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Article

Brazilian Students' Expectations Regarding Distance Learning and Remote Classes During the COVID-19 Pandemic

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Abstract

Face-to-face classes of about 1.5 billion students in 165 countries worldwide have been suspended due to the COVID-19 pandemic and social distancing measures. This study investigates the expectations of students from technical and higher education courses regarding the possibilities for distance learning and remote classes during the COVID-19 pandemic in Brazil, including the technological conditions for carrying out the school activities. The present paper analyses this issue in Brazilian students ($N = 7,203$) through an online survey. Three questionnaires were developed for the research context. Descriptive and multivariate statistical analyses were performed. Results highlight the students' interest in maintaining their studies remotely, but this interest is preeminent when the students have more extensive access and conditions for using information and communication technologies (ICTs). The research highlighted that students in need of psychological assistance demonstrate more difficulty, less interest, and fewer technical conditions to conduct remote studies. Therefore, internet access conditions, difficulty getting and using ICTs, socioeconomic circumstances, demotivation, and influence of the home environment are the main factors for the remote studies' continuity and effectiveness. As follows, it is necessary to manage psychological, social, and economic aspects to reduce educational losses and improve distance learning in the pandemic context to achieve better school results.

Keywords

Social distancing • distance learning • remote classes • COVID-19 • Brazil • Brazilian students

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Social distancing measures to mitigate and suppress the COVID-19 contagion have been adopted by several countries worldwide. These measures include blockade squares and beaches, the ban on events, and the closure of shops and educational institutions (e.g., schools and colleges) to prevent agglomerations, which have to require home office practices in the most varied types of businesses and organizations (Anderson et al., 2020; Bedford et al., 2020; Remuzzi & Remuzzi, 2020).

Precisely, according to the United Nations Educational, Scientific and Cultural Organization (UNESCO, 2020), the closure of educational institutions corresponds to the suspension of face-to-face classes of about 1.5 billion students in 165 countries (from child education to postgraduate studies). This scenario strongly affects students' academic performance and school progress. Distance Education (DE) has been considered an alternative to replace face-to-face classes during the social distancing period due to the COVID-19 pandemic (see Viner et al., 2020).

Brazil is becoming the epicentre of the COVID-19 pandemic in the World, with 4,689,613 cases and 140,537 deaths between February-September 2020 (World Health Organization [WHO], 2020). In this context, the Brazilian government authorized on an exceptional basis until December 31, 2020, the substitution of face-to-face classes for remote classes by digital means and information and communication technologies (ICTs) or DE (Portaria nº 544, 2020). Remote classes aim to ensure that high school students have been guaranteed access to universities, and students in technical and higher education courses completed their professional and academic training (Arruda, 2020).

The advancement and diffusion of digital social media provide a peculiar look at the didactic-pedagogical possibilities during the COVID-19 pandemic (Santos & Monteiro, 2020). However, especially in emerging countries, this articulation to adopt remote classes or distance learning at the moment neglects the students' and professors' needs and the schools' ability to offer that (Barreto & Rocha, 2020; Macedo et al., 2020).

Arruda (2020) warns that replacing face-to-face classes for remote classes using digital technologies is not the same as DE, even though there are technical and methodological similarities. According to several authors (e.g., Coelho & Tedesco, 2017; Nage-Sibande & Morolong, 2018; Silva et al., 2019; Simonson et al., 2019), DE conceptually represents an educational modality that provides autonomy and a freeway for knowledge construction at any place and time. It includes the student's self-development in the medium and long term, with the support of previously trained professors and tutors, standardized didactic-pedagogical material, and specific platforms. Currently, DE is primarily delivered by digital technologies.

On the other hand, remote classes – also formally entitled *Emergency Remote Education* or *Emergency Remote Teaching* – are an adaptation of tools and techniques for interaction between students, professors, and pedagogical support staff. This adaptation encompasses the use of digital social media and academic material (in printed or digital format), as a didactic-pedagogical model that applies distance learning methodologies, sometimes synchronously, sometimes asynchronously (Arruda, 2020; Hodges et al., 2020; Williamson et al., 2020).

Also, regarding the remote classes' possibilities, it is necessary to consider the inherent challenges to DE, such as prejudice, learning resistance, and school evasion. These problems are justified, in part, by the lack of access and mastery with digital and computational tools, essential for the proper use of ICTs (Almeida et al., 2013; Nage-Sibande & Morolong, 2018; Silva et al., 2019; Simonson et al., 2019).

Remote classes – despite the limitations – demonstrate their relevance based on the partial link maintenance between students and professors, since the complete remoteness of school environments throughout the pandemic may imply disinterest, demotivation, delay in the learning process, and, consequently, inequality (Beaunoyer et al., 2020; Santos & Monteiro, 2020).

