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Higher Education: Learning of students with disabilities in remote education in times of pandemic

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ABSTRACT

A new reality affected the educational system with the Covid-19 pandemic, significantly altering social life. Higher education institutions recognize the need to analyze the impacts of their measures on remote education, in the context of the pandemic, which affect each group of students, including people with disabilities. Efforts that deserve special attention in view of the potential of these people, as citizens who seek to build new skills from higher education. Brazil is not isolated in the face of this challenge, but the development of inclusive relationships for people with disabilities in remote classes and educational activities depends on the adequacy of the virtual environment to the characteristics and state of difficulty of the students to exercise their autonomy in the teaching and learning process. The experience reports, presented in this article, point out the learning challenges of students with disabilities during remote education in the Covid-19 pandemic. The classes and activities in the remote environment were at the heart of the establishment of a monitoring routine between student, teacher, monitors and a professional specialist in the accessibility program of the educational institution. In a scenario like the one presented, interventions to overcome limitations such as the construction of meaning to texts, due to the lack of reading skills and the capacity for abstraction, were successful. A collaborative support network of professionals is shown to be an important measure for welcoming the peculiarities of students, especially in remote education, and it shows in practice respect for their individual characteristics.

KEYWORDS: Remote teaching. Disabled people. Covid-19.

1 INTRODUCTION

A new reality affected education with the Covid-19 pandemic, significantly altering social life. With the isolation measures, a condition that values and preserves life by mitigating the spread of the SARS-CoV-2 virus, the Ministry of Education (MEC) has decreed actions to make teaching more flexible from Ordinance No. 343/2020, which governs the replacement of face-to-face classes with remote classes mediated by digital technologies (BRASIL, 2020a), and of provisional measure No. 934, which provides, among other issues, for the flexibility of the mandatory 200 school days in the educational environment (BRASIL, 2020b).

The latent content of the MEC measures comes from the recognition of the importance of preserving higher education institutions from exercising their main role in the education of citizens. In view of this reality, the pedagogical relations between students and teachers were reformulated, and the implementation of teaching and learning approaches mediated by technologies, demanded a new social behavior still under construction.

In this transformed teaching environment, obstacles to the inclusion of students with disabilities have increased. Recalling that inclusion is a social, educational and political reform that seeks to guarantee the rights of people with disabilities (PCD), as well as their representation in society (Molossi et al. 2015). In addition, the fourth Sustainable Development Goal of the United Nations Agenda 2030 aims to “Ensure inclusive and equitable and quality education, and promote lifelong learning opportunities for all”. According to Molossi et al. (2015), the inclusion constitutes a social, educational and political reform in order to guarantee the rights of people with disabilities, as well as their representation in society. With the pandemic, actions to achieve this goal face new obstacles, especially in relation to people with disabilities.

A United Nations report informs that approximately 15% of the population has some form of disability and that this affects one in ten children (UNITED NATIONS, 2020). In Brazil in

2019, according to data from the latest Higher Education Census of 2019, approximately 47 thousand people with disabilities had enrolled in Higher Education Institutions, of which 35.5% had vision problems (low vision, blindness or deafblindness), 35% physical disability and 9% intellectual disability (INEP, 2020). Even without official data, UNESCO (2020) recognizes that remote education adds new obstacles for students with disabilities. The lack or difficulty on obtaining qualified support, the obstacles to accessing information technology, ranging from the availability of the internet service to learning how to use specific software, as well as the unavailability of accessible teaching materials, constitute obstacles to inclusive learning environment.

Academic publications dealing with the effects of the Covid-19 pandemic on higher education in relation to inclusive education are, in general, the subject of a case study or experience report. This study is characterized as an experience report in the context of remote education with students with disabilities at a Higher Education Institution in the city of Campinas, State of São Paulo, Brazil. This article aims to point out the learning challenges of students with disabilities during remote education in the Covid-19 pandemic.

