

**ACADEMICS ACTIVITIES OF STUDENTS WITH VISUAL EMPIRMENT:
HIGHER EDUCATION IN AN EMERGENCY REMOTE TEACHING CONTEXT**

***ATIVIDADES ACADÊMICAS DE ESTUDANTES COM DEFICIÊNCIA VISUAL:
ENSINO SUPERIOR NO CONTEXTO DE ENSINO REMOTO EMERGENCIAL***

***ACTIVIDADES ACADÉMICAS DE ESTUDIANTES CON DISCAPACIDAD VISUAL:
EDUCACIÓN SUPERIOR EN EL CONTEXTO DE ENSEÑANZA REMOTA DE
EMERGENCIA***



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ABSTRACT: The objective was to characterize the academic activities of students with visual impairment in higher education in a remote teaching situation during the COVID-19 pandemic. The research had a descriptive exploratory design and content analysis method with a convenience sample. It was developed using technological resources, using a semi-structured interview script and the Brazil Economic Classification Criteria questionnaire. Nine adult higher education visual impairment students participated. Data were analyzed using content analysis. There was no significant difference between undergraduate and graduate students regarding the difficulty in using electronic resources, however, graduate students reported greater tiredness and health problems during this period related to the demand and excessive use of the screen. It is necessary to reflect on the positive aspects of emergency remote teaching that could be used in face-to-face teaching for visual impairment students and establish a plan of accessible strategies for future offers.

KEYWORDS: University education. Academic activities. Remote teaching. Visual impairment.

RESUMO: O objetivo foi caracterizar as atividades acadêmicas de estudantes com deficiência visual do ensino superior em situação de ensino remoto durante a pandemia da COVID-19. A pesquisa teve delineamento exploratório descritivo e método de análise de conteúdo com amostra de conveniência. Foi desenvolvida por meio de recursos tecnológicos, com a utilização de roteiro de entrevista semiestruturado e do questionário Critério de Classificação Econômica Brasil. Participaram nove estudantes do ensino superior adultos com deficiência visual. Os dados foram analisados por meio de análise de conteúdo. Não houve diferença significativa entre estudantes de graduação e pós-graduação quanto à dificuldade em utilizar os recursos eletrônicos, contudo, os pós-graduandos relataram maior cansaço e problemas de saúde nesse período relacionados ao aumento da demanda e uso excessivo de tela. É necessário refletir sobre aspectos positivos do ensino remoto emergencial que poderiam ser utilizados no ensino presencial para estudantes com deficiência visual e estabelecer um plano de estratégias acessíveis para ofertas futuras.

PALAVRAS-CHAVE: Ensino superior. Atividades acadêmicas. Ensino Remoto. Deficiência visual.

RESUMEN: El objetivo fue caracterizar las actividades académicas de los estudiantes con discapacidad visual en la educación superior en situación de enseñanza remota durante la pandemia del COVID-19. La investigación tuvo un delineo exploratorio descriptivo y método de análisis de contenido con una muestra por conveniencia. Fue desarrollado utilizando recursos tecnológicos, utilizando un guión de entrevista semiestructurada y el cuestionario Criterios de Clasificación Económica de Brasil. Participaron nueve estudiantes adultos de educación superior con discapacidad visual. Los datos se analizaron mediante análisis de contenido. No hubo diferencia significativa entre los estudiantes de pregrado y posgrado en cuanto a la dificultad en el uso de los recursos electrónicos, sin embargo, los estudiantes de posgrado informaron mayor fatiga y problemas de salud durante este período relacionados con la demanda y el uso excesivo de la pantalla. Es necesario reflexionar sobre los aspectos positivos de la docencia en el modelo de emergencia que podrían utilizarse en la docencia presencial para alumnos con discapacidad visual y establecer un plan de estrategias accesibles para futuras ofertas.

PALABRAS CLAVE: Enseñanza superior. Actividades académicas. Enseñanza remota. Discapacidad visual.