The question that arises is whether students from face-to-face courses have technical, social, and psychological conditions to pursue (even if temporarily) their studies remotely. Therefore, this study aims to investigate the students' expectations from technical and higher education courses regarding the possibilities for distance learning and remote classes during the COVID-19 pandemic in Brazil, including the technological conditions for carrying out the school activities. The study covers a phenomenon beyond the epidemic sphere and delves into economic, social, and educational issues.

Background and Assumptions

The present study evaluates distance learning specificities in the COVID-19 pandemic scenario. Building on the considerations just presented, we proposed assumptions that can be related to these specificities.

First, motivation and academic performance are interconnected when it comes to studies at a distance. Demotivation is associated with lack of time, difficulty concentrating at home, work demands, or psychological problems and disorders, and contributes to low retention rates, frequent in DE courses (Beluce & Oliveira, 2016; Hartnett, 2019; Park & Yun, 2017). Therefore, it appears that students who require psychological assistance – due to the various psychological issues (e.g., anxiety, stress, depression) – present worse conditions to conduct remote studies and less motivation (hypothesis 1).

The social and psychological effects of the COVID-19 pandemic are still being studied. Studies warn about emotional distress and other mental disorders during the COVID-19 pandemic (Duan & Zhu, 2020; Jiang et al., 2020). Xiang et al. (2020) extend mental health problems not only to people with confirmed COVID-19 infections but also to medical personnel and those with suspected contagion or in social distancing.

Beyond emotional distress, maladaptive behaviours, and defensive reactions, Taylor (2019) points out widespread psychological vulnerability and social disruption occurrences, such as the fear spreading, xenophobia, and stigmatization. For the author, psychological factors play a central role in the way people deal with the pandemic threat (e.g., infection, financial problems, and losses). Furthermore, lessons from the influenza (H1N1) pandemic 2009 highlighted risk factors to mental health, for example, bereavement, emergent life-threatening, panic or anxiety attacks, which are aggravated by separation from family and low household income, suggesting the necessity of psychological intervention (Fang et al., 2012; Taylor, 2019; Zhang et al., 2012). Thus, it appears that students infected with COVID-19 (hypothesis 2a) or with infected family members (hypothesis 2b) could demonstrate worse conditions to conduct remote studies.

In addition, the effectiveness of DE courses depends on internet access and appropriate equipment, including technical skills with ICTs (Rahardjo, 2016; Varshneya, 2017). In Brazil's case, studies show that the internet access and digital and computational equipment are less common in more impoverished locations (Horta & Oliveira, 2019; Silva, 2020) and outside the urban areas (Pereira & Santos, 2019). This indicates that socioeconomically vulnerable students (hypothesis 3), and to live in the countryside (hypothesis 4) probably implies worse conditions to conduct remote studies.

So, the present study focuses on individual-level analyses and the particularities from the social, economic, and public health situation that are underlying the COVID-19 pandemic in Brazil.

Methods

Participants

The participants were 7,203 Brazilian students (55.4% females) between 14 and 60 years old ($M_{age} = 19.97$, $SD_{age} = 5.49$) from 57 different technical (49.68%) and higher education (50.32%) courses in public

educational institutions in the Southeast Region of Brazil, coming from 27 cities [city of Salinas, in Minas Gerais, with the highest incidence (20.32%)].

Instruments

For this study, three new instruments and a sociodemographic questionnaire were developed. Initially, a brainstorming was carried out to understand the empirical elements to be evaluated. Because of the lack of instruments to be used for the research proposal, the study focused on issues that could indicate better guidance for returning school activities remotely in Brazil.

Three questionnaires were designed, and their items (47 items in all) were intuited and written according to recommendations and established psychometric criteria by Cohen and Swerdlik (2017). The questionnaires were submitted to the textual content analysis procedure (adequacy of the items to the measurement proposal) and the semantic analysis (item intelligibility). Content validity was performed with eight judges (of which three psychometrists and five professors from the areas of languages, geography, mathematics, information technology, and business administration). Semantic validity was performed with seven judges (of which two psychometrists, two professors from the area of languages, and three students). As a result, 11 items were excluded. Additionally, the psychometric properties of the instruments were tested and reported in the results section.

In this manner, the research included a sociodemographic questionnaire (containing gender identity, age, location, need for psychological care, COVID-19 contagion), and the three instruments as follow:

Distance Learning in Social Distancing Scale (DLSD-S). It was developed to measure students' expectations regarding distance learning and remote classes during the social distancing due to the COVID-19 pandemic. The DLSD-S was based on a 5-point scale ranging from 1 (*I completely disagree*), to 5 (*I completely agree*). It comprises 20 items related to the suspension of classes, distance education possibilities, and daily tasks and experiences on the social distancing period. An example item was: "I would like the educational institution where I study to offer remote classes during the social distancing period" and "the home environment does not allow me to concentrate on studies at a distance".

