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Assistive technology equipment and accessibility in university libraries

Eduardo José Manzini
Universidade Estadual Paulista "Júlio de Mesquita Filho" (Brasil)
Danielle da Silva Pinheiro Wellichan
Rede de Ensino Municipal e Estadual de Bauru (Brasil))

Abstract

The study aimed to analyze, in public university libraries, the ways of selecting and purchasing assistive technology equipment, its modernization, training for use, and demand for services. The research was carried out through visits and online discussion group with 24 librarians and library attendants. Data from verbal interactions were analyzed by thematic categories and included those observed during visits. The results indicated that equipment has been acquired through a kit consisting of: microcomputer with specific software, scanners, electronic magnifying glass and Braille printer. The modernization of libraries mainly indicated a better structuring of accessible architecture. Participants reported that training to operate library equipment took place on more than one occasion. The demand for services was a much-discussed topic, especially, in relation to the idleness of assistive technology equipment, a fact that is a concern for librarians.

Keywords: University library. Library equipment. Support for people with disabilities. Assistive technology.

Equipamentos de tecnologia assistiva e acessibilidade em bibliotecas universitárias

Resumo

O estudo objetivou analisar, em bibliotecas públicas universitárias, as formas de seleção e aquisição de equipamentos de tecnologia assistiva, sua modernização, treinamento para o uso e demanda dos serviços. A pesquisa foi realizada por visitas *in loco* e por meio de grupo de discussão *online* com 24 bibliotecárias e atendentes das bibliotecas. Os dados das interações verbais

foram analisados por categorias temáticas e incluídos aqueles observados nas visitas. Os resultados indicaram que a aquisição de equipamentos tem ocorrido por meio de um *kit* composto por: microcomputador com *softwares* específicos, scanners, lupa eletrônica e impressora Braille. A modernização das bibliotecas indicou, principalmente, uma melhor estruturação da arquitetura acessível. Os participantes relataram que o treinamento para operar os equipamentos da biblioteca ocorreu em mais de uma oportunidade. A demanda pelos serviços foi um tema muito discutido, principalmente, em relação à ociosidade dos equipamentos de tecnologia assistiva, fato que preocupa as bibliotecárias.

Palavras-chave: Biblioteca universitária. Equipamentos de biblioteca. Apoio à pessoa com deficiência. Tecnologia assistiva.

Equipos de tecnologías de apoyo y accesibilidad en las bibliotecas universitarias

Resumen

El estudio tuvo como objetivo analizar, en las bibliotecas universitarias públicas, las formas de selección y adquisición de equipos de tecnología de apoyo, su modernización, capacitación para su uso y demanda de servicios. La investigación se llevó a cabo mediante visitas *in loco* y a través de un grupo de discusión en línea, con 24 bibliotecarios y asistentes de biblioteca. Los datos de las interacciones verbales fueron analizados por categorías temáticas e incluyeron los observados durante las visitas. Los resultados indicaron que se ha adquirido equipamiento mediante un *kit* compuesto por: microordenador con *software* específico, escáneres, lupa electrónica e impresora Braille. La modernización de las bibliotecas indicaba, sobre todo, una mejor estructuración de la arquitectura accesible. Los participantes informaron que se impartió formación para manejar los equipos de la biblioteca en más de una ocasión. La demanda de servicios fue un tema muy discutido, principalmente en relación con la inactividad de los equipos de tecnología de apoyo, un hecho que preocupa a los bibliotecarios.

Palabras clave: Biblioteca universitaria. Equipo de biblioteca. Apoyo a personas con discapacidad. Tecnología de apoyo.

Introduction

In research and studies on assistive technology and accessibility in higher education institutions, which cite libraries, it is common to find mentions of: the access and architectural accessibility of libraries and spaces (Branco; Almeida; 2019; Castro; Almeida, 2014; Garcia; Bacarin; Leonardo, 2018; Oliveira; Melo; Azambuja Elali, 2008); the level of satisfaction or dissatisfaction with the human resources of libraries (Branco; Almeida, 2019); and the use and availability of assistive technology resources and equipment (Cantorani; Pilatti, 2015; Wellichan; Manzini, 2021). But they also present other information about libraries as a space that can be experienced by students and employees with disabilities (Brunhara; Berberian; Guarinello; Biscouto; Krüger; Silva; Ferla, 2019).