2 HIGHER EDUCATION AND THE COVID-19 PANDEMIC

From the coronavirus called SARS-CoV-2 the pandemic that caused the disease called Covid-19 originated in March 2020 (LOPES NETO et al., 2020), a severe respiratory syndrome (RODRIGUEZ-MORALES et al., 2020).

As Ferreira, Branchi and Sugahara (2020) point out, several segments of society have mobilized to face Covid-19, including educational institutions, needing to review the institutional apparatus.

In practice, the emergence of discussions on teaching strategies with the Covid-19 pandemic led to a search for the construction of a new educational environment suitable for remote education (MEDEIROS; TAVARES, 2021; FAUSTINO; SILVA, 2020)

In the context of higher education, the Covid-19 pandemic brought continuous changes with new challenges for students, teachers and educational institutions, such as ensuring quality education through the mediation of digital technologies. The question that arises is whether accessibility resources for the inclusion of people including people with disabilities during the Covid-19 pandemic, a topic of interest to educational institutions, are present not only to comply with legal provisions. Having as reference the one recommended by Law nº 13.146 - Brazilian Law for the Inclusion of Persons with Disabilities (BRASIL, 2015), chapter IV - On the right to Education, art. 27

> Education is the right of people with disabilities, ensuring an inclusive educational system at all levels and lifelong learning, in order to achieve the maximum possible development of their physical, sensory, intellectual and social talents and abilities, according to their characteristics, interests and learning needs (BRASIL, 2015, s/p).

Brazil is not isolated in the face of this challenge, but the development of inclusive relationships for people with disabilities in remote classes and educational activities depends on the adequacy of the remote environment to the characteristics and the state of difficulty of

students to exercise their autonomy in the teaching-learning process. This reflection sparks the importance of promoting, as required by Law nº 13,146, chapter IV, art. 27, paragraph II

> improvement of educational systems, aiming to guarantee conditions of access, permanence, participation and learning, by offering services and accessibility resources that eliminate barriers and promote full inclusion (BRASIL, 2015, s/p).

Higher education institutions recognize the need to analyze the impacts of their measures on remote education, in the context of the pandemic, on each student group, including people with disabilities. Efforts that deserve special attention in view of the potential of the PWD as citizens seeking to build new skills from higher education for insertion in the labor market.

Basing this positioning, Nohara, Acevedo and Fiammetti (2010, p. 73) when dealing with social representations of people with disabilities argue that work "provides conditions for learning and skills development, guarantees security and financial independence and contributes to the autonomy of the individual ".

With the Covid-19 pandemic, new realities and practices emerge to reach education with respect for the different conditions of people with disabilities. Resende and Melo (2020, p. 93) point out that the pandemic context opens space for discussions that "bring out who is being privileged and who is made invisible in the educational process".

The attempt to reproduce traditional pedagogical practices in remote education, with the mediation of digital technologies, reveals a purely instrumental and insufficient posture to the pandemic scenario. It is necessary to reconstruct new attitudes that temporarily accommodate the absence of face-to-face interactions to foster the teaching and learning process. Medeiros and Tavares (2021, p. 154) affirm that in the education of people with disabilities it is essential to build an integrative proposal with the participation of a specialized professional to guide the activities of students and teachers.

In light of the above, the next section contextualizes some challenges of students' learning in higher education and the issues they go through in the Covid-19 pandemic timeframe.

3 HIGHER EDUCATION AND THE CHALLENGES OF INCLUSIVE EDUCATION

During antiquity, people with disabilities were not well regarded in society. Later, in the Middle Ages, from the influence of the Catholic Church, it was possible to change this thinking. And according to Duarte et al. (2013), the rights of people with disabilities cannot be diminished due to their limitations because, according to the authors, "People with disabilities are citizens and are part of society and it must prepare itself to deal with human diversity" (DUARTE et al., 2013, p. 291).