Introduction

As a result of COVID-19, emergency measures were adopted, such as social distancing, in order to prevent the spread of the virus (OPAS, 2020). In order to solve the problem caused by the suspension of classes and maintain continuity in the learning processes, several countries have adopted an emergency remote teaching model (ERE), which depends on the capacity and modality adopted by each country, as well as the availability to build an effective model for each population (MARINELLI *et al.*, 2020).

About ERE, Hodges *et al.* (2020, p. 9, our translation) indicate that “it is a temporary shift from instructional delivery to an alternative delivery mode due to crisis circumstances”, which contrasts with ³*online* teaching models, such as distance education (EAD), which have been studied and developed since the 1970s. The authors point out that ERE's main objective is to provide temporary access to instruction in situations of collapse, and not to recreate an educational ecosystem, providing support quickly and information reliably. However, ERE does not have time in advance to plan and structure *online teaching projects from the beginning* (HODGES *et al.*, 2020), occurring abruptly.

According to Paiva (2020), the private education network was better able to adapt classes to the ERE model and, on the other hand, public universities faced greater difficulties and slowness in this process due to the resistance of teachers and students in adopt the new format. According to Leite *et al.* (2020), the implementation of remote classes has become a challenge for universities and especially for public universities, in terms of teachers and students, who were not prepared to use virtual platforms, as transposing classes face-to-face to remote required them to quickly learn how to use digital resources to develop classes, without any prior knowledge or training courses.

In this way, some students with and without disabilities suffered profoundly from the change in class offerings from in-person to remote mode. Another factor that worsened this adaptation were situations of social vulnerability and lack of access to technological equipment and the *internet*, which hampered “the possibilities of schooling during this period” (ORLANDO; ALVES; MELETTI, 2021, p. 12, our translation).

Barros *et al.* (2021) point out that during this period students suffered from various sources of stress related to higher education, which influenced their mental health. Another factor indicated by Corrêa *et al.* (2022) is that postgraduate students reported suffering from

“[...] is a temporary shift from instructional delivery to an alternate delivery mode due to crisis circumstances” (HODGES *et al.*, 2020, p. 9).

mental health problems, such as: anxiety attacks, difficulty sleeping, stress, lack of motivation and difficulty concentrating. Oliveira *et al.* (2022, p. 2815, our translation) also indicate that higher education students who attended a private institution had better mental health conditions compared to students at a public institution, since it “suffered greater repercussions resulting from the pandemic, thus exposing the vulnerability of these students’ mental health”.

It is worth noting that entering higher education demands a series of adaptations from the student that can influence academic performance, as well as students' mental health. Cunha and Carrilho (2005, p. 216, our translation) indicate that he faces challenging situations when making the transition from high school to higher education, “arising from the normative psychological tasks inherent in the transition from adolescence to adulthood that when faced with the demands of life university is a challenge.”

In addition to psychological adaptations, students experience difficulties of various natures in the university context, such as: adaptation to the institution and the course; knowledge bases for the course; personal autonomy; time management; study methods; involvement in extracurricular activities; self confidence; physical and psychological well-being; relationships with teachers, colleagues and family; career development; economic resource management; personal perception of cognitive skills; anxiety about exams, among others (ALMEIDA; SOARES; FERREIRA, 2002; CUNHA; CARRILHO, 2005).

In turn, in addition to these, students with visual impairments face access difficulties in face-to-face teaching regarding architectural and content accessibility, making it necessary to adopt material and curricular adaptations. Some factors must be taken into consideration when teaching students with visual impairment, since the degree and moment of loss (whether congenital or acquired) require different teaching needs. Regarding visual impairment, Decree 5,296, “Chapter II, Priority Care” points out:

Art. 5 c) Visual impairment: blindness, in which visual acuity is equal to or less than 0.05 in the best eye, with the best optical correction; low vision, which means visual acuity between 0.3 and 0.05 in the best eye, with the best optical correction; cases in which the sum of the visual field measurement in both eyes is equal to or less than 60°, or the simultaneous occurrence of any of the previous conditions (BRASIL, 2004, np, our translation).