Questionnaire on the Use of Information and Communication Technologies (QUICT). It was developed to verify access, skills, and technical capacity with ICTs related to distance learning possibilities. The QUICT was based on 5-point discrete scale (1 = *No time availability*, 2 = *less than an hour per day*, 3 = *between 1 and 2 hours per day*, 4 = *between 2 and 4 hours per day*, 5 = *more than 4 hours per day*), and comprises 9 items (e.g., study availability)

Skills with Apps Inventory (SAI). The instrument was developed to check the students' skills with applications related to communication, data sharing, and video conferencing, which can be used in remote classes or distance learning. The SAI was answered on a 5-point scale ranging from 1 (*I don't know it*), to 5 (*I know it, and I have the expertise or excellent skills*), and comprises 7 items (apps such as "Zoom", "Google Drive", and "Google Classroom").

Procedure

The participants were invited conveniently by social media (e.g., WhatsApp, Telegram, Facebook, and Instagram) to complete the online questionnaire voluntarily and anonymously between May 10 and 18, 2020. Since all participants under the age of 18 were students from the same institution as the authors, the parents or guardians of the students were contacted to collect their respective consents by means of an academic system. For these students, the link was available by the academic system so that the students could complete the online questionnaire. Only students from face-to-face technical and higher education courses were invited to participate in the research. A non-probability sampling method was used. The data

collection was approved by the National Research Ethics Commission (Comissão Nacional de Ética em Pesquisa, in Brazil), under the process number 30850620.2.0000.0008. The participants were required to sign a free and informed consent term document before completing the questionnaire, guaranteeing the respect for the ethical guidelines that govern research with human beings. The average completion time was 13 minutes.

Data Analysis

Data were processed using statistical software. Initially, descriptive statistics (e.g., frequency, mean, standard deviation) were employed. To provide an additional interpretation of the DLSD-S items, the scores were arbitrarily classified according to the level of endorsement to the item: low (1.0 to 2.9), medium (3.0 to 3.9), and high (4.0 to 5.0). Analysis of skewness and kurtosis of each item and the Kolmogorov-Smirnov test indicated the sample normality, mitigating the selection bias possibilities due to the use of a convenience sample. Pearson's r correlation (two-tailed) was employed for a complimentary analysis.

The complete sample ($N = 7,203$) was divided into two random subsamples to check the validity and reliability of the proposed instruments. Sample A ($n = 3,549$) was used for the procedures of factor validity and internal consistency, in which an exploratory factor analysis (EFA) was employed to determine the most parsimonious set of elements that explain the empirical components (factors) of each instrument. Based on recommendations from Hair et al. (2010), the factors were extracted by the maximum likelihood method, using the varimax rotation with Kaiser standardization, as well as the statistical significance criteria (factor loads above .30), eigenvalues above 1.0 and Cronbach's alpha (reliability test) above .60. Sample B ($n = 3,654$) was used for the confirmatory factor validity procedure through structural equation modelling (SEM), adopting the maximum likelihood method, based on the parameters from Hair et al. (2010).

From the extracted factors and by using the complete sample, Student's t -test was applied to test hypotheses raised in this study, considering: (i) the student's need for psychological assistance, (ii) the infection or not with COVID-19 by the student and their family, (iii) the student's socioeconomic vulnerability by receiving financial assistance from the government or scholarship, and (iv) the residence place, whether in the countryside or the urban area. The effect size (Cohen's d) was used to ensure the quality of explanation, according to the criteria of statistical ($d \geq .20$), educational ($d \geq .50$), and practical significance ($d \geq .80$) (Cumming & Calin-Jageman, 2017). For DLSD-S factors, the means of the factors were calculated after recoding items with a negative direction to a positive direction.

Results

Validation of Research Instruments

Distance Learning in Social Distancing Scale (DLSD-S)

To analyse the factor structure of the DLSD-S, an exploratory factor analysis [KMO = .89; Bartlett's Sphericity Test, $\chi^2(190) = 21161.80$, $p < .000$] was performed with data from sample A ($n = 3,549$). Three factors were extracted and accounted for 45.65% of the total variance (see Table 1) – factor loads below .30 were suppressed, as they did not present any interference for the analyses. As verified in Table 1, EFA showed that the items are grouped into three principal characteristics that explain the students' expectations regarding distance learning and remote classes during the social distancing period due to the COVID-19 pandemic.

Difficulties with Distance Learning (factor 1, 7 items) represent the adversities that students face to remote classes or distance learning, highlighting the lack of experience with the distance learning and negative stimuli within the home environment that can inhibit the conditions to carry out studies or other

school or academic activities. This factor covers items such as “the home environment does not allow me to concentrate for studies at a distance”, and “my domestic commitments prevent me from carrying out any other activities”. Negative factor loadings in some items (such as “I am willing to continue my classes through distance education”, and “I have experience with Virtual Learning Environments”) show that these statements are contrary to positive direction items and, therefore, are interpreted inversely.