In the educational sector, Glat, Fontes and Pletsch (2006) point out that the school must be able to serve all students with their individual differences. The school has the social function of producing knowledge and promoting development, so that all students have the right to quality education, contemplating human diversity. Furthermore, Duarte et al. (2013) clarify the importance of the school in the formation of the individual who lives in a society strengthened by exclusion, failure and dropping out of school.

Educational institutions have a great responsibility in the formation of society's knowledge, especially when considering inclusive education, where the challenge is even greater, as it demands specific learning strategies to promote the inclusive process.

Bisol et al. (2010) point out that higher education is challenging for young people in general, as it requires adaptation to the new academic life, and it is often necessary to overcome the flaws acquired in previous education. In addition, involvement with colleagues and teachers is essential, factor that is decisive to avoid dropping out of school.

Young people in general face difficulties in gaining a place at the University, and this access is even more challenging for young people with learning difficulties. Furthermore, as explained by Gomes and Lima (2006), the fact that students are attending the classroom does not mean that they are absorbing the content taught, with greater attention in the case of students with learning difficulties.

In the context of inclusive education, Rosin-Pinola and Del Prette (2014) emphasize that:

> Support services are fundamental in the schooling process of students with special educational needs, since the training of teachers, whether generalist or specialist, come short from dealing with the current demands of education, among them the inclusion, understood as one of the challenges of the current school (ROSIN-PINOLA; DEL PRETTE, 2014, p. 343).

In addition, in order to promote the learning of students with disabilities, it is important to create an environment of inclusion. According to Schneider (2020, p. 33), inclusion involves everyone, because everyone is different and with limitations, so the term inclusion "provides for social adaptation so that equality occurs between the most different individuals".

It is also perceived that the continued search for social and institutional support for the development of content and instruments of interaction aimed at adequate learning for people with disabilities, in the context of remote education, is a movement towards a condition of equality in teaching.

With regard to the learning difficulties of people with intellectual disabilities, Medeiros and Tavares (2021) highlight that a determining factor for the evolution in learning is the joint work between the teacher, the institutional specialized service and the involvement of the other students in the class that can strengthen interpersonal relationships.

A survey of 230 Russian university students with disabilities showed that during the pandemic, socio-psychological problems were added to technical problems, aggravating the process of inclusive education (DENISOVA, LEKHANOVA; GUDINA, 2020). Among the main problems reported there was the growth of required activities that generated major problems in the organization and planning of time, communication problems especially by students with hearing impairment and the technical problems. The advantages of remote education were summed up in the absence of commuting, which is particularly relevant among students with visual and physical disabilities.

Reports of experiences with students with disabilities also point to some positive aspects of remote education, including a more intense dialogue and a closer relationship between teacher and student which guided changes in classroom activities (synchronous activities) and assessment (PACHECO, NOLL, MENDONÇA, 2020).

Leite et al. (2020) carried out a bibliographic review of scientific works on distance learning for visually impaired people to identify facilitating practices for remote education adopted in Brazil as a result of the pandemic. They point out that familiarity with the virtual teaching environment and access to specific software, such as a screen reader or text-to-audio converter, represent important elements to limit the impact of remote teaching for this group of students. But they also identify in the scarcity of adapted teaching material and in the absence of teachers or qualified monitors, the main obstacles, especially in the phase of evaluative activities.

Medeiros and Tavares (2021) carried out a study with reflections on the language and perceptions of students with intellectual disabilities in remote education. They focused on the work based on the context experienced by two students with intellectual disabilities, regarding their difficulties, pedagogical adaptations and family support for their studies.

In the next section, reports of experiences in the teaching and learning process of people with visual and intellectual disabilities in higher education during the Covid-19 pandemic are presented.

4 SOME EXPERIENCES WITH STUDENTS WITH DISABILITIES EXPERIENCED IN REMOTE EDUCATION

4.1 Activities carried out in the discipline of Mathematics Applied to Administration with visually impaired student

The activities of the Mathematics Applied to Administration course for the Business Administration course were carried out in the second semester of 2020 using the digital technologies Platforms Canvas and Microsoft Teams. The Canvas platform was used for teaching and grading activities, and Teams for meetings and conferences.