Martins and Silva (2016, p. 252, our translation) point out that the inclusion of students with visual impairments in higher education has faced challenges related to “the development of policies and actions that guarantee students [...] the full exercise of citizenship and democratization access to this level of education”, delegating to higher education institutions

(HEIs) the need to organize themselves to receive them, in order to offer and guarantee accessibility and adequate and quality training that provides autonomy.

Machado (2014, p. 06, our translation) assures that in addition to having qualified professionals, an accessible environment and space for teaching students with visual impairments in higher education, it is necessary to have “political will [and the] [...] involvement of all the people who make up the institution, because, if not, isolated inclusion practices will occur”. In this way, higher education for people with visual impairments must involve: public policies, the involvement of qualified and trained professionals, spatial accessibility resources, materials, and in the context of a pandemic, technological resources. Martins and Silva (2016, p. 255, our translation) indicate that HEIs must develop “actions to promote the inclusion of students with disabilities [...] [pervading the] pillars of teaching, research and extension, [...] ensuring the access and permanence in the university context”.

Selau, Damiani and Costas (2017) indicate that, in addition to architectural obstacles, these students face attitudinal and inclusion barriers, related to entering higher education regarding the evaluation process and retention at that level. Also, lack of specific resources, such as technological and adapted materials. In turn, Silva, Rossato and Carvalho (2019) point out that higher education has become more accessible in Brazil, based on the 2016 Census, which indicated an increase in rates after the implementation of the National Special Education Policy from the Perspective of Inclusive Education (2008).

Borges and Segadas-Vianna (2020, p. 378, our translation), however, indicate that the percentage of students with disabilities in higher education has increased, but not exceeding “0.5% of the total 8 million enrollments”: they indicate that of these 0.5% only 34% had visual impairment. The data presented by the study shows that although it has increased, access for these students continues to fall short of that of the country's university population.

Kreussler *et al.* (2020) demonstrated that students with disabilities face many challenges when accessing higher education, which is worsened by the pandemic, since the ERE model can exclude them due to the lack of accessibility of the electronic and virtual resources used, which make effective participation difficult and do not meet their learning needs.

Thus, students with visual impairment enrolled in higher education face difficulties in access and permanence that directly interfere with the completion of the course, generating a low rate of entry to this level of education and evasion from HEIs, which are related to access, permanence and Special Education aimed at this audience, admission exams, accessibility issues, physical and attitudinal barriers, ableism, among others. The studies presented here

exemplify how not only the access, but the permanence of these students is something that still needs to be discussed, since both the literature and the Census data show that there is much to be done to improve the quality of their teaching, especially in remote mode.

Therefore, the work asks: how did students with visual impairments in higher education adapt to academic activities in the context of ERE during the COVID-19 pandemic? Seeking to answer this question, the research had the general objective of characterizing the academic activities of students with visual impairments in higher education in a remote teaching situation during the COVID-19 pandemic. To this end, the specific objectives aim to: describe the strategies and resources offered by higher education institutions in the context of a pandemic for students with visual impairments; outline the academic activities carried out by these students and what resources have been used to carry them out.

Method

The research was developed based on an exploratory and descriptive approach (RAUPP; BEUREN, 2006). Participants were selected using a convenience sample (COZBY, 2003), so a video was created containing two figures with textual content and audio description in audio and text. The video was released on social media, after approval by the Ethics Committee.

The research was submitted to the Ethics and Research Council on Human Beings, being approved under opinion no. 5,141,282 and CAEE: 52226421.1.0000.5504, following the ethical procedures in accordance with Resolution no. 510, of April 7, 2016, Guidelines and Regulatory Standards for Research Involving Human Beings (BRASIL, 2016), from the National Health Council. The research was carried out remotely using the digital platform *Google Meet* to carry out the interviews, following distancing recommendations, in accordance with Law No. 13,979, of February 6, 2020, which provides for social distancing as an emergency public health measure against COVID-19 (BRASIL, 2020).