Table 1. Factor loadings and internal consistency of DLSD-S

Items	Factors extraction		
	1	2	3
15. The home environment does not allow me to concentrate on studies at a distance.	.74		
11. I think that I would have difficulty in conducting my studies at a distance.	.74		
8. I am willing to continue my classes through distance education.	-.64		
14. I have difficulty reading books (e-book or PDF) on the computer/tablet screen.	.62		
18. My domestic commitments prevent me from carrying out any other activities.	.61		
12. If I study, I can carry out assessments (tests) online.	-.56		
16. I have experience with Virtual Learning Environments (VLE).	-.38		
13. I would like to have quick and easy access to my professors to clarify doubts.		.68	
7. I believe social media could be used for sharing academic information.		.67	
10. I would like to participate in discussion forums with my colleagues on subjects in my field of study.		.63	
9. I believe it is interesting to receive academic materials (e.g., books, articles) by e-mail, during this social distancing period.		.63	
6. I would like the educational institution where I study to offer remote classes during the social distancing period.		.61	
1. I feel uncomfortable with the suspension of classes.		.45	
5. I believe the suspension of classes is not a good thing for my career and my professional interests.		.44	
2. I haven't done productive things in the hours that I would be studying at school/college			.70
19. Regardless of my school/college, I continue to study during this social distancing period.			-.70
17. I have been feeling unmotivated to read books during this social distancing period.			.59
3. I believe after the social distancing period; I will feel unmotivated to continue my studies.			.51
4. I want to take advantage of the suspension of classes to stimulate my personal projects.			-.50
Cronbach's Alpha (α)	.80	.74	.62
Quantity of items	7	7	5
Eigenvalue	5.37	2.42	1.32
Total Variance Explained	45.65%		

Interest in remote classes or studies at a distance (factor 2, 7 items) represents students' propensity and aspiration in face-to-face courses to participate in academic activities at a distance during the social distancing period. This factor assesses students' claims, taking into account their personal interests and beliefs, and comprising items such as “I believe social media could be used for sharing academic information”, and “I would like to participate of discussion forums with my colleagues on subjects in my field of study”.

Demotivation for carrying out productive activities (factor 3, 5 items) represents the disinterest and discouragement for study or professional activities due to the COVID-19 pandemic. This factor covers items such as “I haven't done productive things in the hours that I would be studying at school/college”, and “I have been feeling unmotivated to read books during this social distancing period”. Two items showed negative direction of factor loading and were interpreted inversely, following the logic of the positive direction items.

After that, data from sample B ($n = 3,654$) were submitted to structural equation modelling. The three extracted factors with the EFA were fixed as first-order latent factors and were hierarchically related

to a second-order factor representing the DLSD-S. The analysis confirmed the DLSD-S multifactorial solution with the following fit indexes: $\chi^2/df = 4.53$, $GFI = .99$, $NFI = .98$, $RMSEA = .03$, $RMR = .04$. Therefore, the instrument presents a coherent and representative empirical structure for the current educational scenario, providing a parsimonious explanation for the construct.

Questionnaire on the Use of Information and Communication Technologies (QUICT)

In addition, with data from sample A ($n = 3,549$), an EFA ($KMO = .77$; Bartlett's Sphericity Test, $\chi^2(36) = 12283.55$, $p = .000$) was applied to items from the QUICT. One factor was extracted with nine items (see Table 2) and was entitled *Factor 4*.

Table 2. *Factor loadings and internal consistency of QUICT*

<i>Items</i>	<i>Factor extraction</i>
Digital platforms	.72
Computational tools	.72
Computational equipment (PC or notebook)	.72
Internet access	.69
Digital equipment (tablet, smartphone, etc.)	.68
Conditions to take disciplines at a distance	.67
Use of digital equipment (tablet, smartphone, etc.)	.66
Study availability	.54
Use of computational equipment (PC or notebook)	.36
Cronbach's Alpha (α)	.82
Eigenvalue	3.84
Total variance explained	42.75%

With data from sample B ($n = 3,654$), a model was hypothesized with a first-order latent factor, using the nine items from QUICT, and submitted to structural equation modeling. The analysis confirmed the QUICT unifactorial solution, with the following fit indexes: $\chi^2/df = 3.45$, $GFI = .99$, $NFI = .99$, $RMSEA = .02$, $RMR = .01$. The instrument, therefore, presented validity and reliability.

Skills with Apps Inventory (SAI)

In continuity, using data from sample A ($n = 3,549$), the analysis of items from SAI began with an EFA ($KMO = .83$; Bartlett's Sphericity Test, $\chi^2(21) = 7004.16$, $p = .000$). One factor was extracted with seven items (see Table 3) and was entitled *Factor 5*.