Studies on architectural accessibility, especially on physical access to libraries, is a topic that was studied by Branco and Almeida (2019). The authors surveyed the satisfaction of special education target audience students and used the Attitudes to Disability Scale (ADS). The research was carried out in four Brazilian public institutions, one federal university and three state universities. The results indicated that there was dissatisfaction in relation to access to libraries, among other spaces, and dissatisfaction in relation to human resources, with demands for sign language interpreters for deaf people and readers for blind people.

The admission and permanence of students with disabilities in Brazilian public universities was the object of a study by Castro and Almeida (2014) who conducted interviews with 12 coordinators of specialized technical support, document analysis, *in loco* visits (with photographic record) in spaces indicated by 30 students who participated in the research. The authors concluded that the modifications made to the university library were one of the actions praised by the students.

The perception of students with disabilities in relation to accessibility and permanence in higher education were analyzed by Garcia, Bacarin and Leonardo (2018). Data were collected through interviews with five students. The results indicated difficulty in accessing the library due to architectural problems. On the one hand, the library had an adapted elevator and keyboard,

but it did not have tactile paving, necessary for the blind person to be able to move around (Wellichan, 2022).

The accessible bibliographic collection and assistive technology equipment are also themes found in the research by Cantorani and Pilatti (2015). Using data from course evaluations, carried out by the National Institute of Educational Studies and Research Anísio Teixeira (INEP) on Federal Technological University of Paraná campuses, and others collected with managers at the Federal Technological University of Paraná, the authors analyzed several aspects that included the library. Cantorani and Pilatti (2015) argue that the availability of bibliographic collections in accessible format to the student is limited, but the situation may vary from library to library. The same occurs in relation to assistive technology resources (technical support) so that students can have access to knowledge.

Actions carried out by accessibility centers in Brazilian federal universities were the subject of analysis by Ciantelli and Leite (2016). The study was carried out through an online electronic form, answered by 17 coordinators of accessibility centers. Among the various results, there are mentions in relation to the use of technical support resources (or assistive technology resources and equipment):

> [...] the preparation and adaptation of braille material; the use of a braille printer, the digitization and availability of accessible didactic and pedagogical materials; the loan of recorders, expanded materials, texts and atlases in braille and in audio, magnifiers, electronic magnifiers, autonomous reader, software, chairs, tables, computers with accessible interface, scanners with voice synthesizer, technological resources that allow the production of books in accessible digital format; construction of a more accessible website, production of accessibility videos, promotion of sign language courses; signs in braille; acquisition, use and training of assistive technology equipment (Ciantelli; Leite, 2016, p. 425).

Also, in relation to assistive technology resources and equipment, Fialho and Silva (2012) prepared an essay and made considerations and suggestions on the use of this equipment and software that could be used in university libraries, focusing mainly on people with visual impairments. Among the various resources indicated, the authors do not fail to point out the need for

planning the institution of higher education for the acquisition and training of the librarian for the use of resources.

Libraries can also be considered a living space for students and staff, with and without disabilities. This theme was studied by Brunhara, Berberian, Guarinello, Biscouto, Krüger, Silva and Ferla (2019), who used an attitude scale to analyze and compare social behaviors of students and teachers of a higher education institution in relation to the inclusion of students with disabilities. The selected variables were: gender, age, and areas of knowledge of the participants. Discussions about attitudes favorable to inclusion – especially towards employees with disabilities – involved the physical locations that could promote coexistence. The library was mentioned as one of these possible places that can provide the meeting and social interaction between members of the academic community.

The accumulated knowledge about accessibility, resources and assistive technology equipment demonstrates the need for joint efforts for university libraries to be able to meet the demand of students with disabilities enrolled in universities.

Therefore, studying assistive technology focused on the library also means studying the use of equipment that can provide access to printed texts, books, and journals, for example, to people who are blind or have low vision.

The condition for autonomous use, which can be total or assistive, of assistive technology (AT) equipment in libraries is due to the need to learn how to use this equipment. Looking, in general, at the use of assistive technology in education, research indicates that it is necessary, first, for professionals to know the equipment and, then, learn how to make use of it. This has been one of the most identified problems in studies that used the Questionnaire of Assistive Technology for Education (Manzini; Maia; Rodrigues, 2008, 2014), which aimed to identify whether assistive technology resources and equipment were present in schools, whether teachers knew them and whether they knew how to use these resources and equipment. The results have indicated, in all research, the need for learning to use assistive technology resources and equipment (Oliveira; Manzini, 2016; Manzini, 2011, 2012, 2013; Manzini; Glat, 2016; Verussa, 2009).

