Teaching-learning in the pandemic period: perception of professors and students from classroom graduation programs

Ensino-aprendizagem no período pandêmico: percepção de docentes e discentes de cursos de graduação

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A b s t r a c t

The Covid-19 pandemic caused global changes in the teaching-learning process at all levels, including higher education. In view of this scenario, the research carried out aimed to compare the perception of professors and students in relation to the teaching-learning process in face-to-face undergraduate courses in the area of Applied Social Sciences in the State of Rio Grande do Sul, which was carried out in a remote due to the Covid-19 pandemic. For that, a quantitative and descriptive research was used, operationalized through a cross-sectional survey. The sample analyzed was composed of 36 valid respondents, 17 professors and 19 students. For data analysis, Pearson's chi-square test with Monte Carlo adjustment and the Mann-Whitney U test were used. The results showed that the perception of professors and students regarding the remote teaching-learning process differs in terms of prior preparation for said change ($p=0.031$), indicating that professors had less time/conditions to adapt. The findings also suggest that in the future there will be more remote hours in courses in the mentioned area due to theoretical disciplines, minimization of costs and scope of remote classes.

Resumo

A pandemia do Covid-19 ocasionou mudanças globais no processo de ensino-aprendizagem em todos os níveis, incluindo no ensino superior. Ante a este panorama, a pesquisa realizada teve como objetivo comparar a percepção dos docentes e discentes em relação ao processo de ensino-aprendizagem em cursos presenciais de graduação na área de Ciências Sociais Aplicadas do Estado do Rio Grande do Sul, que foi realizado de forma remota em função da pandemia do Covid-19. Para tanto, empregou-se uma pesquisa quantitativa e descritiva, operacionalizada por meio de uma survey com corte transversal. A amostra analisada foi composta por 36 respondentes válidos, sendo 17 docentes e 19 discentes. Para a análise dos dados, empregaram-se os testes de Qui-Quadrado de Pearson com ajustamento por Monte Carlo e o teste U de Mann-Whitney. Os resultados obtidos demonstraram que a percepção dos docentes e discentes quanto ao processo remoto de ensino-aprendizagem difere no que concerne ao preparo prévio para a referida mudança ($p=0,031$), indicando que os professores tiveram menos tempo/condições para se adaptar. Os achados também sugerem que no futuro haverá mais horas remotas em cursos da área mencionada devido a disciplinas teóricas, minimização de custos e abrangência das aulas remotas.

1 INTRODUCTION

The teaching-learning process is based on the premise that individuals learn in a heterogeneous way. It refers to the way or skills from which people "concentrates on, processes, internalizes, and remembers new and difficult academic information or skills" (SHAUGHNESSY, 1998, p. 141). Therefore, recognizing multiple learning styles contributes to maximizing the effectiveness of teaching mechanisms (CSAPO; HAYEN, 2006).

However, numerous factors influence this process– such as aptitude and previous knowledge, instructions provided, socioeconomic context (e.g.) – which maximizes the complexity of its understanding (MCILRATH; HUITT, 1995), and implies the inexistence of perfect models (ORMAZÁBAL; BOROTTO; ASTUDILLO, 2021). In this preamble, aspects inherent to educational psychology emerge, such as orientation and the use of language, for example. Both emphasize self-regulated learning and the active role of students in their own learning process (HAENEN, 2001). Though "in recent years, a process of reform and innovation in higher education has been witnessed" (GUARDIA et al., 2019, p. 35).

In addition, the Covid-19 pandemic, which has characterized the global transition of the first decade of the 21st century, has highlighted the relevance of resilience and adaptive skills for the development of teaching-learning process (VILLAMARÍN et al., 2021). Thus, technology provided the opportunity to propose and implement new arrangements at all levels of education, which promotes different challenges inherent to a virtual classroom (LYNCH, 2020; SCHLESSELMAN, 2020; TOQUERO, 2021).

> The COVID-19 pandemic forced universities around the world to shut down their campuses indefinitely and move their educational activities onto online platforms. The universities were not prepared for such a transition and their online teaching-learning process evolved gradually (CHAKRABORTY et al., 2021, p. 357).

Emergency Remote Education (ERE) is a mechanism capable of ensuring the maintenance of educational activities even in periods of public health calamity, as is the case with the Covid-19 pandemic (TOQUERO, 2021). This new arrangement is based on the use of Information and Communication Technologies (ICTs), which main objective is to create an instructional environment with greater flexibility, efficiency, and effectiveness (DUNCAN; YOUNG, 2009). However, despite the fact that ICTs have been part of the academic context for some time, the imminence of its use has reverberated since remote teaching is still the only means capable of maintaining the progress of educational activities in this pandemic period.