Table 3. *Factor loadings and internal consistency of SAI*

<i>Items</i>	<i>Factor extraction</i>
Google Drive	.78
Skype	.76
Google Classroom	.72
Hangouts Meet	.71
Zoom	.60
Lives (Instagram/Youtube)	.58
WhatsApp	.57
Cronbach's Alpha (α)	.80
Eigenvalue	3.25
Total Variance Explained	46.52%

With data from sample B ($n = 3,654$), a model was hypothesized with a first-order latent factor, using the seven items from SAI, and submitted to structural equation modeling. The analysis confirmed the SAI unifactorial solution, with the following fit indexes: $\chi^2/df = 3.21$, $GFI = .99$; $NFI = .99$, $RMSEA = .02$, $RMR = .00$. The instrument, therefore, presented validity and reliability.

Expectations Regarding Remote Classes and Distance Learning

After the validation procedures, the study proceeds to a descriptive analysis of the research results. Detailed results of the DLSD-S, as shown in Table 4, demonstrate that the items with the highest scores highlight the students' desire for continuous access with their professors (item 13), for receiving academic materials and information by e-mail or other digital platforms (items 7 and 9), and for the possibility of holding remote classes (item 6).

Table 4. Students' expectations regarding remote classes and distance learning in the social distancing period

Items	Statistics		Endorsement to the items		
	<i>M</i>	<i>SD</i>	Low (1 - 2.9)	Medium (3 - 3.9)	High (4 - 5)
13. I would like to have quick and easy access to my professors to clarify doubts.	4.26	0.96	4.7%	18.1%	77.1%
7. I believe social media could be used for sharing academic information.	4.03	1.20	12%	18.4%	69.6%
9. I believe it is interesting to receive academic materials (e.g., books, articles) by e-mail, during this social distancing period.	3.99	1.20	12.8%	18%	69.2%
5. I believe the suspension of classes is not a good thing for my career and my professional interests.	3.90	1.34	16.6%	17.7%	65.7%
1. I feel uncomfortable with the suspension of classes.	3.87	1.26	14.2%	22.6%	63.2%
6. I would like the educational institution where I study to offer remote classes during the social distancing period.	3.58	1.39	22.9%	22.2%	54.9%
4. I want to take advantage of the suspension of classes to stimulate my personal projects.	3.54	1.20	18.4%	31.9%	49.7%
12. If I study, I can carry out assessments (tests) online.	3.46	1.36	23.9%	23.6%	52.4%
8. I am willing to continue my classes through distance education.	3.44	1.41	26.8%	21.1%	52.1%
11. I think that I would have difficulty in conducting my studies at a distance.	3.43	1.37	15%	21.3%	51.4%
10. I would like to participate in discussion forums with my colleagues on subjects in my field of study.	3.39	1.31	25.4%	27.8%	46.8%
17. I have been feeling unmotivated to read books during this social distancing period.	3.35	1.41	27.7%	23.9%	48.4 %
20. My professional demands have been less intense in this social distancing period.	3.34	1.34	24.4%	30.2%	45.4%
2. I haven't done productive things in the hours that I would be studying at school/college.	3.10	1.42	33.8%	26.9%	39.3%
15. The home environment does not allow me to concentrate on studies at a distance.	3.00	1.47	39.2%	21%	39.8%
14. I have difficulty reading books (e-book or PDF) on the computer/tablet screen.	2.91	1.50	42.1%	19.8%	38.1%
19. Regardless of my school/college, I continue to study during this social distancing period.	2.80	1.31	42.2%	29%	28.8%
3. I believe after the social distancing period; I will feel unmotivated to continue my studies.	2.51	1.47	52.9%	20.5%	26.6%
16. I have experience with Virtual Learning Environments (VLE).	2.44	1.36	55.3%	22%	22.6%
18. My domestic commitments prevent me from carrying out any other activities.	2.07	1.15	67.3%	20.8%	11.9%

Note. *M* = Mean; *SD* = Standard deviation.

Although the majority of students demonstrate an interest in conducting academic/school activities remotely during the period of social distancing, most of these students claim to have no experience with Virtual Learning Environments (VLE) (item 16). The lowest score item corroborates this finding.

Item 18 highlights that the students' domestic activities do not represent barriers to performing academic/school activities remotely during the social distancing period. Pearson's r correlation pointed out the existence of a negative relationship, for example, between the demands for domestic activities of the investigated students (item 18) and the desire that the educational institution where they study offers remote classes (item 6) ($r = -.32, p = .000$).

Access, Skills, and Technical Capacity with Information and Communications Technologies (ICTs)

As shown in Table 5, the detailed results of QUICT highlight that most students claim to have: digital (tablet or smartphone, 97%) and computer equipment (PC or notebook, 74.3%), internet access even if with connection limitations (92.5%), and capacity to use digital platforms (96.6%) and computational tools (93.5%). These indicators, when they are associated with the student's time available for study and the number of disciplines the student is willing to attend, could support a viable proposal for returning school activities through remote classes and distance studies.