In this sense, the following research questions are pointed out: a) What are the criteria for selecting and acquiring assistive technology equipment for libraries? b) Have libraries been modernized to serve students with disabilities in higher education? c) How has the learning of this equipment been? d) Is there a demand for assistive technology services for college students with disabilities?

To answer these questions, the present study aimed to describe and analyze the forms of selection and acquisition of assistive technology resources and equipment in university public libraries, their modernization, training for the use and demand of services.

Method

The survey was conducted online, during the pandemic, and in person, through visits to libraries, before the pandemic.

In the online modality, the sample consisted of 24 supervisors and attendants of the libraries of seven public faculties who participated in a training course to assist students with disabilities.

In person data collection, *in loco*, was carried out before the pandemic in eight technical visits to university libraries, seven in Brazil and one abroad.

The elaboration and adequacy of the questions of the script for data collection, which occurred during the training course, were based on the literature (Manzini, 2020) and carried out through the following steps: 1) elaboration of a script; 2) sending to two experts to analyze the questions; 3) reassessment of the instrument; 4) pilot interview with a library supervisor, who did not participate in the present study, to analyze the adequacy of the questions; 5) evaluation and finalization of the instrument for data collection.

During the training course, there was a moment for discussion and the questions were presented within this context, when the group discussed the topics addressed by the questions in the script previously prepared.

Data collection took place through the Google Meet platform, as there were no visits to universities due to the pandemic.

Meetings with the discussion group were recorded (audio and video). Verbal interactions were fully transcribed and subsequently analyzed. For the treatment of the testimonies, the excerpts for the present study followed the Brazilian Association of Technical Standards (ABNT, in the Portuguese acronym) (2018) regarding the use of direct author citation, that is, the participants were considered authors: brackets were used in the excerpts of the testimonials and the identification of each participant, with the acronyms P1, P3, etc.

The *in loco* data collection, through technical visits, sought to verify the existence of assistive technology equipment and resources, their allocations, and possibilities of use for the academic community. Data were recorded in field notes (Vianna, 2003).

For data treatment, thematic analysis was used, indicated for data from verbal interactions (Bardin, 2000). It is a technique that is characterized by the excerpts of testimonials in large thematic contents of the object of the questions and the objective of the research. The data from the observations served to complement the testimonials collected.

The analysis generated the following classification: a) criteria for selection and acquisition of equipment; b) modernization of libraries; c) learning of equipment operation by library servers; d) demand of university students with disabilities in libraries.

Results and Discussions

The results are presented according to the thematic classification, elaborated from the content analysis.

Criteria for selection and acquisition of equipment

In public faculties, the equipment acquisition project took place through a project of the rectory. There was the acquisition of a *kit* for seven campuses. In general, with small variations, the testimonials indicated that the equipment is the same with small variations.

This kit consists of:

1) Microcomputer and/or notebook that have software with JAWS screen readers and Dosvox systems. These software and equipment allow blind students

to use such resources for written reading of texts or for communication through emails.

2) Scanners that can search for images in written material, transform them into texts through OCR (optical character recognition).

3) Electronic magnifying glass for text enlargement.

4) Braille printer.

In one of the faculties, there is an accessibility laboratory attached to the library, with employees hired to provide services to visually impaired faculty students (information on webpages). In other faculties, we heard testimonials about the acquisition of the Braille equipment.

In the university visited outside Brazil, all accessibility resources are centered on a service sector, which has employees hired to serve the community. The equipment is the same as those found in libraries in Brazil.

This same type of service already occurs in Brazil, such as the Accessibility Laboratory of the Zila Mamede Central Library, of the Federal University of Rio Grande do Norte, which has employees hired for the demand of students with disabilities, with the same resources identified in this study (UFRN, 2024). This practice also occurs in the library of the Faculty of Sciences of the São Paulo State University (UNESP, in the Portuguese acronym), Araraquara campus (Unesp, 2024).