Nevertheless, the challenges inherent to remote learning arise due to the need that educational institutions have to establish the quality of learning (ZAYAPRAGASSARAZAN, 2020), since online learning experiences differ significantly from face-to-face learning (HODGES et al., 2020). Thus, obsolete or inadequate technological equipment and the heterogeneity of sociocultural aspects make it difficult to adopt Technologies, therefore curbing the effectiveness of the entire process (KEBRITCHI; LIPSCHUETZ; SANTIAGUE, 2017; ALVAREZ, 2020).

Likewise, obstacles to student involvement, the learning atmosphere and professor training in the face of preparing and conducting remote classes (TRUST; WHALEN, 2020; ZHANG, 2020), in addition to the difficulty of carrying out assessment activities (GUANGUL et al., 2020) characterize this new way of teaching and learning. This set of challenges along with the drastic change in the process contributes to the maximization of stress on the part of both professors and students, corroborating the perception that remote learning corresponds to a deficient option to face the ongoing educational crisis (HODGES et al., 2020; ZHANG, 2020).

On the other hand, there are studies that suggest that remote teaching tends to be maintained in multiple educational institutions and courses, even after the end of the pandemic, driving changes in academic curricula (SCHLENZ et al., 2020; SCHLESSELMAN, 2020). This is, "after the Coronavirus crisis e-Learning will be in an entirely different state, especially in developing countries" (AFFOUNEH; SALHA; KHLAIF, 2020, p. 135). But the perception of the characteristics and challenges of remote teaching and learning is not homogeneous among its stakeholders, so that the obstacles faced by professors and students – both active agents and protagonists of this process – are different.

Assim, "understanding teachers' and students' perceptions of online teaching and learning has been an important and popular research topic" (LEI; SO, 2021, p. 148). Therefore, our research aimed to compare the perception of professors and students in relation to the teaching-learning process in undergraduate courses in the area of Applied Social Sciences in the State of Rio Grande do Sul, Brazil, which has been carried out remotelydue to the Covid-19 pandemic.

2 METHODOLOGY

Our research is characterized as quantitative and descriptive, operationalized through a cross-sectional survey. As data collection instrument a structured questionnaire adapted from Schlenz et al. (2020) was employed and applied to professors and students of higher education in face-to-face courses in the Applied Social Sciences area in the State of Rio Grande do Sul, Brazil. The data gathering took place between May 21 and October 14, 2021 via Google Forms' Platform. The sampling was

non-probabilistic for accessibility and achieved a total of 36 valid respondents, of which 17 were professors and 19 students. As data analysis procedures we have employed univariate statistical tests of frequency (absolute and relative), central tendency, and variability.

In turn, the multivariate tests were developed using non-parametric statistics, given that the data do not follow a normal distribution. We used the Pearson Chi-Square test (χ2) to verify the existence of an association between pairs of categorical variables and, when necessary, we proceeded with the adjustment using the Monte Carlo test (HAIR JÚNIOR et al., 1998). We also employed the Mann-Whitney test to compare two groups–expressed by professors and students. For all multivariate tests, we considered 5% as the level of statistical significance (p<0.05) and consequently 95% as the confidence interval. The data organization and the performance of the tests were instrumentalized through the Software Statistical Package for the Social Sciences (SPSS) version 20.0.

3 FINDINGS AND DISCUSSIONS

Our results showed the predominance (63.9%) of students and professors from public educational institutions. We also found that 61.1% of respondents are women, while 38.9% are men. The age group with the highest incidence was from 30 to 39 years old (36.1%), followed by people from 21 to 29 years old (22.2%) and up to 20 years old (19.4%). Individuals who claimed to be between 40 and 49 years old accounted for 13.9% of the respondents, while those over 50 years old comprised 8.4% of the investigated sample.

The device commonly used to attend the remote classes was the notebook (72.2%), followed by the desktop (22.2%), and smartphone (5.6%). We emphasize that the latter is used, in its entirety, by students, not having been indicated as a tool by any professor. Regarding the way in which classes take place, we found that the asynchronous form is the least used (2.8%), while synchronous classes amount 44.4% and mixed classes comprise 52.8% of the total. Regarding the comparison between the perception of students (group 1) and professors (group 2) regarding the remote teaching-learning process that has been developed, we used the Mann-Whitney test, which results are displayed in **Table 1**.