Table 5. Access, skills, and technical capacity with information and communications technologies (ICTs)

Study availability	<i>No time availability</i> 2.9%	<i>Less than an hour per day</i> 4.6%	<i>Between 1 and 2 hours per day</i> 26.9%	<i>Between 2 and 4 hours per day</i> 36.3%	<i>More than 4 hours per day</i> 29.3%
Internet access	<i>Little or no access</i> 7.5%	<i>Access with connection difficulties</i> 26.2%	<i>Limited access without connection difficulties</i> 11.3%	<i>Continuous access without connection difficulties</i> 38.8%	<i>Unlimited access with fast connection</i> 16.2%
Digital platforms	<i>No skills</i> 3.4%	<i>Little skills</i> 17.7%	<i>Limited skills</i> 31.4%	<i>Substantial skills</i> 33.6%	<i>Expertise or great skills</i> 13.9%
Computational tools ¹	6.5%	23.8%	21.7%	34.6%	13.4%
Digital equipment	<i>I don't have it</i> 3%	<i>I have it but without internet access</i> 9.8%	<i>I have it, with internet access</i> 50.6%	<i>I have several equipments², with internet</i> 36.5%	
Computational equipment	25.7%	6.1%	52.1%	16.2%	
Conditions to take disciplines at a distance	<i>No disciplines</i> 6.4%	<i>Only one discipline at a time</i> 17.1%	<i>More than one discipline</i> 30%	<i>All my disciplines</i> 46.6%	
Use of digital equipment	<i>Neither I nor anyone who lives with me has it</i> 1.8%	<i>I use someone else's equipment</i> 2.4%	<i>I use shared equipment</i> 3%	<i>I use my own equipment</i> 92.8%	
Use of computational equipment	20%	8.8%	25%	46.2%	

Note. ¹Text editor, spreadsheet, presentation, etc. ²Printer, audio/video, available memory.

It is worth noting that 25.7% claimed not to have a computer or notebook at home, while 7.5% claimed to have little or no access to the internet, and 26.2% scored to have access to the internet, but with connection difficulties (see Table 5). This situation leads to the inference that the students' access to the internet can be given in part by smartphone/tablet using mobile data. Pearson's r correlation indicated a relation between having access to the internet and having computer equipment ($r = .42$; $p = .000$), corroborating this line of reasoning.

Skills with Apps (Communication, Sharing, and Videoconferencing Applications)

Detailed results of the SAI, as shown in Table 6, highlight that most students demonstrate more knowledge and skills on sharing platforms like WhatsApp, Google Drive, and Google Classroom, and less knowledge and expertise with videoconferencing platforms (online meetings) like Zoom and Hangouts Meet.

Table 6. Skills with apps

	<i>I don't know it</i>	<i>I know it, but with little skills</i>	<i>I know it, and I have average skills</i>	<i>I know it and I have substantial skills</i>	<i>I know it, and I have the expertise or excellent skills</i>
Google Drive	8.5%	30.7%	24.1%	25.9%	10.8%
Google Classroom	10%	17.7%	24.1%	32%	16.2%
WhatsApp	0.1%	1.5%	7.9%	29.7%	60.7%
Hangouts Meet	50.2%	24.4%	11.4%	9.7%	4.4%
Zoom	59.3%	18%	9.1%	8.9%	4.7%
Skype	22.6%	39.8%	16.7%	13.7%	7.1%
Lives (Instagram/ Youtube)	22%	28.1%	19.4%	19%	11.5%

It turns out that while most students claim not to know the Zoom and Hangouts Meet platforms, video conferencing platforms are easy to use. Therefore, more attention should be directed to the fact that 55.3% of students possess no experience with virtual learning environments (item 16 from DLSD-S). In this respect, platforms better known to students can mean more comfort and enjoyment with remote studies.

Analysis of the Relationships Between Distance Learning in Social Distancing, Use of ICTs and Skills with Apps

Descriptive statistics and Pearson's correlation between the three instruments' factors (mean of the respective items) were performed (see Table 7).

Table 7. Descriptive statistics and Pearson's correlation between the factors

<i>Factors</i>	<i>M</i>	<i>SD</i>	<i>SE</i>	<i>95% CI</i>	<i>Correlations</i>			
1 Difficulties with distance learning	2.70	0.98	0.01	2.68 – 2.72	1	2	3	4
2 Interest in remote classes or studies at a distance	3.86	0.81	0.00	3.84 – 3.87	-.65***			
3 Demotivation for carrying out productive activities	2.92	0.86	0.01	2.90 – 2.92	.10***	.04***		
4 Access, skills, and technical capacity with ICT	3.28	0.64	0.00	3.26 – 3.29	-.57***	.36***	-.04***	
5 Skills with apps of communication.	2.80	0.77	0.00	2.78 – 2.82	-.42***	.29***	-.11***	.61***

Note. M = Mean; SD = Standard deviation; SE = Standard error; CI = Confidence Interval.

*** $p < .001$

The analyses indicate that *Interest in remote classes or studies at a distance* obtained the highest average score, denoting students' willingness to pursue their studies remotely. The same factor demonstrated a negative correlation with *Difficulties with distance learning*, which indicates that the fewer difficulties with distance studies, the higher the interest in continuity of studies remotely.

