded to maintain anonymity: "S" stands for the subject, which is represented by the letter, while the number refers to the times it appears. Finally, "PC" indicates pre and "PtC" post-conditions. The values are all average scores of students' appreciation, on a scale from "1" (1= strongly disagree) to "5" (5= strongly agree).

Table 1

Data collected: Subjects, number of students, answers and average scores for each indicator.

School Year	Sem		Subject	n	answers	%	c1	c2	c3	c4	c5
2018-19	2	**A**	**S. A1. PC**	15	10	67	4,1	4	4	4	4,1
	2	**B**	**S.B1.PC**	90	61	68	4	4	3,9	4,1	4
2019-20	1	**C**	**S.C1.PC**	81	71	88	4,3	4,1	4,1	4,4	4,3
	1	**D**	**S.D1.PC**	24	22	92	4,5	4,6	4,5	4,7	4,6
	1	**E**	**S.E1.PC**	61	49	80	3,9	4,1	4,1	4,1	4,1
	1	**F**	**S.F1.PC**	15	14	93	4,4	4,3	4,3	4,4	4,3
				286	227	81,3					
2019-20	**2**	**B**	**S.B2.PtC**	88	62	70	4,4	4,3	4,1	4,3	4,4
	2	**A**	**S.A2.PtC**	16	8	50	4,3	4,3	4,3	4	4,3
2020-21	1	**F**	**S.F2.PtC**	16	16	100	4	4	4,1	4	4,1
	1	**D**	**S.D2.PtC**	26	18	69	4,5	4,5	4,4	4,6	4,6
	1	**C**	**S.C2.PtC**	83	68	82	4,3	4	4	4	4,3
	2	**E**	**S.E2.PtC**	67	49	73	3,7	3,7	3,9	3,8	4
	2	**B**	**S.B3.PtC**	79	55	70	4,2	4,1	4,2	4	4,4
	2	**A**	**S.A3.PtC**	18	12	67	4,4	4,4	4,3	4,2	4,5
				393	288	72,6					

As it is patent, the rates are all over 3.6, which indicates a good to a very good appreciation of the teachers' performance. The average score of appreciation is 4.21 for the situation pre-COVID19 and 4.19 for the post-COVID19. In Figure 1 we can see that for each criterion (c1…5), of pre-COVID19, the results are very similar regarding all the considered subjects (S.A…E); in fact, the lines almost completely coincide.

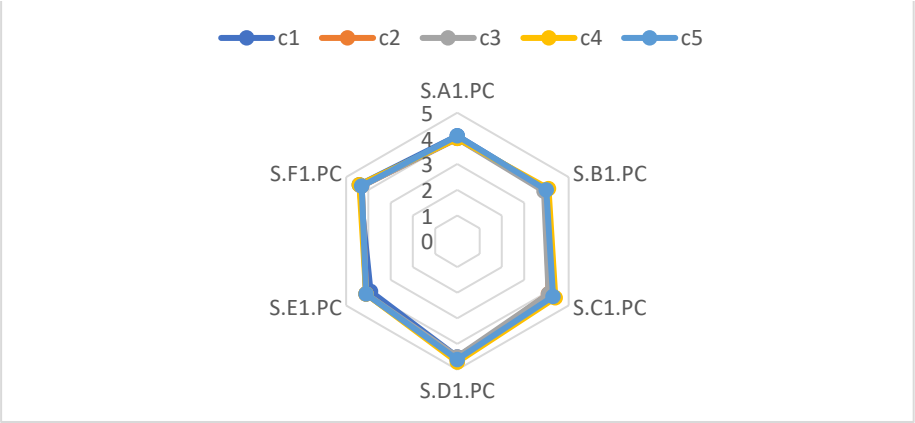

Figure 1. Pre-COVID19 scores per criteria, per subjects' curricular areas.

In Figure 2 we have a very slight difference, only c5 (Overall appreciation of the teacher's quality in the teaching/learning process) from the others.

