

Emergency Remote Education: educational practices and teaching perceptions

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ABSTRACT – Emergency Remote Education: educational practices and teaching perceptions. Emergency Remote Education (ERE) has been the only viable teaching option due to the covid-19 pandemic. Thus, the goal of this study was to characterize teaching practices and the perceptions of professors related to the teaching at the Federal University of Roraima (FURR/UFRR). An online questionnaire was answered by 150 professors of UFRR, that indicate that professors evaluate ERE with above average satisfaction. In addition, they point out that ICT are important as educational tools for the educational process, but they need better conditions. It is concluded, therefore, that the implementation of the ERE at UFRR obtained results that allowed minimizing the negative impacts from the restrictive measures of covid-19 on student learning.

Keywords: Higher Education. Covid-19. Teaching Practices. Perceptions of Professors. Emergency Remote Education (ERE).

RESUMO – Ensino Remoto Emergencial: práticas educacionais e percepções docentes. O Ensino Remoto Emergencial (ERE) é apresentado como única opção de ensino enquanto durar a pandemia de covid-19. O objetivo deste estudo foi caracterizar práticas de ensino e percepções de professores sobre o ensino realizado na Universidade Federal de Roraima (UFRR). Um questionário online foi respondido por 150 professores da UFRR, cujas respostas apontam que os professores avaliam o ERE com satisfação acima da média. Além disso, apontam que as Tecnologias de Informação e Comunicação (TICs) são ferramentas educacionais importantes para o processo educacional, mas necessitam de melhores condições. Por fim, conclui-se que a implementação do ERE na UFRR obteve resultados que minimizaram os impactos negativos derivados das medidas restritivas da covid-19 no aprendizado dos alunos.

Palavras-chave: Ensino Superior. Covid-19. Práticas de Ensino. Percepções Docentes. Ensino Remoto Emergencial.

Introduction

COVID-19 was recognized as a Global Pandemic in early 2020 and, since then, has resulted in alarming numbers of serious infections and burdens on health systems, reaching the mark of 2.3 million deaths worldwide in 2021 (OPAS-OMS, 2020; Covid-19..., 2020). This scenario highlights the importance of actions related to the control of the Coronavirus Pandemic, such as physical distancing between people, which is, whenever possible, a recommended alternative (Islam et al., 2019). This distancing measure impacts all dimensions of human life, such as the functioning and the scope of the mission of Higher Education Institutions (HEIs). In this paper, we seek to contribute to the measurement of this impact through the characterization of how teachers are dealing with teaching during the pandemic.

In the face of the pandemic situation, the Brazilian Ministry of Health, in February 2020, following guidelines issued by the World Health Organization (WHO), prepared the *National Contingency Plan for Human Infection by the new Coronavirus COVID-19* (Brasil, 2020). This plan aimed to present guidelines to restrain the advance of Covid-19 in Brazil and social isolation was among the most significant actions (Brasil, 2020). For the implementation of the social isolation plan, a set of actions was published in the areas of economy, health, security and education, including remote teaching.

The Ministry of Education (MEC), in its turn, published regulations to allow the flexibility of educational actions by teaching institutions in Brazil. They were released on June 17, 2020, Ordinance nº 554 (Brasil, 2020), and instituted the switch from presencial classes to synchronous and/or asynchronous remote classes. The ordinance allowed the use of information and communication technologies (ICTs), as well as other available resources, that would enable teaching in different times, spaces and contexts, in order to assure social isolation.

Based on the established legal basis, Higher Education Institutions (HEIs) throughout Brazil organized themselves in order to offer their courses. In the extreme North of the country, the Federal University of Roraima (FURR or UFRR, considering the Brazilian name) implemented the Emergency Remote Education (ERE), approved by its Teaching, Research and Extension Council (TREC/FURR), on August 17, 2020. In addition, FURR conducted a survey, in March 2020, in order to identify professor training needs with respect to the use of technologies applied to teaching. Based on articulations among commissions designated to promote actions to face the Pandemic and on the results of the survey, the I Seminar for Teacher Training of the institution was organized in July 2020, and had, as its target audience, the 555 professors of FURR, offered for free and entirely on-line. Another action articulated by FURR was making funds available for the acquisition of equipment that would assure the university community's access to technological resources, to enable attendance in remote teaching activities. From these actions, in August 2020, ERE activities started.

The ERE principle was to ensure access to education during the Pandemic period in the most satisfactory way as possible, in respect to social distancing, the period of personal fragility for students and professors, the difficult access to learning conditions outside of the university environment, aggravated mainly in the extreme North of Brazil. Despite all the flexibilities and adjustments implemented, it is necessary to evaluate the work developed. It is precisely because we recognize the importance of higher education that we need to monitor the extent to which its objectives have been achieved (Hattie, 2015; Schneider; Preckel, 2017). Although the proposals of a HEI are aligned with the recommendations of regulatory bureaucratic organizations (MEC and MH), it is necessary to characterize how professors have dealt with the new scenario, what results they have obtained and how the work can be improved, since the pandemic could continue for longer, including due to the low vaccination rates in Brazil (Brasil, 2021).

The concern with investigations of this nature is not exclusive to Brazil or Brazilian HEIs. There has been a worldwide research movement to characterize teaching work in the pandemic period (Izumi et al., 2020). These data help to monitor how professors and students have dealt with the challenges of remote teaching, what results have been obtained in education and what the impacts in terms of training new higher education professionals are, fundamental aspects for us to identify strategies to improve teaching that will help us dealing with the current pandemic and others that we may face (Gusso et al., 2020).

When it comes to the scientific literature on teaching during the pandemic, we find studies of a qualitative nature, conducted mainly through interviews, and that investigate the perceptions of students related to the impacts of the pandemic on learning, for example Scull et al. 2020, as well as perceptions of professors about the barriers faced in on-line teaching, for example Joshi, Vinay e Bhaskar (2021), or the skills they have for teaching mediated by digital technologies, as Zhang (2020) shows.

Theoretical studies, with guidelines to work in HEIs during the pandemic or with critical reflections on remote learning, have also been published, from more general exams on how to organize Brazilian higher education to face the pandemic, for example Gusso et al. ., (2020), to its impacts on teaching specific subjects, exemplifying with Sansom (2020). Many studies of a quantitative nature, in their turn, have sought to investigate student satisfaction and motivation towards ERE, as it is shown by Wang, Zhang e Ye (2020), or student perceptions about access to education and impacts of remote teaching on learning, it is the case of Andreza et al. (2020).