The analyses also indicate that *Difficulties with distance learning* is negatively correlated with the *Access, skills, and technical capacity with ICTs* and *Skills with apps of communication, sharing, and videoconferencing*. I.e., not having access to ICTs and low skills with apps accentuate the difficulties with distance learning. The correlation between *Access, skills, and technical capacity with ICTs* and *Skills with apps of communication, sharing, and videoconferencing* corroborates this line of thought.

Furthermore, the analyses showed that the *Demotivation for carrying out productive activities* at home during the social distancing period did not depend on students' difficulties or interests with distance studies. It equally did not suffer interference from the conditions of access to the internet or skills and technical capacities with ICTs. I.e., the demotivation comes from elements not related to the constructs raised here.

Analysis of Sociodemographic Variables Based on the Factors

As presented in Table 8, Student's *t*-test was employed together with the effect size (Cohen's *d*) to verify the influence relations between the sociodemographic variables and each factor.

Table 8. Analysis of sociodemographic variables based on the factors

Factors	Yes		No		Statistics		
	<i>M</i>	<i>SD</i>	<i>M</i>	<i>SD</i>	<i>t</i>	<i>p</i>	<i>d</i>
Beneficiary of any financial assistance program or scholarship (yes = 1,652; no = 5,551)							
1. Difficulties with distance learning	2.76	.98	2.68	.98	2.85	.004	.11
2. Interest in remote classes or studies at a distance	3.88	.79	3.85	.81	1.46	.143	.04
3. Demotivation for carrying out productive activities	2.92	.88	2.92	.85	-.22	.826	.01
4. Access, skills, and technical capacity with ICTs	3.18	.66	3.31	.63	-7.33	.000	.21
5. Skills with apps of communication...	2.75	.76	2.82	.78	-2.95	.003	.08
Need for psychological assistance during social distancing (yes = 349; no = 6,854)							
1. Difficulties with distance learning	3.24	.97	2.67	.98	10.53	.000	.58
2. Interest in remote classes or studies at a distance	3.71	.86	3.86	.80	-3.45	.001	.19
3. Demotivation for carrying out productive activities	3.18	.85	2.91	.86	5.77	.000	.32
4. Access, skills, and technical capacity with ICTs	2.96	.70	3.30	.63	-8.71	.000	.51
5. Skills with apps of communication...	2.59	.74	2.81	.77	-5.28	.000	.29
Student infected with COVID-19 (yes = 102; no = 7,101)							
1. Difficulties with distance learning	3.08	1.11	2.69	.98	3.90	.000	.38
2. Interest in remote classes or studies at a distance	3.58	.90	3.86	.80	-3.40	.001	.33
3. Demotivation for carrying out productive activities	2.88	.88	2.92	.86	-0.43	.665	.04
4. Access, skills, and technical capacity with ICTs	3.25	.65	3.28	.64	-0.46	.639	.03
5. Skills with apps of communication...	2.77	.73	2.80	.77	-0.35	.722	.04
Someone in student's family infected with COVID-19 (yes = 324; no = 6,879)							
1. Difficulties with distance learning	3.14	1.10	2.68	.97	7.44	.000	.46
2. Interest in remote classes or studies at a distance	3.58	.93	3.87	.80	-5.39	.000	.34
3. Demotivation for carrying out productive activities	2.84	.91	2.92	.86	-1.61	.107	.09
4. Access, skills, and technical capacity with ICTs	3.15	.73	3.29	.63	-3.28	.000	.21
5. Skills with apps of communication...	2.78	.81	2.80	.77	-.50	.001	.03
Urban area (n = 5,739) Countryside (n = 1,464)							
1. Difficulties with distance learning	2.63	.97	2.97	1.00	-12.02	.000	.35
2. Interest in remote classes or studies at a distance	3.88	.80	3.75	.84	5.40	.000	.16

3. Demotivation for carrying out productive activities	2.93	.86	2.88	.85	1.80	.069	.05
4. Access, skills, and technical capacity with ICTs	3.38	.59	2.89	.68	24.68	.000	.79
5. Skills with apps of communication...	2.87	.77	2.52	.72	16.32	.000	.46

Note. *M* = Mean; *SD* = Standard deviation.

Analyses indicate that beneficiary students of financial assistance programs or scholarships claim to have more substantial difficulty with distance learning, as well as less access, skills, and technical capacity with ICTs (which includes less internet access) than students who are not beneficiaries (those in better financial condition).

On the other hand, students who claimed in need of psychological assistance presented more unfavourable general conditions than students who claimed not to require this type of care. In general, students in need of psychological assistance presented more difficulty with distance studies, higher demotivation to carrying out productive activities at home, less interest in remote classes or distance studies, less access, skills, and technical capacity with ICTs (which including less internet access), and fewer skills with apps of communication, sharing and videoconferencing.