The criteria for selecting the public faculties that would receive the assistive technology equipment were based on the demand of students with disabilities enrolled in each course. However, according to the participants of this research, there was no collective and more in-depth research for the acquisition of the equipment as can be seen in the testimonials:

> At the time, libraries were consulted, if they were interested in students with disabilities. It was very superficial research (P23, 2022).
>
> […]
>
> […] I think it depended on the type of disability, on top of a very superficial survey, they made this separation (P4, 2022).
>
> […]
>
> They consulted the types of users and the deficiencies (P11, 2022).

A criticism of this methodology, also presented by the participants, refers to the fact that enrolled students can finish or drop out of the course. Thus, one of the matters mentioned refers to the loan, from one library to another, of equipment that is idle, unused.

There were also reports among the research participants regarding the allocation of resources and equipment for accessibility.

> It is complicated, because if you take the equipment and put it in a reserved room, you may be implying that it is not inclusive, but if this equipment is not being used out of shame, then it may be embarrassing. So, if it is equipment that you can take and put somewhere else, it is better to ask the student. Because we are talking about the blind persons, but the person with low vision also has different characteristics, who can live in the periphery or in the center, and this brings differences. So, sometimes, the equipment is not well structured to serve some people. Now, if the equipment cannot be moved, then we need to analyze what can be done to favor its access (P4, 2022).

The discussion permeates the issue of visibility and exposure of assistive technology resources and equipment. It seems that there is a perception that exposing the materials to all users of the library reinforces inclusion. However, the use of equipment is to meet a specific demand, as other students can see and do not understand what the function of that equipment. Therefore, regardless of whether the equipment is in a separate room or not, this does not configure exclusion processes, the important thing is that the equipment is available for use.

A discussion that appeared more than once in the data collections referred to the difficulty of librarians and attendants in knowing the existence of students with disabilities and with specific needs, so that they can prepare to serve these users.

> In fact, I miss it and, apparently, everyone does, there must be a channel at the university that tells us that this student has a disability and indicates to us what we need and can do. It should have this channel between the sectors and the library needs to receive this information to be better organized in terms of action, creation of strategies, acquisition of materials and equipment, in short, something in this sense (P11, 2022).

This subject is a bottleneck that is linked to the mechanisms of identification of the entry of students with disabilities or with specific needs, therefore, something that should be solved in the enrollment of students. Because identification is accomplished through self-declaration, these data may provide a biased statistic about students.

Library modernization

It is interesting to note that the concern with the modernization of libraries does not only refer to resources, for example, Braille books, and assistive technology equipment, such as voice scanner, but also in relation to other conditions of accessibility to the library for students with hearing and visual impairment, such as automatic opening doors and tactile paving, furniture. The following reports exemplify the need to modernize libraries:

> [...] I really wanted us to be accessible to everyone, to be able to offer a platform, specific material, adequate technology, but we struggle a lot to achieve things that are not always valued. *Having an automatic door*, for example, is a big cost, and if the institution does not think it is necessary, we will not have it, even if it is adequate. A lot of things we want to do get "stuck" in the budget, even if the norm is pointing to its need. If the institution does not "buy" the idea, the thing does not go forward (P13, 2022).

It can be seen that the testimonial is in line with the definition of accessibility, published in Law No. 13,146, of July 6, 2015, also called the Brazilian Law for the Inclusion of Persons with Disabilities (Statute of Persons with Disabilities). In this law, accessibility was defined as:

> [...] possibility and condition of scope for the safe and autonomous use of spaces, furniture, urban equipment, buildings, transport, information, and communication, including their systems and technologies, as well as other services and facilities open to the public, for public or private use of collective use, both in urban and rural areas, by people with disabilities or with reduced mobility (Law No. 13,146, of July 6, 2015, p. 8).

Therefore, the idea that Participant 13 expresses is that accessibility can also be understood as adequate furniture and signs and not only the structuring of architectural spaces.

Participant 13's testimonials also point to a subject present in higher education institutions: managers almost always need to justify to external bodies, such as the Federal Audit Court, the entry of unplanned expenses outside legal limits.

The following testimonials indicate topics related to the execution of works, usually carried out by outsourced services, such as the placement of the tactile paving:

> Another thing that went very wrong is the *tactile floor*, it was placed only in a place, then the user who needs to be guided by it only has access to this section. The project was to put it all over the library area, but when they came to put it, it was only halfway there. Then the solution was to bring it close to the counter to be able to serve it right there (P11, 2022).
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> [...]
>
> This issue of the *tactile paving*, I have seen in some libraries that the floor is delimited, defined where it will use, the space would have to be broader. I believe the space should be utilized more effectively, but there are areas where it only extends to the counter, meaning the user can only access that area if they rely on the paving. There are universities that do not even have this paving for the bathroom path, so how is it? Does the student ask for help for someone to take him there? Zero autonomy there (P4, 2022).