In Australia, for example, Scull et al. (2020) interviewed four academics to identify the greatest impacts of the pandemic on the teaching process. Participants indicated that access to content, as well as the possibility of relating it to their educational needs, was at risk. It was also outstanding to the researchers a damage to student attendance in

teaching activities and interaction in the with the teacher, requiring different strategies from the teacher to increase the chances of student involvement with the subject. Finally, high levels of anxiety, concern about health and survival issues, as well as emotional issues caused by social isolation were identified.

In India, Joshi, Vinay e Bhaskar (2021) investigated barriers faced by teachers during on-line teaching and assessment in different house settings in the country. For this, interviews were carried out with 19 university professors. The results pointed to several barriers, which were divided into four major categories, from which items can be selected such as absence of basic household resources (Joshi; Vinay; Bhaskar, 2021) – internet access, family interruption, disorganized routine, among others. In addition, difficulties were reported in acquiring necessary materials for on-line learning, lack of clarity and objectivity of instructions, lack of technical support, among others. It was also identified that professors had difficulties in mastering technological resources to teach, they had not motivation and their perspective in the face of the challenge of remote teaching was negative, as well as a lack of support to carry this teaching out. These results revealed the need to take the social and emotional aspects of teachers as a fundamental part of teaching in a pandemic situation.

In China, Wang, Zhang, and Ye (2020) collected data from 42 dentistry faculties, with a total of 8,740 students. The results were more optimistic than in previous studies, as the researchers concluded that remote teaching has proven to be an effective alternative to ensure teaching in times of a pandemic. In addition, students, in general, were satisfied with the ERE, although with little motivation to study and missing the interaction with professors. It is noteworthy that, also in China, students reported connection problems and instability in teaching platforms.

In addition to these studies that report broader assessments, there are exams on the impacts of the ERE on the teaching of specific subjects. This is the case of the discussion carried out by Sansom (2020) on the teaching of chemistry, when assessing the extent to which it is possible to make learning about experimentation in the laboratory possible for students in remote mode. Zhang (2020), in his turn, evaluated the belief of language teachers in the effectiveness of on-line teaching methods and their perceptions of their own digital competence. Zhang observed that beliefs about one's own digital competence and the degree to which digital resources can be used to teach impact on the characteristics of teaching work in remote teaching, in a way that they would represent a resource for overcoming a challenging moment or an acting barrier. Furthermore, it was found that the degree to which teachers are able to acquire digital competence depends on how much institutional support they receive, so that they can dedicate themselves to develop these skills.

Researches in Brazil, in their turn, have examined the extent to which access to education has been granted, since this is a legal re-

quirement found in the National Education Guidelines and Framework Law (Brasil, 1996). A study of this nature was conducted by Andreza et al. (2020), who, based on the opinion of students, analyzed how education has been affected by the Covid-19 pandemic. An amount of 185 undergraduates from 11 Brazilian states participated in this research. The researchers found that 80% of the participants understand that educational activities are working in the ERE model, but that adjustments are still necessary to actually assure access to remote learning by everyone. With respect to difficulties encountered during the ERE period, the authors highlighted four categories: (1) personal and emotional difficulties; (2) amount of activities required by professors; (3) problems with the availability and operation of equipments; and (4) internet access problems. Among the Brazilian studies, we identified little data on the ERE in the North region, so that it would not be possible to assess whether there are differences (and which ones) in comparison to other states and countries or not.

Thus, we consider it necessary to conduct research in the extreme North of Brazil that could help us understanding the regional educational reality in the pandemic scenario and, mainly, evaluating convergences and divergences in relation to other contexts, inside and outside Brazil, since our experiences may be useful to other universities and vice versa. Thus, this study aimed to characterize teaching practices adopted at the ERE and perceptions of professors about the ERE carried out at FURR, over the last semester of 2020. For that, in addition to the characterization of the participants, we sought to answer the following research questions:

1) RQ01: What were the teaching practices adopted by professors during the ERE?

2) RQ02: How do professors evaluate the experience in the ERE?

3) RQ03: What teaching characteristics can be related to adopted teaching practices and perceptions about the ERE?

We conclude this study by presenting suggestions for improving the ERE, based on the characterization performed and the scientific literature reviewed. We emphasize that these notes can represent an important resource to assist in the elaboration of more effective strategies or actions in similar future situations, or even in the face of the continuity of the ERE in Brazil.

Method

In order to achieve the proposed objectives, research of a basic nature, with a quantitative approach and exploratory objectives was carried out (Cozby, 2003). To be considered as exploratory research, it is understood as those that aim to investigate phenomena that are little known, or that are in an initial stage, thus having few materials as a source of search, such as possible impacts and effects of Covid-19.

Participants

In this research, 150 out of the 555 professors working in teaching at FURR¹ participated in the research. These professors had a mean age of 45.79 years (SD = 9.17), ranging from 28 to 65, with an average of 11.79 years of work at FURR (SD = 8.63; minimum = 1; maximum = 31). A summary with the main characteristics of the research participants is presented in Table 1.

Table 1 – Summary of Sociodemographic Characterization

Variable	%	Variable	%
Gender		Posgraduate area	
Masculine	48.67	Agrarian	8.67
Feminine	51.33	Biological	5.33
Disability		Health	6.67
Yes	2.67	Human	26.67
No	97.33	Applied Social Sciences	16.00
Income		Letters and Arts	12.67
> 2 a ≤ 8	24.00	Exact and Earth	12.00
> 8 a ≤ 15	55.33	Engineering	6.00
> 15 a ≤ 30	18.00	Multidisciplinary	6.00
> 30 mw	2.67	Working Hours at FURR	
Internet at home		20h to 40h	6.67
Yes	85.33	Exclusive dedication	93.33
No	14.67	Preparing to use ICTs	
Physical structure		Yes	23.33
Yes	71.33	No	76.67
No	28.67	Experience with DL	
Academic degree		No	42.7
Specialist	0.67	Student	17.30
Master student	1.33	Professional	40.00
Master	15.33	Use of ICTs in teaching	
PhD student	10.00	Yes	58.67
PhD	72.67	No	41.33

Note: N = total; % = percentage; mw = minimum wage; Internet at home = “Do you have an adequate internet service to carry out your work at the ERE?”; Physical structure = “Do you have an adequate space at home to carry out your work at the ERE?”; Exclusive dedication = Contract of 40 hours per week with exclusive dedication; Preparation for the use of ICTs = “Did you attend to any pedagogical training to perform as a professor in the remote or distance modality?”; Experience with distance education = “Have you had experience with distance learning before ERE?”; Use of ICTs in teaching = “Have you used ICTs for teaching?”; Categories that had no participants were not added into the table.

Source: Elaborated by the authors.

In order to take part in this research, approved by the Committee for Ethics in Research on Human Beings of the Federal University of Roraima – Opinion number 4,480,749 –, all professors had to sign the

Free and Informed Consent Form (ICF). To ensure the anonymity of the participants, codes were assigned to each professor throughout the data analysis.