Besides, students with suspicion or confirmation of the COVID-19 infection claimed to encounter more difficulties and less interest in remote classes or distance studies. A similar scenario occurs among students with family members with suspicion or confirmation of the COVID-19 infection, who also showed less access, skills, and technical capacity with ICTs (which included less internet access). This context may indicate contagion has been higher among low-income families, unable to remain in social distancing, probably because of the need to work in person - Gaudecker et al. (2020) indeed indicate that works (underemployment) that do not require a higher education degree present less chance of working remotely.

Finally, it is worth mentioning that students who are living in the countryside, during the social distancing period, showed more difficulty with distance studies, less access, skills, and technical capacity with ICTs (which included less internet access), and fewer skills with apps of communication, sharing, and videoconferencing.

Discussion

On the conditions for remote classes and the emergency remote education in Brazil, during the social distancing period given the COVID-19 pandemic, this article reports a survey that suggests some essential circumstances to understand the Brazilian students' expectations on this issue and its underlying individual aspects.

Firstly, to think about an emergency remote education during the COVID-19 pandemic, it must consider the student's interest in conducting studies remotely or at a distance, the facilities/difficulties related to the student's routine life and home environment, and their demotivation to undertake productive things due to the morbid scenario. After that, no less important, it must consider the conditions of access to and use of ICTs and skills with applications – which will be used and will be more effective in this remote education process.

In addition, the students' demotivation with remote classes and DE is related to difficulties in being productive in this period. Sanchez-Taltavull et al. (2020) explain that productivity during the social distancing period decreases when there is an increase in the rates of COVID-19 infections or low efficiency of home office practices (work/study at home). The authors estimate a reduction in productivity of about 50% with the work/study at home during the COVID-19 pandemic.

Some authors (e.g., Barros & Silva, 2010; Christensen, 1988; Gaudecker et al., 2020) highlight conditioning elements for the profitable home-based work/study such as capacity for self-discipline, ease of

access to peers and the reference institution, delimitation of resources and procedures to be used, nature of tasks and activities, numbers of people at home and the incidence of young children, and adequacy of the domestic space.

Results highlight the students' interest in maintaining their studies remotely or at a distance. However, this interest is inversely linked to the several individual difficulties inherent to own students, including the lack of internet access and low skills to use ICTs and applications. Studies have warned of these specificities for the education during the COVID-19 pandemic, emphasizing challenges and impossibilities, which are also already usual in traditional DE (e.g., Arruda, 2020; Barreto & Rocha, 2020; Hodges et al., 2020; Viner et al., 2020; Williamson et al., 2020).

In this study, the socioeconomic vulnerability, the need for psychological assistance, the residence in the countryside (rural areas), and the incidence of the COVID-19 infection were considered potential predictors of the students' expectations with remote classes and distance studies. Results showed these sensitive sociodemographic variables influenced the factors raised here, corroborating the assumptions (hypotheses) determined for this study in the theoretical treatment. Notwithstanding the remote classes and distance learning needs technological support, the analyses confirm that socioeconomic, family, home, and psychological conditions are determinant to ensuring the remote studies' continuity and effectiveness.

In this study, limitations are principally related to the temporal aspect of the results presented, since the data were collected in May 2020 – two months after the closing of schools in Brazil (on March 18), when the growth of COVID-19 cases in Brazil was still at the beginning, and there was still no prediction of how long the social distancing would last. As time goes by and schools remain locked, students will likely become even more interested and motivated to carry out academic and school activities remotely, even if there are difficulties. Besides, in June 2020, the Brazilian government announced it would subsidize the internet and equipment for students in socioeconomic vulnerability situations so that they could conduct remote classes, which would modify part of the students' needs currently investigated here. Moreover, the use of a convenience sample limits the generalizability of the found results. In this aspect, it is worth mentioning that this study has a limitation on the recruitment of students, which occurred only through social media. This procedure could imply that all participants have some internet access and are probably more skilful with ICTs than other students who have not any internet access, and who, therefore, had fewer opportunities to access the survey.

The objective of this study was to investigate the students' expectations from technical and higher education regarding the possibilities for distance learning and remote classes, which include the technological conditions for carrying out the school activities during the COVID-19 pandemic in Brazil. The study revealed the need to view the remote classes' possibilities and DE with parsimony and weighting – beyond the more complex dimension specificities of the teaching-learning process. The main contribution is established in the mapping of mechanisms (facilitators and barriers) for the adoption of viable actions for school and academic management in Brazil regarding the resumption of classes during the COVID-19 pandemic period, demonstrating applicability for future scenarios – considering the probability of new waves of COVID-19 contagion (see Kissler et al., 2020). Results highlight the need to manage individual and collective (psychological, social, and economic) aspects to reduce educational losses and to improve the distance learning expansion in the pandemic context to achieve better school/academic results. For future research agendas, it should be investigated the educational institutions' capacity (including the professors) to offer remote classes or DE, therefore completing a coherent cycle on the emergency remote education.

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