Among the students in the discipline's classroom, there were students with learning difficulties, some with a certain aversion to mathematics and a student with visual impairment. It is worth mentioning that the visually impaired student had already tried to take the course, when provided with the same teacher in person, but for having difficulties in monitoring classes and performing tasks, she decided to abandon it.

Initially, several meetings were held with the student, the teacher and with professionals in the field who provide pedagogical support in order to define the format of the activities to be carried out by the student. In addition, there was a tutor, graduating in Mathematics, to assist the student in the routine activities of the discipline. During the semester more meetings were necessary, sometimes with the teacher and the pedagogical team, other times with the student and the teacher and also with the tutor and the teacher. The meetings were extremely relevant for the student to understand the difficulties and to direct the activities, confirming the importance of strengthening the relationships between students and teachers in the remote teaching environment, as published by Pacheco, Noll and Mendonça (2020).

In the first activities, the student performed the evaluative activities through the Canvas platform with the tutor help, like the other students in the class. The calculations

performed by the student were made in Excel. It is worth mentioning that the student was not literate with Braille, as the visual impairment occurred in adulthood.

After two evaluative activities, some modifications were necessary, in view of the difficulties that occurred in this realization. Thus, it was decided that the student, unlike the other students, would deliver the activity by email to the teacher, as this would facilitate the identification of the procedure used by the student in resolving the questions. In this line, Rodrigues and Sales (2018) point out that the process of including visually impaired students represents a great challenge to the teacher, especially when it comes to teaching mathematics, which requires abstraction to understand its concepts.

The activities performed by the student in Excel strengthened the need for a more focused look at the teaching and learning of the student, as it was possible to identify several gaps in mathematical content of elementary school. The involvement of student monitors of the discipline was fundamental for the development of the student's activities. However, the teacher, after a thorough monitoring, intervened continuously and repeatedly to ensure the understanding and learning of the contents of the discipline. This attitude was highly positive, as it enabled the teacher to better understand the student's learning difficulties and, at the same time, the student felt free to ask any questions that might exist. As Landim, Maia and Sousa (2017) point out, it is important that the teacher understands the student with disabilities, as this way he can help him prepare for his life outside school.

After understanding operations with fractions, another challenge was the activities carried out with the functions content. Firstly, linear functions were addressed - calculation of the numerical value for a given value of the variable x; slope of the line, linear coefficient of the line; increasing or decreasing function. The understanding of these contents was extremely important when dealing with the application of functions in the area of Administration and Economics.

Even with the difficulties initially diagnosed by the student, it was possible to overcome them with the teacher's commitment and the student's motivation in this process. According to Landim, Maia and Sousa (2017), the learning of visually impaired students depends on their dedication, persistence and willpower. The same authors add that it is necessary that these students have persistence to overcome the obstacles faced daily and have guaranteed the right to full social exercise.

After understanding the mathematical content, the transition from real problems to mathematical language was approached, especially those related to the area of Business Administration and Economics, such as cost, revenue, profit, supply, demand and breakeven.

It is worth noting that it was not possible to use the graphical representation with the student. As highlighted by Molossi et al. (2015), vision is one of the most important sensory senses, specifically in Mathematics, several visual concepts and formulations require graphic representations.

4.2 Activities carried out in the discipline Working Project in Business Administration Course with an intellectually disabled student

In this experience report, we seek to present the construction of elements that subsidized the development of activities and remote classes in higher education, from the teaching practice with a student with intellectual disabilities, in the curricular component Working Project in the Business Administration Course.

To contextualize the situation experienced, it is important to clarify that the person with intellectual disabilities presents the construction of meaning as one of the main limitations, as he does not have full development of the reading ability and the capacity for abstraction (CARVALHO; ALVES; MOTA ROCHA, 2017; MEDEIROS; TAVARES, 2021).