Two instruments were used to collect data: a semi-structured interview guide and the Brazilian Economic Classification Criteria (CCEB) questionnaire (ABEP, 2021). The interview guide was prepared by the researchers and followed the recommendations of Stewart and Cash Jr. (2015, p. 137, our translation), containing “open-ended questions, planned probes and [...] unplanned probes that depend on the interviewee's answers”. Thus, the script had three blocks: characterization, socioeconomic data and specific questions.

The authors Kreussler *et al.* (2020, p. 1, our translation) point out that an important factor to be taken into account is the lack of resources resulting from the poverty and vulnerability that some students may experience, which causes “difficulties in accessing technology for virtual education and, therefore, [...] greater learning deficits”, in this way, we adopted the CCEB. The 10 specific questions dealt with the experience of remote academic activities in higher education during the COVID-19 pandemic.

Nine people aged between 21-41 years participated in the research, who studied higher education subjects for at least one semester in 2020 and 2021, corresponding to the restrictive measures on social interaction during the pandemic. They had visual impairment, including cases of blindness and low vision. Below, Table 1 presents a characterization of the participants.

Table 1– Characteristics of participants

P	Age	Gender	Def. *	B.C **	Course	Type of institution	Economic class***	State
P1	36	M	W	W	Master's Degree in Mathematics Education	Public - federal	5 - C2	Pará
P2	31	F	B.V	W	History	Private	5 - C2	Rio de Janeiro
P3	30	F	B.V	W	PhD in Psychology	Public – federal	2 - B1	Minas Gerais
P4	22	F	W	W	Physiotherapy	Private	4 -C1	São Paulo
P5	37	M	B.V	W	Industrial chemistry	Public - federal	6 - DE	Pará
P6	22	M	W	W	Law	Public - federal	4 - C1	Pará
P7	41	M	B.V	W	Law	Private	1 - A	São Paulo
P8	21	F	B.V	A	Graphic design	Private	5 - C2	São Paulo
P9	23	F	B.V	A	Management in Environmental Analysis	Public - federal	3 - B2	São Paulo

Caption: Gender: M – male, F – female; * Disability: C/BV – blindness, low vision; **A/C – acquired, congenital; ***Economic classes were classified according to the Brazilian Economic Classification Criteria – CCEB questionnaire (ABEP, 2021).

Source: Prepared by the authors based on data collected (2022)

It is noted that in the present sample, the majority had congenital visual impairment (77.7%), with 66.6% having low vision and the smallest part (33.3%) blindness. Despite being of convenience, the sample was well balanced in terms of gender (55.5% female and 45.5% male) and in terms of type of institution (55.5% public; 45.5% private); the majority were studying an undergraduate course (66.6%), with the remainder being postgraduate students (33.3%). Of these, 33% had a socioeconomic level ranging between classes A and B2 and the

remainder distributed in classes C (55.5%) and D (11.1%). Participants belonged to different regions of the country.

As a means of analyzing and discussing the data collected, the research adopted the content analysis method, according to Bardin (2011). In this way, the interviews were transcribed and read, the data was selected into units of analysis, categorized into two broader ones: i) Adaptation to ERE and Academic activities; and ii) Strategies adopted in the ERE.

Results and discussions

Adaptation to the context of Emergency Remote Education (ERE)

In general, according to P1 and P5, the initial period of the pandemic and restructuring of the offer of subjects in the ERE mode was quite challenging, not only for people with visual impairment, but for everyone, as P1 emphasizes, “look, in the At first [the classes] were very complicated, because I think that all of us, regardless of visual impairment, went through a period of adaptation to the pandemic, technologies were still being studied and created for this purpose” (P1). Although participants indicate that the difficulty in adapting was general, they faced other types of barriers, such as technological and instructional, as indicated by Orlando, Alves and Meletti (2021).