There is not always a supervision of professionals when the work is performed, the result is that it is the library employees who must make the adaptations. Participant 24 expresses doubt about the existence of a fully accessible library:

> On the other hand, is there a fully accessible library? I think not because usually *the furniture* follows a pattern and if they are like that, what is in one has in the other library as well. What can be different is the service, or one has more than the other. But completely accessible I think it does not exist (P24, 2022).

In the previous testimonial, the theme "adequate furniture for the library" is again noted. In the Brazilian Association of Technical Standards NBR 9050 standard (2015, 2020), there are descriptions of the types and heights of service counters for people who use wheelchairs. These situations were not always present in all the libraries visited. Probably, this is the source of inspiration for Participant 24 to mention the situation of the library furniture.

Other testimonials go in the direction of visits for recognition of undergraduate courses:

> Some things in the university do change, depending on the norms. When a committee of the Ministry of Education come, for example, they can point out deficiencies or some things are already done with this evaluation in mind. But it is so poorly done that it ends up leaving something to be desired, because if you think only about the structure, maybe the beneficiary will be a student with disabilities, but what about the others? Are the students with hearing impairment and the visually impaired also served? I ask myself this question (P11, 2022).
>
> [...]
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> I accompanied a visit once, at the private (university), in which the committee only wanted to see the bathroom and stairs, they did not want to know anything else. We had in the collection some books in Braille and in audio, computer with adapted software, but they only evaluated the bathroom and spoke badly of the staircase that had about three steps. It seems that they do not even know the criteria they are following, they only thought about the accessibility of the bathroom. Or only know about it. What about access to student information? This one seemed to be of no interest (P16, 2022).

The criticisms go beyond the internal limits of the *campus* as indicated by the two previous testimonials. Currently, it seems that accessibility assessment in higher education has begun to become sophisticated, with improvement in the types of measures to be taken and observed. Today, the National Institute of Educational Studies and Research Anísio Teixeira course evaluator has as an *in loco* app, which helps the evaluator on what should be the accessibility requirements to be evaluated and measured (INEP, 2019).

The following testimonials present some criticisms in relation to the bibliographic materials to be consulted in relation to accessibility.

> On standards, I see things missing in it. For example, it talks about measurements, it brings some drawings and such, but it could bring more specific guidelines on how we can adapt what we have or drawings that better depict the interior of the library, that address the informational aspect, perhaps about the web, things like that. It addresses a lot about ramps and the mess they are in everyday life. Not even with the measures in the standards, they come out correctly. So, I mean, it pays a lot of attention to some things and a few to others (P24, 2022).
>
> [...]
>
> It is very common for us to think about the standard in aspects of architectural accessibility and not in other aspects such as information or communication. What I see a lot on the web is about accessibility, there is a lot there. But it is very detailed, it requires study to know what it can be, how it should be (P16, 2022).

The testimonials indicate that the participants, librarians, and attendants, seem to be well committed to locating accessibility problems and difficulties, with a critical and constructive look (Wellichan, 2022).

It can be concluded that participants are aware of criticism and modernization of libraries. This awareness was one of the very positive elements in the group discussions, in which the participants listed the possibility of changes, even though they knew how difficult it would be to resolve them administratively. That is, there is an organizational culture that weighs when making changes in relation to accessibility.

Learning of equipment by librarians and attendants

The training to use the equipment, according to the testimonials, was initially carried out by a blind person, a technician in an accessibility laboratory, who demonstrated the use of assistive technology equipment in libraries. This was the first training received by librarians and attendants.

A second training was given by a teacher from the Department of Special Education and managed by the Library Center. The six-hour course addressed content on legislation, accessibility, and some categories of disability – physical, visual, and hearing impairment (deafness) –, based on the number of students with disabilities enrolled at the University. In the testimonials

during the discussion group, all participants from the seven faculties stated that they had received the training.

It was also possible to identify the occurrence of informal training that occurred in one of the faculties, as pointed out in the following testimonial.