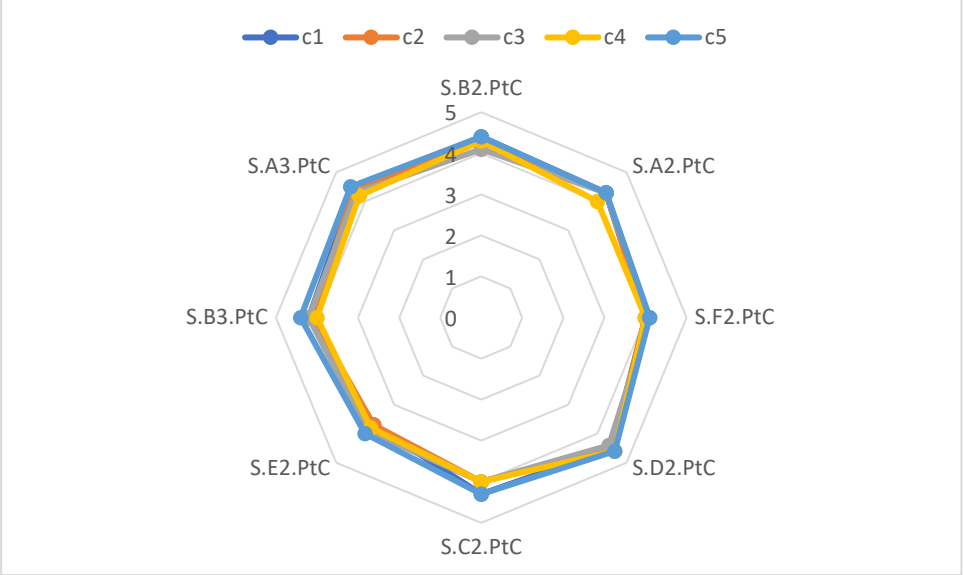

Figure 2. Post-COVID19 scores per criteria, per subjects' curricular areas.

3.2. Inferential analysis

Overall, the "U of Mann-Whitney test" has found no differences between the two moments, pre and post-COVID19, as neither for each indicator. Even when we compare c4 (Availability for the clarification of doubts outside the classes), the criterion where we found the highest value pre-COVID19 and the lowest post-COVID19 value, which coincides with the highest and lowest means, respectively, "U of Mann-Whitney test" returns a "p" value of .181, so we must retain the null hypothesis, namely: $H_0^{a;}$ $H_0^{b1;}$ $H_0^{b2;}$ $H_0^{b3;}$ $H_0^{b3;}$ $H_0^{b4;}$ H_0^{b5}.

4. Discussion

Results seem to point out that the students' perception of the lecturer's performance was not affected by the regimen shift from face-to-face to online. Moreover, it suggests that the shift for online or partial online mode didn't change the way students perceive the teaching/learning experience. This is in line with what the literature points out. However, in this study, we only have an appreciation of the teacher's performance under the pre and post-COVID19 teaching and learning conditions, not a direct appreciation of the different conditions by the participants.

For attaining such understanding one should ask directly the participants if they like better the first or the second conditions. Meaning to adopt an approach of focusing on students' perception of how the switching to online reveal (dis)satisfaction with the new regimen (focus on the switch, FOS), as we have above explained. Which was the case for the study of Flores et al. (2021), which have found motifs of dissatisfaction with the switching along with some benefits. According to the European Students' Union study, the preference percentage (57,43%) for face-to-face, "with the lecturer lecturing in real-time" suggests that most students like to have face-to-face lecturer-student interaction." (Doolan et al., 2021; Biesta, 2015), which could be indicative of their preference for face-to-face over remote teaching.

5. Conclusion

This study is affected by several limitations. The sample is of convenience and the dependent variable is assessed only indirectly by average scores and there is no question asking for the perception of satisfaction with the online switch to ERT (focus on the switch approach, FOS). Which we aimed to assess indirectly and found no differences between the pre- and post-COVI19 conditions, regarding the students' appreciation of the teacher's performance in times of face-to-face and the same teacher performance in the same subjects' areas during ERT situation.

However, in the case of the process FRS approach (focus on the restructure and support), a large number of studies support the idea that students positively appreciated the switch to ERT and the support measures they received. We conclude that more studies are needed to clarify the students' preferences between face-to-face and mediatized or online education.

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