Data Collection Instrument

The questionnaire implemented on Google Forms was composed of close- and open-ended questions, organized into five sections: (1) characterization of the professor: the variables investigated involved age, time working as a professor in the classroom, academic training, specific training technologies usage for teaching etc.; (2) role of the professor at the university: we investigated the course to which the professor worked for and the subject(s) he taught at the ERE, among other aspects; (3) Beliefs about the ERE: the professor's opinion about remote teaching in the face of the pandemic situation being experienced; (4) Beliefs about the use of ICTs: what the teaching strategies used by professors are, as well as identifying how they evaluate the didactic technological procedures and resources they used; and (5) difficulties and facilities identified in carrying the ERE out: the difficulties that professors experienced during the implementation of the ERE and what conditions or resources made the process easier.

Data Collection Procedure

Participants were invited electronically, and the survey was applied through Google Forms. The invitation to participate was carried out as it follows: (1) sharing the questionnaire link and the research video on social media; (2) sending an e-mail to center directors and course coordinators with the survey description and links to the survey questionnaire and the video; (3) sending an e-mail to departments that have contact with several FURR courses, such as the Accessibility Center and the Civil Servant Training Coordination (CSTC); and (4) sending an automatic e-mail, addressed individually, to the professors of the University who were registered at the institution's system database.

Participants who agreed to participate in the study had to access the published survey link and, upon expressing their agreement in relation to the ICF, they had access to the questionnaire questions. Participants were free to drop the study out at any time, without having to send their responses. However, if the survey was completed, the participants had to click on the submission confirmation button so that the completed form could be received by the researchers.

Data Analysis Procedure

The data obtained and made available through Google Forms were categorized and analyzed according to the divisions of items A to E, using the R software (R Core Team, 2019). Finally, the hypotheses were investigated by correlation analysis and hypothesis testing.

Results and Discussion

Considering the goals established by the research – which consisted on characterizing the teaching practices adopted at the ERE and the perceptions of the professors about the ERE carried out at FURR –, we present and discuss the data that came from the sample characterization. This data collection took place between the first week of March and the third week of April 2021; two months.

Sample Characterization

A total of 150 professors² participated in the research, representing 22.79% of FURR professors. Most participants are aged between 35 and 45 years (41.33%), followed by 45 to 55 (30%). According to Table 1, the sample was balanced in terms of men (48.67%) and women (51.33%) participation, with a predominance of professors without disabilities (97.33%).

In socioeconomic terms, it was noticed that 55.33% of the sample has a family income that goes from 8 to 15 minimum wages, most of which have internet access (85.33%) and physical structure to work from home (71.33%). Participants are, typically, doctors (72.67%) who work 40 hours a week with exclusive dedication (93.33%), whose post-graduate studies were carried out in the areas of humanities (26.67%) or applied social sciences (16%). It is noteworthy that, although most professors stated that they had not attended to any previous training for the use of ICTs in teaching (76.67%), 40% of them had already worked with distance learning (DL), and 58.67% of them reported the usage of ICTs to teach before the pandemic caused by COVID-19. Among the 41.33% of teachers who had not used ICTs before the pandemic, it was noticed that 40% of them (25) did not attend or did not look for this training, and 43% of them (27) did it, but considered it to be insufficient.

A relevant fact – and that could be investigated more carefully in future studies – is that statistically significant differences were not found in terms of age between the group of participants who had already used (mean age = 45.50) and the one who had not used ICTs (mean age = 46.16) before the pandemic ($t = 0.45751$; $df = 134.21$; $p = 0.648$). Also, no age difference was found between those who had some previous preparation for using ICTs in teaching (mean age = 44.68) and those who had no preparation (mean age = 46.12; $t = 0.87198$; $df = 63.687$; $p = 0.3865$), or among those with ($M = 45.21$) and without work experience in distance education ($M = 46.56$, $t = 0.893$, $df = 148$, $p = 0.373$). This finding contradicts data found in literature that point to an association between age and perception/belief in the use of ICTs (Broady; Chan; Caputi, 2010; Ozdamli; Ozdal, 2014).

Broady, Chan and Caputi (2010), for example, carried out a literature review on skills for the use of ICTs, based on age and environmental/structural conditions. The researchers observed that there is a significant difficulty in using ICTs for those in an advanced age. However,

this difficulty may be overcome if the environmental/structural conditions are adjusted. And this might be the explanation for what happens to this study's sample, since the FURR professors who took part on this study present, regardless of age, the same barriers and the same conditions for overcoming difficulties, such as: instability in internet access or lack of motivation from students in the interactions during activities, as barriers, and training courses offered by FURR, as overcoming conditions.

In fact, when responding to the questionnaire item about "technological resources used for teaching", the professors reported having used strategies learned in the courses offered by FURR during the I Seminar on Teacher Training. This data indicates an action plan, the training, with the potential to help overcoming difficulties in the use of ICTs. In addition, it also represents an action that is in accordance with suggestions found in literature to overcome the adverse effects of the pandemic on education (Izumi et al., 2020; Lawrence; Wu, 2021; Kummitha et al., 2020; Ling, 2020).

According to the data collection, 63.33% of the teachers who made up the sample of this research attended to this training. On the other hand, 22% of them were aware of the training, but did not attend it, and 14.67% of them claimed that the institution did not offer any training at all. Certainly, providing training is essential because if, on one hand, many professors had contact with the use of ICTs in teaching, on the other hand, several professors also reported not having previous experiences with distance learning (42.7%), nor having previous training for the use of ICTs in teaching (76.67%) or not even using ICTs to teach before the pandemic (41.33%).

Precisely due to its relevance, it is always recommended to improve the quality of the training. In our sample, among the professors who attended to the training, 33.33% of them indicated that it was insufficient to guide their practice during the ERE, and 30% of them rated it as sufficient. Considering those who stated that FURR training was insufficient, 58% of them (29) indicated that they did not look for additional training to improve their practice, and 42% of them (21) did. Considering the global data, 70% (105) of the professors did not look for training outside the university, and 30% of them (45) did. These data show how much institutional actions for teacher training are needed, because, otherwise, it does not seem to be that every teacher will look for this improvement. In any case, whether on the initiative of the institution or of the teacher, it is a fact that, for the training to be possible, there must be conditions for the teacher to dedicate a part of their work schedule for this purpose (Zhang, 2020). Otherwise, the high statistics pointing to a low demand for training are likely to remain unchanged.