P2 reports that she studies at a private university on an EAD course and has accessible PDF documents available. She has contact with the institution's accessibility center, which consulted her before the start of classes to find out the best way to receive the documents. She also reports that the university platform is in basic HTML, which makes navigation easier and, although she is completely blind, she is able to use the platforms independently. Such data corroborate Hodges *et al.* (2020) regarding the difference between ERE and EAD. Another important point to highlight is that the private institution, already accustomed to working with EAD tools, had more resources and facilities to assist students, unlike what happened in most public universities, as indicated by Paiva (2020).

Selau, Damiani and Costas (2017) indicate that students with visual impairments need specific tools that enable their permanence and quality education that corresponds to their perceptual reality. Regarding the equipment necessary for students to participate remotely in remote activities, everyone had internet, a laptop and a cell phone to attend classes. In addition to the usual electronic resources, participants with blindness reported using free screen readers. P3, for example, reported using a second screen, as it requires enlargement; P5 indicated using

an electronic magnifying glass and the *Windows* magnifying glass feature to perform the necessary readings.

As positive points when developing activities remotely, participants indicated: not having to travel; being able to carry out activities at another time; have recorded classes available and can watch them as many times as necessary, pause these classes and take notes; develop more independence in relation to one's own education, seeking study and accessibility strategies; receive texts accessible to the screen reader, since before the pandemic, texts were available via photocopy, which made accessibility difficult for students.

Academic Activities and strategies adopted at ERE

Table 2 presents a summary of information from each participant regarding: academic activities carried out during the period; electronic resources used; strategies adopted by teachers and students; and assistance provided by the Higher Education Institution (HEI) to which they were linked. In general, regarding academic activities carried out during the pandemic period using the ERE model, the data indicate that all participants used the *Google Meet platform* to attend synchronous classes, however participants reported experiencing difficulties in using it, due to the lack of *chat accessibility*, sharing the presentation or attending classes, with the exception of P4, who reported having no difficulties.

Table 2– Academic activities and strategies adopted in ERE

P	Academic activities	Electronic resources	Strategies adopted by teachers	Strategies adopted by the student	Aid from IES
P1	Reading and discussion of texts, synchronous classes, writing and defending the dissertation, assessment activities, writing texts and seminars, taking credits	<i>Google Meet</i> , <i>WhatsApp</i> classes on <i>YouTube</i>	They sent texts via <i>email</i> before the subjects	He turned to colleagues to read texts and tests, asked for help from colleagues to deliver work	Accessibility coordination, braille session, digitization of accessible materials
P2	Assessment activities, simulations, tests, reading and discussion of texts, video classes	University platform, video classes, forums, <i>WhatsApp groups</i> , <i>email</i>	Had contact with teachers only when responding to forums or delivering materials	He chose to study using texts and videos, asked for help from his companions to deliver work	They made the assessment available on a <i>pendrive</i> so that it could be done on the student's <i>laptop</i> , they provided readers and texts

					accessible to the screen reader
P3	Synchronous classes, seminars, writing articles, reviews, taking credits, preparing materials and instruments, reporting	<i>Google Meet, YouTube, PDF, email</i>	Two teachers established contact with the student to find out her educational needs, sent the material in advance for reading, sought to make the content accessible, made <i>slides</i> accessible	Print documents to read	Financial assistance from the accessibility department for the purchase of accessibility equipment and resources
P4	Practical and theoretical classes, assessment activities, in-person internship in 2021, seminar, preparation of materials, work using <i>Word</i> , case studies	<i>YouTube, Google Meet, video calling, Google Forms, WhatsApp, email</i>	Teachers provided image descriptions, contact via <i>WhatsApp</i> to answer questions during class and basic audio description, use of review	I talked to teachers via <i>WhatsApp</i> and answered any questions, asked for help from my colleagues to deliver work	Mediator assistance
P5	Assessment activities, synchronous classes, calculations, hybrid classes in 2021, practical classes in the laboratory and remote theoretical classes	<i>Google Meet, PDF, slides, Google Classroom</i>	There were no educational strategies on the part of teachers	He completed the assessment activities on paper and sent them to the teachers via photograph	Expanded material. According to the student, the accessibility center does not have the competence to adapt laboratory materials
P6	Synchronous classes, assessment activities, research	<i>Google Meet, PDF, Google Drive, recorded classes, SIGA system - Integrated Academic Activities Management System, Google Classroom</i>	Teachers made recordings of classes available, one teacher made video classes and made them available in advance and resumed the content in synchronous classes, some got in touch to find out the student's needs, made texts accessible to the screen reader	He asked teachers to read or describe the <i>slides</i> he did not understand. Requested texts or books in open PDF so that the screen reader could read, requested help from colleagues to deliver work	Financial assistance for the acquisition of accessibility resources and equipment
P7	Synchronous classes, records, assessment activities	<i>Google Meet, PDF, Google Classroom, files in Word, books</i>	Synchronous classes without using <i>slides</i>	When receiving texts in PDF containing images, they searched the <i>internet</i> for books that corresponded to the text and set	There was no assistance