Table 1: Mann-Whitney test results

Variable	Mean[a]	Standard Deviation	Mann-Whitney	Wilcoxon	p-value
Initial guidance provided by the educational institution prepared me for remote classes	3.36	1.13	155.500	308.500	0.843
I was able to get ready well in advance for the remote teaching-learning process	2.81	1.19	96.500	249.500	0.031[b]
I have never had contact with remote teaching or remote learning	2.25	1.56	125.500	315.500	0.220
The remote teaching-learning process was well structured	3.25	1.13	129.500	319.500	0.285
The level of remote learning is adequate	3.33	0.99	103.500	293.500	0.053
Image and sound quality contribute to remote learning	3.86	1.10	117.500	307.500	0.145
In the current situation, remote teaching is a great option for learning	3.83	1.28	137.500	327.500	0.424
Participating in remote classes I feel well prepared for the teaching-learning process regarding practical contente	3.03	1.28	119.000	309.000	0.166
Using new remote teaching methods motivates me to teach or learn	3.42	1.18	115.500	305.500	0.124
In remote learning I do question more often than in face-to-face classes	2.61	1.50	154.000	344.000	0.805
I prefer face-to-face teaching compared to remote teaching	3.58	1.48	147.500	300.500	0.640
I do not think remote learning is useful and would have preferred not to have had/taught class this semester and (if possible) to continue with 'normal' [face-to-face class]	2.36	1.11	142.000	295.000	0.522

Source: results obtained by the author applying questionnaires to professors and students.
[a]Five-point Likert scale (1 = "Strongly Agree"; 5 = "Strongly Disagree").
[b]Significant to p<0.05.

We have observed that the only variable that showed a statistically significant difference between the groups was "preparation prior to remote teaching" (p=0.031). Our results indicated that although both groups were inclined to disagree with the afore mentioned statement, it corresponds to 47.7% of the total number of professors, decreasing to 21.1% in the group of students. That means professors considered that they had less time/conditions to prepare for the new process (Mean Rank=14.68) compared to students (Mean Rank=21.92).

This finding is possibly justified by the abrupt way in which there was a migration from face-to-face to remote teaching. Generally, sudden transitions resulting from a crisis require coordinated measures, which implementation takes time due to the existence of bureaucratic obstacles (HAVEMAN, 1992). Therefore, decisions about adjustment and adaptation strategies are left to the individuals themselves, "in this case, instructors who have to swiftly select among multiple digital tools with different capabilities to support teaching while balancing their workload" (IGLESIAS-PRADAS et al., 2021, p. 106714).

From this perspective, Schlenz et al. (2020) showed that more than half of the professors had no previous experience with remote teaching before the pandemic, that demanded rapid adaptation. Concomitantly, Shim and Lee (2020) corroborate that for this goal an adequate infrastructure is essential, as well as a class design that enables the operationalization of interactive remote teaching capable of meeting the learning needs–that are not uniform among all classes along higher education institutions.

Concomitantly, Coman et al. (2020) show that the

Covid-19 pandemic stimulated the adoption of e-learning platforms by teachers. However, despite this, they highlight that the disadvantages of the teaching-learning process that took place in an emergency have more disadvantages than benefits, evidencing that the teaching style of teachers in person is inadequate when adapted to the virtual environment.

However, in **Table 2** we present the results of the Pearson Chi-Square test (χ2) with adjustment by the Monte Carlo test, used to verify the association between the groups (professors and students) and their perception regarding characteristics or preference of classes (face-to-face, remote or indifferent).

Table 2: Pearson Chi-Square test results regarding class characteristics or preferences

Variable	χ^2	p-valor
Less effort	6.413	0.052
Facilitated participation	1.704	0.403
Better knowledge sharing	0.396	0.856
Better to make questions	0.557	0.904
More lecture tips and videos	0.056	1.000
More fun	0.892	0.772
More modern	4.147	0.126
More study or preparation time	5.081	0.094

Source: Results obtained by the author sapplying questionnaires to professors and students.
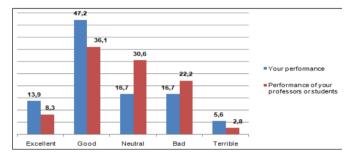
We found that the perception about the characteristics of the classes is independent on the role that the individual plays in the teaching-learning process (student or professor). This finding can be explained by the fact that these main stakeholders have not yet formed a concrete opinion regarding remote classes, given that this circumstance of teaching-learning took place in an unstructured way and in an unprecedented emergency situation for current generations (TOQUERO, 2020).

However, in a study carried out by Chakraborty *et al.* (2021) with students from a university, it was found that students consider remote learning more stressful and impacting on quality of life, especially in a context of social relationships. Therefore, a set of variables - psychological, physical and social - tend to affect the teaching-learning process in the pandemic period, such as physical discomfort, uncertainty, fear and loneliness (XIANG *et al.*, 2020), in addition to mental disorders (TALIDONG; TOQUERO, 2020). In line with this, a study carried out by Ionescu *et al.* (2020) it was also found that remote teaching was less attractive and interesting compared to the traditional teaching-learning process in the perception of students.