RQ01: What were the Teaching Practices adopted by Professors during the ERE? Organization and Workload in the ERE

We investigated how many subjects were taught by professors and how many hours per week were directed to actions – amount of hours, considering planning, preparation and selection of materials, activities correction, students monitoring and others. It was found that 43.33% of the professors taught two subjects in a semester of the ERE, and another 44.66% of them taught three or more. Consistent with data regarding the two subjects, most teachers (21.33%) reported having invested 16 hours per week, which can be understood as half in the classroom (four hours per subject) and the other half in class the preparation. For this sample, 40.67% of the professors spent 12 hours or less (minimum of four hours), and 38.02% of them reported having invested more than 16 hours.

This data represents an important variable to be investigated by future research, since a professor of Higher Education, in Brazil, has four areas as attributions: teaching, public administration, extension and research (Brasil, 1990; 2012). Such tasks, when gathered together, might represent a high workload. According to Henklain et al. (2020), the quality of teaching work tends to be negatively impacted by the excessive workload that the teacher has in Higher Education.

Assessment of what can be taught in the ERE by Professors

First, it was investigated what the professors, generally speaking, thought to be possible to teach during the ERE, considering the options (a) nothing, (b) practice, (c) theory, and (d) theory and practice. It was observed that 66.67% of the professors believe that only theory can be taught, probably because internship activities, for example, were drastically reduced or turned out to be impracticable. Only 30.67% of them suggested that it would be possible to teach theory and practice. In their turn, the options “nothing” and “practice” were equally poorly selected, with only 1.33% of the participants having selected each one.

According to the 30.67% (46) of the participating teachers who claimed that it was possible to teach “theory and practice”, it was observed that most of them were professors of applied social sciences (30.43%), in addition to the areas of human sciences (21.74%) or letters and arts (17.39%), in which human interaction is essential, even if mediated, to a certain degree, by technologies in a situation of physical distance. In the case of areas such as engineering (4.35%), biological sciences (4.35%) and agrarian sciences (8.70%), few professors identified the possibility of practical activities. In any case, our data refute any rash hypothesis that, in the technical evaluation of professors, the development of practical learning is narrowed, in principle, during the ERE. Future studies can specifically investigate what kind of practice is possible in this scenario, how to develop it and under what conditions.

Class Type

A second point examined was the type of classes held at the ERE. It was noticed that 76% of the professors used synchronous and asynchronous classes together, 8% of them took classes only synchronously and 16% of them, only asynchronous classes. According to the teachers, the programmed teaching activities required an average of 3.79 hours from the students (SD = 1.7). However, a limitation of this study was that it did not investigate, along with the students, how much time they actually invested in the ERE subjects. Another limitation of this research refers to the fact that it did not investigate the number of subjects taken per student in each semester. This data would make it possible to compare analyzes pertaining to the number of hours required per week for each student to take the minimum number of subjects in a semester in order to complete the course with no harm to the expected date for obtaining the title, for example.

Technologies Adopted

We also investigated which technologies were adopted by professors to work during the ERE, considering the following aspects: (a) virtual learning environment (VLE) adopted, (b) videoconferencing software and (c) how communication was established with the students. The data obtained suggest that most professors (52,56%) used SIGAA (the University's academic management system, which has a module with the VLE function) and Moodle (20.94%), also maintained by the University. As videoconferencing software, professors used, mainly, Google Meet (43.03%) and the National Research Network Webconference (NRNW, 26.29%). Finally, for the communication with students, it was identified the predominance of WhatsApp (29.77%), e-mail (25.16%) and messages sent via VLE (17.82%).

Methodologies and Resources for Teaching at ERE

Table 2 presents, in its first column, the description of the methodologies and resources for teaching mentioned by the professor and, in its second column, the frequency of these references. When responding to the survey, each professor could mention more than one methodology/resource.

Table 2 – Methodologies and Resources for Teaching in the ERE

Methodologies and resources for teaching	Frequency
Class support slides	122
Class dedicated for talking about a certain topic	120
Individual exercises for students to train	120
Texts	112
Moments to discuss doubts, whether synchronous or asynchronous	112
Videos and movies available on the internet	88
<i>Feedback</i> on student performance	69
Group exercises for students to train	41
Project development	35
Songs	11
Group dynamics techniques	10
Comics	6
<i>Role play/Simulations</i>	5

Source: Elaborated by the authors.

In addition to the practices mentioned in Table 2, specific practices were also numbered less frequently, such as: (a) registering of components of the content covered in the subjects (images, pictures, videos and others); (b) a podcast production by the professor, shared on social medias; (c) debates through social medias; (d) materials produced by third parties and made available for on-line consultation related to the course contents (websites, books and others); and, (e) recreational materials, such as games and puzzles related to the course content. This diversity of teaching strategies seems to be promising. In the research conducted by Peloso et al. (2020), researchers evaluated the concerns of 704 undergraduates with respect to remote teaching and identified anxiety and discontent with ERE. That said, Peloso et al. (2020) concluded that the diversification of methodologies and resources for teaching increases the chances of professors being able to engage their students.

Methodologies and Resources to Assessment in the ERE

As for the evaluations, Table 3 shows the main strategies used in the ERE. In its first column, the types of assessment are described and, in the second one, the frequency to which they were mentioned by the professors.

Table 3 – Main Assessment Procedures Adopted

Assessment adopted	Frequency
Learning self-assessment	31
Memorial or portfolio preparation	12
Exam items in dissertation format	69
Exam items in objective format	57
Class participation	85
Project realization	40
Abstracts or text reviews	77
Group seminar	36
Individual seminar	38

Source: Elaborated by the authors.

Professors mentioned, less often, other types of specific assessment activities, such as: (a) students should prepare materials (projects, articles, texts, videos and others); (b) directed studies; (c) participation and critical discussions on social media or forums created for that purpose; (d) game development; (e) exercises solving; (f) Problem Based Learning (PBL) and Team Based Learning (TBL); and (g) tasks or exercises for specific content of the subject.

RQ02: How do Professors evaluate the Experience in the ERE? ERE Satisfaction Rating

As in the study presented by Rizvi and Nabi (2021), there was a need to investigate, directly, the perception of professors about the ERE. In Table 4, the investigated area is presented in the first column, the approval mean in the second column, and the standard deviation in the third one. It is noteworthy that the minimum possible value of satisfaction is 1 and, the maximum, 5.

It is possible to see, according to the data in Table 4, that the overall mean of satisfaction with the resources used in the ERE was of 3.75 (SD = 0.97), which can be considered as a positive result, between “Neither Unsatisfied, Nor Satisfied” and “Partially Satisfied”. It’s noteworthy that the satisfaction results ranged between 3.54 and 3.90, being, therefore, well represented by the overall mean.