				up a study routine.	
P8	<i>design</i> activities, TCC writing, newspaper and magazine creation, use of <i>Photoshop</i>	<i>Google Drive</i> , <i>Google Meet</i>	There were no educational strategies on the part of teachers	I preferred to “suffer first” [sic] before asking my teacher or classmates for help	Did not describe what aid was available
P9	Synchronous classes, summaries, mind maps, <i>podcast</i> , video creation, assessment activities, seminars	Recorded classes, PDF, videos, <i>Google Meet</i> , <i>Ava</i> , <i>Moodle</i> , <i>Google Classroom</i> , digital whiteboard	Recording of classes was made available, they used a digital whiteboard and modified the explanations giving examples	Used magnification to read and chose to make videos instead of seminars	Material adapted by the accessibility department, extension project for this purpose

Source: Prepared by the authors based on data collected (2022)

All participants indicated attending synchronous classes, developing evaluative activities, such as seminars and research development, and undergraduate students carried out evaluations via *Google Forms*. There was no significant difference between undergraduate and postgraduate students in terms of difficulty using electronic resources, however postgraduate students reported greater fatigue and health problems during this period related to increased demand and excessive screen use. P1, who is completely blind, reports feeling auditory fatigue as a result of using a screen reader.

When the professor taught the class and he asked us to interact via *chat*, it was complicated for those who had a screen reader, because the screen reader, I don't know if you're familiar with it, but it keeps talking all the time when a message arrives. So I didn't know whether to focus on the teacher's class or what the *chat* was saying. In this sense, it hindered my hearing accessibility (P1).

P3, who has low vision, reported that it was challenging to attend classes and meet the high volume of demands.

It's very challenging, I think it's very tiring, by the end of the class I'm very tired. I had a problem in the middle of the year [2021] and it was [...] an exhaustion problem, visually. [...] Anyway, I was still taking the course, too, a lot of demand on it, a lot of reading, so I was a little exhausted (P3).

P3's speech shows that we may possibly face post-pandemic problems related to the exhaustion of students with visual impairments in higher education, due to the ERE model,

resulting from the excessive use of screens, which can harm them even more due to effort, in addition to other difficulties in accessing and remaining in higher education.

Although the present study had a sample of only two postgraduate students, they reported a greater impact in relation to health problems compared to undergraduate students. Corrêa *et al.* (2022, p. 04, our translation) indicate that a significant portion of the participants in the research they carried out (5,985 higher education students) reported mental health problems during this period, as well as the lack of psychological support offered by postgraduate coordinators voluntarily, requiring a request. According to the study, 68.04% of participants demonstrated that the concomitance of the pandemic and postgraduate studies resulted in a critical situation of students' mental health. It is worth noting that the study addresses students in general, not categorizing them as with or without disabilities.

According to Oliveira *et al.* (2022), students from private institutions had a lower impact on mental health compared to students from public institutions; one of the factors that caused this fact is due to the delay of public institutions in implementing ERE, as well as the delay in implementing Information and Communication Technologies and suspension of classes indefinitely, which “were unfavorable to the process of adapting to the remote environment” (OLIVEIRA *et al.*, 2022, p. 2818) compared to private institutions, which had a faster response.