Nevertheless, in **Figure 1** we present the percentage distribution of the perception attributed by the respondents regarding their performance in remote teaching as well as that of their students (in the case of professors) or professors (in the case of students). We also emphasize that 76.4% of professors consider their performance in remote teaching to be positive (good or excellent), while in the group of students this percentage drops to 47.3%.

Figure 1: Percentage distribution of the perception attributed by the respondents regarding the performance in the remote teaching-learning process

Source: Results of research

Additionally, we have invited respondents to express their opinion regarding the possibility of having a greater workload of remote classes in their course in the future regardless of the Covid-19 pandemic. Generally speaking, the investigated individuals consider that remote teaching will become more present in courses on the area of Applied Social Sciences, mainly due to the existence of subjects that are essentially theoretical. **Figure 2** presents the word cloud obtained from the respondents justification for this position, with the size of each term being proportional to its recurrence/incidence.

Figure 2: Word cloud

Source: Results of research

It was observed that respondents believe that remote teaching tends to be incorporated into academic curricula, aligned with what was verified by Marshall, Shannon and Love (2020). Therefore, new enthusiasts and supporters of online courses will potentially emerge in the context of teacher qualification and continuing education of teachers, centered on the human being, according to the premise proposed by Baran and Alzoubi (2020).

> Implementation of blended learning for professional growth of school teachers post pandemic will push the boundaries of learning by creating opportunities for collaboration of various educational societies throughout the globe, enhance

constructivist learning and also help in following social norms set to fight against COVID-19 (SABOOWALA; MANGHIRMALANI-MISHRA, 2020, p. 02).

From this perspective, the study carried out by Aliyyah *et al.* (2020) highlights the imminence of central factors related to the obstacles faced by teachers throughout the pandemic period, namely: instructional strategies, challenges, support and motivation. Nevertheless, Gautam and Gautam (2021) include the triad of the remote teaching-learning process (in addition to student and teacher) as well as infrastructure. Thus, they reverberate that technological support tends to maximize the willingness to learn, which in turn contributes to minimizing anxiety - which characterizes the pandemic period - and promotes the effectiveness of remote classes.

On the other hand, Darius, Gundabattini and Solomon (2021), when investigating 450 university students in India, found that online learning is effective. As a justification, the authors highlighted that the use of animations, digital collaboration mechanisms, the use of questionnaires and the realization of video classes by the professors, combined with the favorable environment of the home itself and complementary virtual materials contribute to the understanding of the content. Likewise, the authors also showed that the possibility for classes to be attended in the volume and speed desired by the students is also a benefit provided by technology.

In addition, the abrupt change in the teaching-learning process boosted students' reflection on their own learning, directly reflecting on the academic environment and helping them to devise strategies and adaptations in line with their learning dynamics. Another emerging aspect concerns self-motivation and engagement with activities using remote tools (SETTE-DE-SOUZA, 2020). From the professors' perspective, remote teaching in a period of social isolation stimulated the development of teaching skills and practices, as well as encouraging the adoption of telecommunication technologies. Thus, the effectiveness of the remote teaching-learning process, in part, was conditioned to the creativity, effort and innovative approaches of the professors (REZNIKOVA *et al.*, 2020).

In this way, the need for a comprehensive pedagogy emerges, whose didactic practices include online education and make use of technology as a support mechanism for the teaching-learning process (CARRILO; FLORES, 2020). Likewise, student engagement is directly reflected in the assessment that they carry out on their online learning process, which also denotes the active and participatory role of students (SZOPIŃSKI; BACHNIK, 2022).

4 CONCLUSION

Our research made it possible to contrast the professors' and students' perception of undergraduate courses on the area of Applied Social Sciences in the State of Rio Grande do Sul, Brazil regarding the teaching-learning process that has been taking place remotely due to the Covid-19 pandemic. The results obtained suggest that the perception of such stakeholders differs significantly with regards to their prior preparation before the beginning of remote classes, with professors having less time/ conditions to qualify in the face of the new way of teaching.

Our findings also indicate that, in the opinion of both professors and students, there is a tendency that in the future there will be a greater remote workload in courses frin that area of knowledge, given the incidence of theoretical subjects, the reduction of costs and even the geographic reach provided by online classes.

The main limitation of our research corresponds to the sample size, which cannot be considered representative of the investigated population. For future studies, we recommend the replication of the data collection instrument used in order to compare the perception of students from different areas of knowledge as a means to verify peculiarities inherent to higher education courses. We also suggest an analysis based on the students' stage in their course, which will allow to verify is their perception of remote teaching is related to the semester in which they are studying.

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