Table 4 – Satisfaction Results Related to the ERE

RESOURCES USED IN ERE - DEGREE OF SATISFACTION		
Investigated area	Mean	SD
Satisfaction with resources for recording lessons	3.54	1.11
Satisfaction with videoconferencing capabilities	3.90	0.93
Satisfaction with the VLE	3.79	0.96
Satisfaction with resources for communicating with students	3.81	0.96
Satisfaction with teaching resources	3.80	0.86
Satisfaction with evaluation resources	3.67	0.99
Overall mean	3.75	0.97
BELIEFS ABOUT ERE - DEGREE OF AGREEMENT		
Investigated area	Mean	SD
01. I am prepared for the ERE. [+]	3.82	0.97
02. My experience at ERE was positive.[+]	3.98	0.89
03. My students learned at ERE.[+]	3.81	0.81
04. I saw no difference between the learning of my students in the ERE and in regular education.[+]	2.30	1.22
05. My students liked the ERE.[+]	2.91	1.08
06. ERE is the only viable educational solution for this moment of pandemic.[+]	4.16	1.10
07. ERE is a viable educational solution for this moment of pandemic, although is not the best one.[+]	4.14	1.16
08. I am concerned about the negative effects that the ERE can cause on education.[-]	3.65	1.26
09. I will continue to use what I learned at the ERE to teach in the regular teaching model.[+]	4.16	0.93
10. ERE is more of a problem than a solution.[-]	1.90	1.09
11. ERE should not be implemented in 2020.2.[-]	1.64	1.17
12. In 2020.2 we should go back to presencial teaching.[-]	1.59	1.08
13. In 2020.2 we should not offer any way of formal education.[-]	2.22	1.54
14. In 2020.2 we should offer the ERE.[+]	4.38	0.95
15. ERE made me stressed.[-]	3.45	1.39
16. ERE made me sick.[-]	2.23	1.40

Note: + = item with a positive meaning with respect to the ERE; - = item with a negative meaning with respect to the ERE.

Source: Elaborated by the authors.

Among the 16 items regarding the ERE to which the professors expressed their degree of disagreement or agreement, seven had a negative meaning with respect to the ERE and nine of them had a positive meaning. Among the negative items, the mean was of 2.38 (SD = 1.28), which is in between “Strongly Disagree” and “Neither Disagree nor Agree”. The means ranged between 1.59 (Item 12) and 3.65 (Item 8). In the positive items, it was noticed that the mean was equal to 3.74 (SD = 1.01), in the interval between “Neither Disagree nor Agree” and “Partially Agree”. The lowest mean was of 2.3 (Item 4) and the highest one was of 4.38 (Item 14).

In general, the assessments reveal moderate satisfaction with the ERE and moderate agreement regarding the positive items about the

ERE, with low agreement regarding the items that indicated negative beliefs regarding the ERE. The higher number of positive evaluations coming from the professors may be related to the actions taken by the HEI when it comes to facing the pandemic, which are classified as positive by the literature (Gautam; Gautam, 2021; Izumi et al., 2020; Sia; Abbas Adamu, 2021; Scull et al., 2020; Rizvi; Nabi, 2021).

The degree of satisfaction presented by the professors, associated with the indication of different teaching and assessment strategies that the participating professors claimed to carry out in the previous subsection, are in accordance with the guidelines of the literature. In the study conducted by Risvi and Nabi (2021), for example, the authors suggest teaching and evaluation actions that achieved better indicators of effectiveness during the pandemic period, such as: interactive lectures given by the faculty, case studies and guided discussions, guided readings of articles and materials prepared specifically for the subject.

Evaluation of Difficulties, Suggestions for Improvement and Positive Aspects about the ERE

The main difficulties and benefits identified by the professors with respect to the ERE were investigated. When it comes to the difficulties, they were asked about what possible improvements could be adopted to solve or mitigate the effects of these difficulties. Table 5 shows the greatest difficulties faced by professors in its first column and, in the second one, the frequency to which they were mentioned. The order of data presentation is organized from the most to the least frequent ones, and the questionnaire made it possible to select as many options as the professor wanted. The table only presents the difficulties that were mentioned for more than 30 times.

The greatest difficulty found by professors refers to internet access by the students, which corroborates data from the literature (Sia; Abbas Adamu, 2021; Lawrence; Wu, 2021; Izumi et al., 2020; Peloso et al., 2020). Internet access and changes in the learning structure of students at the house environment are limiting conditions, with a potential negative impact on the students' educational process. However, these barriers are beyond what the professors' actions can reach, requiring political, social and economic mobilization to be overcome, as pointed out by Lawrence and Wu (2020). With respect to possible actions for the institution, some strategies were adopted by FURR, such as offering subsidies, grants, for example, for the acquisition of internet plans or technological resources, which represent actions called by the international community as Pastoral Support (Lawrence; Wu, 2020).

Table 5 – Main Difficulties faced by Professors during the ERE

Main difficulties faced	Frequency
Problems with the proper functioning of the student's internet connection	114
Lack of motivation in students	72
More impersonal contact with students, which generates less engagement	72
Problems with my internet connection	67
Mixing work with the house environment	66
Problems with the proper functioning of technological resources	64
Lack of conditions for the development of practical activities	63
Balancing work with the house routine	63
Having to rethink the subject(s) I teach	59
High volume of teaching activities	58
Lack of skills in students to handle technological resources	56
Lack of skills on myself to handle technological resources	50
Difficulty on adapting the assessment to the ERE	49
Short preparation time for the ERE	49
High volume of administrative activities	44
Difficulty on adapting classes to the ERE	40
My mental health condition	39
Social difficulties in remote interaction with students	38
Lack of information technology support	34
Difficulty on adapting learning objectives to the ERE	32

Source: Elaborated by the authors.

Another reported difficulty was the lack of motivation in students. In fact, the low motivation in students can discourage teaching work. It is noteworthy that this condition needs to be considered as likely to occur during the ERE. Tan (2021) conducted an investigation with 282 Higher Education students to assess motivation and learning during the remote teaching period in Malaysia. The authors point out that students had a drop in motivation and learning during remote teaching. Another study that relates to the findings in this research was carried out by Peloso et al. (2020), with 704 Higher Education students, and that indicated that 48.2% of students had anxiety and demonstrated that they did not like the strategies used during the ERE in the analyzed institution.

As for the question about “suggestions for improvement”, the results obtained are presented in Table 6. In it, the suggestions were presented in the first column and, in the last column, the number of indications in descending order. It is important to remember that professors could check more than one option, and that only the options that were mentioned for more than 40 times were selected.