The conception of the Course Working Project presupposes autonomy in the elaboration of a proposal, whose degree of cognitive complexity is consistent with the previous knowledge acquired during the course. In the sense of professional qualification, it is expected that the student will be able to delimit a thematic area for the development of work within the scope of the administration, in order to satisfy the objectives of knowledge, skills and attitudes of a graduate in business administration.

From activities and remote classes mediated with digital technologies Canvas and Teams Platforms, the experience of the teaching and learning process involving a student with intellectual disabilities here reported privileged learning by doing.

The classes and activities in the remote environment were at the heart of the establishment of a monitoring routine between student, teacher and a professional specialist in the accessibility program of the educational institution. It was from a previous report by the professional who accompanied the student since entering the course that information was obtained regarding the individual characteristics and limitations of the student for the development of cognitive skills.

That said, it is important to note that the Pedagogical Project of the Business Administration Course in question foresees collective and individual activities for the development of the Course Project and was conceived more than a decade ago with an active problem-based teaching approach (Project-Based Learning - PBL). Regarding the main challenges of students with intellectual disabilities in the preparation of the Course Project, the skills of readers and writers stand out. There is evidence that students with disabilities benefit from practices that encourage research and analysis in the learning process. An example of a practice that promotes inclusion is the PBL (WEBSTER, 2020).

To get around these limitations, one of the first activities carried out by the student was the elaboration of a paragraph containing a brief description of a subject in the area of administration of his greatest interest. Moment in which it was noticed from the text written by the student the difficulty of writing, also characterized by the suppression of letters of the words, and a long sentence without meaning.

With this report in hand and with the support of the specialist professional, another activity was elaborated, contextualizing the study area from excerpts written by the student himself. During the remote class via conference, the student was able to read his text with the teacher and explain orally his understanding. In a second moment, the student wrote his understanding by elaborating a new paragraph with the teacher's interaction. This practice was followed throughout the semester, but always accompanied by weekly reinforcement oriented activities, along with the institutional support program in which the student participated with

great assiduity and enthusiasm. A relevant fact in this process that made it possible for the teacher, even in a limited way due to cognitive limitations, to work partially with the delegation of responsibility for learning.

The periodic monitoring of learning was also carried out with individual guidance via conference, on these occasions we resorted to the use of readings of short texts selected together with the student, for later construction of paragraphs of the Course Work based on the dialogued texts. This proved to be very effective. However, at the same time it was noticed the apprehension regarding the student's difficulty in expressing the understanding of the text.

Other elements that favored the learning process of students with intellectual disabilities refer to the availability of computers and internet access at home, as well as the lack of difficulty for students in using the word text editor, which facilitated the elaboration of his Working Course Project. As reported by Medeiros and Tavares (2021), educational institutions have an extremely important role in building mechanisms for the promotion of an adequate study routine for remote education, aiming to reduce the impacts on the learning of students with intellectual disabilities.

5 FINAL CONSIDERATIONS

The pandemic generated by Covid-19 significantly changed social coexistence, with emphasis on teaching institutions that had to appropriate mechanisms to serve their students and teachers. The Higher Education Institution, the focus of this work, provided the use of digital technologies such as the Canvas and Teams platforms. In addition to the challenge of learning on these platforms, we must also consider the challenge of remote education for people with learning disabilities.

The work presents the report of the experience of two teachers of students with disabilities. One of the teachers describes her experience with a visually impaired student, but also with difficulties in mathematical content. The second teacher reports her experience with a student with intellectual disabilities.

This work evidenced, from the experiences reports, that the learning of students with disabilities, in the context of Higher Education, during the Covid-19 pandemic depends essentially on a collaborative professional support network, in addition to the student's continuous involvement in teaching activities. This action proves to be very important for the reception of the peculiarities of the students, and it emphasizes in practice the respect for their individual characteristics.

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