Regarding the mental health of students in higher education, Barros *et al.* (2021) indicate that the lack of social interaction during the period of social isolation caused a situation of negative psychological manifestations. A fact corroborated by data from this research, which indicate that around 80% of participants reported missing contact with the class and teachers, feeling demotivated and difficult to carry out academic activities, as well as not belonging and loneliness in the academic environment in this period.

Regarding the difficulty in carrying out academic activities, blind students indicated that they needed help from third parties to deliver work on the platforms, as there was no accessibility. Students with low vision reported having difficulty accessing adapted materials during this period, needing to adapt to the new reality and seek study strategies to be able to meet academic requirements.

Regarding the teaching strategies adopted, it is evident that there were good accessible educational practices adopted by teachers, as well as the ‘erasure’ of students during this period, as indicated in Table 2. In this regard, P5 states that he feels invisible within the institution where he studies.

Look, none, right? Because I consider myself an invisible subject within the University, you know? [...] This is combined with a lack of interest on the part of some comrades, first of all, it's not easy for them either, I can't say that the teacher is negligent, understand? (P5).

P5's speech is in line with Selau, Damiani and Costas (2017), who point out that students with low vision suffer from invisibility within HEIs, with no adoption of strategies that enable or provide opportunities for a good quality of teaching, which makes it difficult for these students to remain and often leads to dropouts in higher education. According to Leite *et al.* (2020), the adoption of remote teaching can contribute to the deepening of dropout rates in the context of the pandemic, due to the lack of training for teachers and students in using technological tools and resources.

According to Leite *et al.* (2020), students with visual impairments face difficulties in face-to-face teaching, such as: the lack of accessible libraries, lack of assistive technologies, adapted materials, accessible physical spaces, among others. This is in line with the statements of P3, P6 and P7, who reported that during the pandemic period, in which activities were carried out remotely and university libraries were closed, access to materials became difficult, since repositories Institutional electronic devices were outdated and did not have all the necessary collection for the development of the disciplines. In this sense, it is necessary for institutions to review and, based on this, reformulate and promote electronic repositories, so that students with and without disabilities can have access to digital materials.

According to Machado (2014), it is necessary that professionals are attentive and prepared to provide not only an accessible space, but that there is attitudinal accessibility and that students can carry out their activities autonomously, with actions to promote accessibility and permanence in HEIs (MARTINS; SILVA, 2016). Therefore, it is necessary to think about the materials made available during classes and the academic period, whether in ERE, distance learning or in-person mode, so that students with visual impairments can have accessibility and use them autonomously, not just academic materials, but a collection that can nurture students' need for reading.

Final remarks

Although the country made efforts based on its previous structure and possibilities, it did not have a consolidated national education strategy that would foresee emergencies of the magnitude experienced during this pandemic. Therefore, teaching students with visual impairments faced significant difficulties in relation to digital accessibility related to: teaching platforms; digitized materials; teaching strategies; availability of digital materials; and use of resources.

In this regard, it is necessary to think about strategies that do not harm students with visual impairments, such as: not using chat *during* classes; open a space for questions in which students can interact via microphone, so that it does not interfere with the progress of the class and allows digital accessibility (visual and auditory); when using *slides*, avoid placing too many images, use a medium-sized font with contrast; provide audio description of the figures, in a way that allows accessibility to students with visual impairments. In addition to access difficulties, students faced attitudinal and instructional barriers, which need to be addressed in the institutions.

On the other hand, students also indicated positive aspects of ERE, such as video-recorded classes, which can be a promising strategy for meeting the needs of students with visual impairments and could also benefit typically developing students.

It is considered increasingly important that teaching is improved in order to serve all students. Therefore, it is necessary to think and systematize a remote teaching model based on the documentation of successful strategies during this period and formulate a future plan for emergency remote teaching, so that, if there is a need to adopt this model, there are ways to equip educational institutions and professionals so that students are not harmed.

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