Table 6 – Suggestions for Improvements according to the Faced Difficulties

Suggestions	Frequency
Reorganization of work routine	67
Acquisition of materials to be used in the subjects	66
Reducing the number of meetings and their duration	64
Specific courses focused on the use of Information and Communication Technologies	63
Assistance with equipment and technical assistance	61
Specific courses focused on teaching didactics	60
The university developing a communication mechanism with professors	56
Modifications in interpersonal relationships between professor-student and professor-professor	45

Source: Elaborated by the authors.

Within this question, in the “others” option, some professors pointed out possible improvements that were not part of the selection, such as: (a) “pedagogical tips”; (b) an explanation made by the management team of the University about what the real teaching practices under the responsibility of the professors would be; (c) the University management to acquire and make available free materials to students related to the course being taught; (d) the University management to articulate an aid or acquisition of resources for the professors to develop their practice (software, internet, furniture, such as desk and chair, devices and others); and (e) platform, website or software that better articulates communication between professors and students and among professors. Finally, it is noteworthy that some participating professors used the “others” field to present information that was not compatible with the question, making any form of analysis impractical.

The suggestions for improvements, again, are in accordance with the needs presented by HEIs around the world, as presented by Izumi et al. (2020) with data from 29 countries. Additionally, the aforementioned improvements were also found by Lawrence and Wu (2020) in China, Sia and Abbas Adamu (2020) in Malaysia, Hall et al. (2020) in the UK, Australia, Belgium, Cyprus, Ireland and the Netherlands, Gautam and Gautam (2021) in Nepal, Scull et al. (2020) and Ling (2020) in Australia, Joshi, Vinay and Bhaskar (2020) in India, among others.

Finally, the options related to the question “Main Positive Points of the ERE” were analyzed. In Table 7, the options of greater representation among the participating professors are presented in the first column, and the total number of indications, in the second one. Data were organized by the frequency of indications in descending order, with the possibility for professors to select more than one option.

Table 7 – Main Positive Points of the ERE according to Professors

Positive Points	Frequency
Learning about new technologies	111
Adapting to a new context	97
Opportunity for professional development in the face of a challenge	83
Flexible working hours	77
Teaching experiences that would not be possible face-to-face	62
More time with the family	40
Stress reduction due to reduced commuting to the University	27

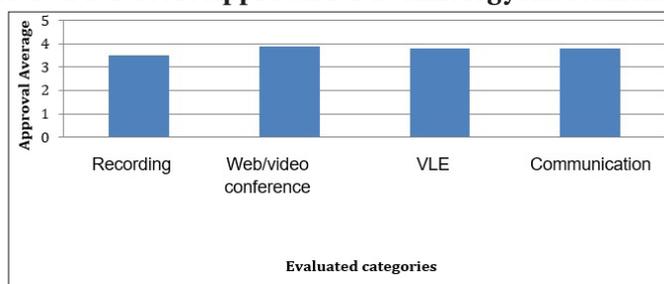
Source: Elaborated by the authors.

RQ03: Which Teaching Characteristics can be related to the Adopted Teaching Practices and Perceptions about the ERE?

The indications presented in Table 7 make it possible to discuss the elements related to the perception and characteristics of teaching practices. It's noteworthy that, in the professors' understanding of this issue, there is an attempt to overcome the difficulties by using, as a core, the attempt to identify positive aspects in the challenge represented by the ERE. The data presented in this study are close to the indications presented by Gautam and Gautam (2021), when they point out that the effectiveness of the ERE modality for teaching and learning has a close relationship with the perception of the effectiveness of remote teaching by the faculty and students, through the technological support of the HEI and infrastructure availability.

In addition, the results presented in this research with respect to professors' approval for technological resources are similar to the belief in the use of ICTs and ERE, as well as for the indication of skills for the use of ICTs. These data represent actions that demonstrate a good response to the limitations imposed, during the pandemic, for the ERE by the FURR, as pointed out by Hall et al. (2020). However, there are still gaps that require further investigations and actions, such as mental health of students and professors, psychosocial support plans for the University population in general, political relations between civil society and University institutions aligned to collective support and overcoming, an economic and social plan that effectively meets the needs of students and professors, among others.

In Figure 1, the approval means indicated by the participating professors for the categories mentioned above are presented. On the X axis, the categories are presented, and on the Y axis, the means obtained are found, whose minimum value is of 0, and the maximum one is of 5.

Figure 1 – Professors Approval for Technology Assessment Areas

Source: Elaborated by the authors.

Finally, the belief in the use of ICTs and ERE has proved to be qualitatively positive in the opinion of professors, as shown in Figure 1. These data are reaffirmed regardless of different trends, linear or exponential, for example, increasing the validity strength of the data. Overall values remained around 3.8, out of a maximum of 5, which represents a high approval value.

Considering that this representation does not reveal the characteristics that could represent barriers or difficulties for the use of such technologies for the teaching practice, future research should present more open/descriptive questions that ask professors for an effective opinion/perception about the investigated categories – ERE, use of ICTs, skills to use technologies and performance, for example. Thus, we understand that it would be possible to get more information that was not covered by the multiple-choice questions.

The findings presented by this study in questions P01 and P02 corroborate the findings of international literature. Thus, it's important to highlight a synthesis of the main data that are corroborated on the possible relationships among characteristics of professors for a more assertive action in the face of pandemic situations with the use of remote teaching. These characteristics are: (a) conditions for looking for a training that is included in the professors' working hours; (b) improvement courses that are aligned with the situation experienced; (c) use of technological resources in subjects that take into account the social situation of students; (d) availability of financial resources for students; (e) different teaching strategies with greater communication between students-professors and students-students; (e) flexible assessment procedures aligned with the teaching procedures adopted; and (f) support and follow-up from the University's administrative team to the entire academic community.

Conclusion

In view of the research goal of characterizing teaching practices and the perceptions of professors about the teaching carried out at the Federal University of Roraima (FURR), it was possible to identify that

the actions adopted by the professors participating of the research and the FURR administrators were adequate with the findings of literature. The most significant results for the teaching practices adopted by the participants are the use of different teaching and assessment strategies through ICTs, the redistribution of time and activities according to the demand imposed by the change in the University-house routine and the involvement in courses of continuing education or improvement.

Regarding the actions carried out by FURR, we highlight the offering of financial resources of assistance to students – Postoral Support/care) –, the monitoring of the ERE implementation with effectiveness measures – professor and student satisfaction evaluation, for example –, the offering of continued education and improvement in courses focused on the interest of professors, actions towards preventing the contamination of the University community and fighting the contagion of Covid-19.

Regarding the perception of participating professors with respect to the ERE and the use of ICTs, the results suggest above mean satisfaction. However, as barriers to a better overcoming, it's noteworthy the high demand for work activities imposed on professors – including the overload of hours dedicated to teaching work –, the absence of some necessary resources for the implementation of quality in teaching, close and continuous monitoring by the University's administrative team, greater motivation of the students to get involved in the activities.

With respect to conditions that exceed the limits of action of the University community members, the low quality of the internet offered in the researched state, the study and work infrastructure imposed by the telecommuting and studying at home, in addition to fear and insecurity caused by the advance of Covid-19 mortality in the country.

As limitations of the research, the number of participants and the regions studied is presented as the most significant one. Thus, it is recommended to include participants from other regions of the country. Furthermore, it is suggested to insert questions that aim to investigate or evaluate the mental health of the participating professors, in order to make it possible to map possible psychosomatic effects on teaching practices, in addition to those already included in this research.

Still on the limitations, it was found that the selected questions were based on national and international research sets published until the onset of the research. Thus, the possibility that they do not reach all the significant scope for investigating of the proposed theme cannot be ruled out. Even so, it is noteworthy that the results obtained contemplated the proposed objectives and answered the research question, as presented.

Finally, the data obtained replicate and extend international data from several countries. We identified that the factors of greatest influence on the performance of teaching practice and the perception of the professors about the ERE are derived from the nature of the change, pandemic and disease severity, and the speed of coping response, im-

plementation of the ERE in a short period of time with no time for training or organizing appropriate conditions.

When comparing, briefly, the characteristics of countries that had published data up to the date this research was written, great economic, population, sociodemographic and other differences can be observed. Even with these differences, the difficulties faced were similar. Thus, the actions indicated in the literature to overcome these difficulties, as well as the actions adopted by professors and by FURR, can serve as data for future actions, both to the institution itself and other HEIs.

The data from this research can enhance discussions regarding other important conditions in the teaching and learning process, such as the level of emotional involvement or an organized teaching environment. It is concluded, therefore, that the data from this research replicate and advance the scope of research that aims to investigate teaching practices and response conditions to the pandemic. As an example, the actions adopted by the professors participating in this research and by FURR itself are partially in agreement with the findings of Hall et al. (2020), Izumi et al. (2020) and Deshmukh (2021), for example. The authors published research results in the early period of the pandemic, presenting possible actions. In the research conducted, the data are also related to the implementation of these actions, with their respective limitations and outcomes.

Received on May 18th, 2022
Approved on October 10th, 2022

Notes

- 1 The calculation of the minimum sample size (145 professors) took into account a sampling error of 7% and a confidence level of 95%.
- 2 The calculation of the minimum sample size took into account a sampling error of 7% and a confidence level of 95%.

References

- ANDREZA, Raul Souza et al. Os Impactos da Covid-19 na Educação por meio do Ensino Remoto. *Revista Interfaces*, Guarapuava, Unicentro, v. 8, n. 3, p. 630-635, 2020. Disponível em: <http://dx.doi.org/10.16891/2317-434X.v8.e3.a2020.pp630-635>. Acesso em: 1 out. 2022.
- BRASIL, Ministério da Educação e Cultura. Portaria nº 554 de 17 de junho de 2020. *Diário Oficial da União*, Brasília, edição 114, 17 jun. 2020. Seção 1. P. 62.
- BRASIL. Lei n. 8.112 de 11 de dezembro de 1990. Dispõe sobre o regime jurídico dos servidores públicos civis da União, das autarquias e das fundações públicas federais. *Diário Oficial da União*, ano 129, n. 75, 11 dez. 1990. Seção 1. P. 7293.
- BRASIL. Lei nº 9.394, de 20 de dezembro de 1996. Lei de Diretrizes e Bases da Educação Nacional (1996); LDB (1996); Lei Darcy Ribeiro. *Diário Oficial da União*, ano 134, n. 248, 23 dez. 1996. Seção 1. P. 27833.
- BRASIL. Lei n 12.772, de 28 de dezembro de 2012. Dispõe sobre a estruturação do Plano de Carreiras e Cargos de Magistério Federal [...]. *Diário Oficial da União*, Brasília, ano 149, n. 251, 31 dez. 2012. Seção 1. P. 1.

- BRASIL. Ministério da Saúde. **Plano de Contingência Nacional para Infecção Humana pelo novo Coronavírus COVID-19**. Brasília: MEC, 2020. Disponível em: <https://portalarquivos2.saude.gov.br/images/pdf/2020/fevereiro/13/plano-contingencia-coronavirus-COVID19.pdf>. Acesso em: 23 out. 2022.
- BROADY, Tim; CHAN, Amy; CAPUTI, Peter. Comparison of Older and Younger Adults' Attitudes towards and Abilities with Computers: implications for training and learning. **British Journal of Educational Technology**, v. 41, n. 3, p. 473-485, 2010. Disponível em: <https://doi.org/10.1111/j.1467-8535.2008.00914>. Acesso em: 12 jun. 2021.
- COVID-19 Coronavirus Pandemic. **Worldometer**, 2020. Disponível em: <https://www.worldometers.info/coronavirus/>. Acesso em: 1 nov. 2020.
- COZBY, Paul. **Métodos de Pesquisa em Ciências do Comportamento**. São Paulo: Atlas, 2003.
- DESHMUKH, Jay. Speculations on the Post-Pandemic University Campus – a global inquiry. **Archnet-IJAR**, v. 15, n. 1, p. 131-147, 2021. Disponível em: <https://doi.org/10.1108/ARCH-10-2020-0245>. Acesso em: 1 out. 2021.
- GAUTAM, Dhruba Kumar; GAUTAM, Prakash Kumar. Transition to Online Higher Education During Covid-19 Pandemic: turmoil and way forward to developing country of South Asia-Nepal. **Journal of Research in Innovative Teaching & Learning**, v. 14, n. 1, p. 93-111, 2021. Disponível em: <https://doi.org/10.1108/JRIT-10-2020-0051>. Acesso em: 4 out. 2022.
- GUSSO, Hélder Lima et al. Ensino Superior em Tempos de Pandemia: diretrizes à gestão universitária. **Educação & Sociedade**, São Paulo, v. 41, e238957, 2020. Disponível em: <https://dx.doi.org/10.1590/es.238957>. Acesso em: 4 out. 2022.
- HALL, Tony et al. Education in Precarious Times: a comparative study across six countries to identify design priorities for mobile learning in a pandemic. **Information and Learning Sciences**, v. 121, n. 5/6, p. 433-442, 2020. Disponível em: <https://doi.org/10.1108/ILS-04-2020-0089>. Acesso em: 23 out. 2022.
- HATTIE, John. The Applicability of Visible Learning to Higher Education. **Scholarship of Teaching and Learning in Psychology**, v. 1, n. 1, p. 79-91, 2015. Disponível em: <https://doi.org/10.1037/stl0000021>. Acesso em 23. out. 2022.
- HENKLAIN, Marcelo Henrique Oliveira et al. Feedback Fundamentado no *Teacher Behavior Checklist* para Professores Universitários: uma pesquisa exploratória. **Psicologia Argumento**, Curitiba, PUCPR, v. 38, n. 96, p. 222-246, 2020. Disponível em: <http://dx.doi.org/10.7213/psicolargum.38.100.AO02>. Acesso em: 20 out. 2022.
- ISLAM, Nazrul et al. Physical Distancing Interventions and Incidence of Coronavirus Disease 2019: natural experiment in 149 countries. **THE BMJ**, v. 370, m2743, 2020. Disponível em: <https://doi.org/10.1136/bmj.m2743>. Acesso em: 14 out. 2022.
- IZUMI, Takako et al. Managing and Responding to Pandemics in Higher Educational Institutions: initial learning from Covid-19. **International Journal of Disaster Resilience in the Built Environment**, v. 12, n. 1, p. 51-66, 2020. Disponível em: <https://doi.org/10.1108/IJDRBE-06-2020-0054>. Acesso em: 16 out. 2022.
- JOSHI, Amit; VINAY, Muddu; BHASKAR, Preeti. Impact of Coronavirus Pandemic on the Indian Education Sector: perspectives of teachers on on-line teaching and assessments. **Interactive Technology and Smart Education**, v. 18, n. 2, p. 205-226, 2021. Disponível em: <https://www.emerald.com/insight/content/doi/10.1108/ITSE-06-2020-0087/full/html>. Acesso em: 28 out. 2022.
- KUMMITHA, Harshavardhan Reddy et al. Coronavirus Disease 2019 and its Effect on Teaching and Learning Process in the Higher Educational Institutions. **Higher Education for the Future**, v. 8, n. 1, p. 90-107, 2020. Disponível em: <https://doi.org/10.1177/2347631120983650>. Acesso em: 14 out. 2022.

LAWRENCE, Leigh; WU, Jian. China's Higher Education Governance During COVID: a mixed-methods study of policy analysis and student perspectives. **Asian Education and Development Studies**, v. 10, n. 2, p. 295-307, 2021. Disponível em: [10.1108/AEDS-05-2020-0115](https://doi.org/10.1108/AEDS-05-2020-0115). Acesso em: 11 out. 2022.

LING, Lorraine. Universities and Research in Times of Crisis: the getting of wisdom. **Qualitative Research Journal**, v. 20, n. 4, p. 361-371, 2020. Disponível em: <https://doi.org/10.1108/QRJ-06-2020-0055>. Acesso em: 13 out. 2022.

OPAS. Organização Pan-Americana de Saúde; OMS. Organização Mundial da Saúde. **Folhas informativas sobre o COVID-19**. Washington: OPAS, 2021. Disponível em: <https://www.paho.org/pt/covid19>. Acesso em: 1 nov. 2020.

ÖZDAMLI, Fezile; ÖZDAL, Hasan. Life-long Learning Competence Perceptions of the Teachers and Abilities in using Information-Communication Technologies. **Procedia - Social and Behavioral Sciences**, v. 182, n. 3, p. 718-725, 2014. Disponível em: [10.1016/j.sbspro.2015.04.819](https://doi.org/10.1016/j.sbspro.2015.04.819). Acesso em: 11 set. 2022.

PELOSO, Renan Morais et al. Notes from the Field: Concerns of Health-Related Higher Education Students in Brazil pertaining to distance learning during the coronavirus pandemic. **Evaluation & the Health Professions**, v. 43, n. 3, p. 201-203, 2020. Disponível em: <https://doi.org/10.1177/0163278720939302>. Acesso em: 12 set. 2022.

R CORE TEAM. **R: a language and environment for statistical computing**. Vienna: R Foundation for Statistical Computing, 2019. Disponível em: <https://www.R-project.org/>. Acesso em: 12 set. 2022.

RIZVI, Yasmeen Shamsi; NABI, Asma. Transformation of Learning from Real to Virtual: an exploratory-descriptive analysis of issues and challenges. **Journal of Research in Innovative Teaching & Learning**, v. 14, n. 1, p. 5-17, 2021. Disponível em: <https://doi.org/10.1108/JRIT-10-2020-0052>. Acesso em: 14 de set. 2022.

SANSOM, Rebecca. Pressure from the Pandemic: pedagogical dissatisfaction reveals faculty beliefs. **Journal of Chemical Education**, Iowa, Iowa State University, v. 97, n. 9, p. 2378-2382, 2020. Disponível em: <https://dx.doi.org/10.1021/acs.jchemed.0c00657>. Acesso em: 24 set. 2022.

SCHNEIDER, Michael; PRECKEL, Franzis. Variables associated with Achievement in Higher Education: a systematic review of meta-analyses. **Psychological Bulletin**, Washington, v. 143, n. 6, p. 565-600, 2017. Disponível em: <https://doi.org/10.1037/bul0000098>. Acesso em: 26 set. 2022.

SCULL, Janet et al. Innovations in Teacher Education at the Time of Covid19: an Australian perspective. **Journal of Education for Teaching**, v. 46, n. 4, p. 1-10, 2020. Disponível em: <https://doi.org/10.1080/02607476.2020.1802701>. Acesso em: 12 set. 2022.

SIA, Joseph Kee-Ming; ABBAS ADAMU, Adamu. Facing the Unknown: pandemic and higher education in Malaysia. **Asian Education and Development Studies**, v. 10, n. 2, p. 263-275, 2021. Disponível em: <https://doi.org/10.1108/AEDS-05-2020-0114>. Acesso em: 11 out. 2022.

TAN, Consilz. The Impact of Covid-19 on Student Motivation, Community of Inquiry and Learning Performance. **Asian Education and Development Studies**, v. 10, n. 2, p. 308-321, 2021. Disponível em: <https://doi.org/10.1108/AEDS-05-2020-0084>. Acesso em: 14 out. 2022.

WANG, Kun; ZHANG, Linglin; YE, Ling. A Nationwide Survey of On-line Teaching Strategies in Dental Education in China. **Journal of Dental Education**, v. 85, n. 2, p. 1-7, 2020. Disponível em: <https://doi.org/10.1002/jdd.12413>. Acesso em: 11 set. 2022.

ZHANG, Chun. From Face-to-Face to Screen-to-Screen: CFL teachers' beliefs about digital teaching competence during the pandemic. **International Journal of Chinese Language Teaching**, v. 1, n. 1, p. 35-52, 2020. Disponível em: <https://doi.org/10.46451/ijclt.2020.06.03>. Acesso em: 11 ago. 2022.

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