> We had, I think, a couple of years ago, a training with a teacher, she put a blindfold on us, we walked around the area as if we were blind and there was a student with us there, but, as much as you go through the experience, it is very difficult to put yourself in the place of those who live it, right. And as much as we have lived together, it is different, because each case is a case, the student goes, another comes, we have one student or another. So, anyway, we must always be reviewing how we will deal with him, what he knows, what his knowledge is, even to work with assistive technology, there are some who have, others have no idea and we interfere. Each has a degree of readiness to deal with the situation, although they have the same disability, each has a degree of readiness. I think that everyone will have to find a way to deal with and adapt to each one what is best (P23, 2022).

It can be seen that the training courses should be updated, because, today, the faculty has students enrolled with autism spectrum disorders, little known by librarians.

This data is interesting, as there is always a criticism in relation to the formation of this area in the literature on the formation of professionals and teachers to use assistive technology resources and equipment (Oliveira; Manzini, 2016; Manzini, 2011, 2012, 2013; Manzini; Maia; Rodrigues, 2008, 2014; Manzini; Glat, 2016; Verussa, 2009).

Demand of university students with disabilities in libraries

One of the topics that was the subject of discussion and controversy addressed the demand of users with disabilities in relation to assistive technology resources and equipment:

> Look, here the equipment is right at the entrance and to tell the truth there is almost no demand. It may be because we have specialized institutions in the city and they prefer to go there. But it is complicated to see such a high investment unused. Perhaps the project that

> defined the equipment was not so well done and then they ended up acquiring equipment without so much use (P23, 2022).
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> [...]
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> I wanted to talk about service in the community and inform students that we have this "Ferrari" that are the equipment in the library. We host many schools and, at the reception of the freshmen, I am the one who usually does it, and I make a point of presenting the service of the materials and I say: "if there is someone with a disability in the family, we can make an appointment." But nowadays there is no longer a community to come, it is a little used service (P24, 2022).

The discussion about the idleness of technology equipment in the library is a matter of concern for librarians. There is recognition about the quality of equipment, on the one hand, and there is community demand on the other, but there are not enough employees to serve this community. Therefore, the equipment is only available to faculty students. To deal with this contradiction – demand versus idleness – the availability of equipment comes into play, even if for a small demand, as indicated by Participant 23.

> I do not know if I am right, but if there is a person who uses it, we must have it. A service cannot be seen, such as: "ah, let's deactivate it because it has low use". It does not matter, if a person uses it, they must have it there. The more we have this idea, the more we must encourage people to use it and not the other way around, I think so (P23, 2022).
>
> [...]
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> The purchase of equipment is a matter that the university is preparing to receive these students. As users arrive, we make this equipment available... possible for loans, as well as books. I do not understand it as a matter of lack of use (P3, 2022).

Another discussion focused on the knowledge and dissemination of this equipment:

> [...] we do publicize it, but we realize that for the University's own community to join it is difficult, no matter how much we publicize it, every year we have to say it again, there are teachers who do not know until today that they have this service, we say if there are any students in this condition, we encourage them to use it, but it

> depends on them too. We know that there are students who need it and do not use it. And this publicize involves funds. Even to make a folder, the budget that we present is cut into so many parts that what arrives is bad for the paper (P23, 2022).

Therefore, the disclosure must be recurrent, year by year, because, in addition to the entry of new students, there is also the inclusion of new teachers.

An opposition to the use of equipment refers to the competition of new applications, which are, in a way, competing with the equipment available in the library.

> Look, I think they do not use it, because they use a lot of apps, for them it is easier because it does not involve displacement, embarrassment. It is more comfortable too, because they can use it anywhere. In the library, it involves a lot and they end up being in evidence (P8, 2022).

Regarding deaf students, library users, the testimonials refer to communication.

> There in the library we do not have so much problem, at least that I have witnessed. We have deaf students. Recently, we had one that was very independent, never needed help to find the book. There at the counter we are used and guided to always seek the user's statement about what he wants "Is it a loan? Will you return it? Will you renew it? What do you want?" It is the user who tells us what he wants, then there is no room for confusion. Thus, he himself says what he wants (P10, 2022).
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> [...]
>
> We have about four deaf students and we have no problem with them. They have already entered the scheme of us communicating by gesture, when it is something difficult, they write and then we communicate well. They are very friendly and help us understand them. But when they arrived, they were more impatient. I think it goes from coexistence (P2, 2022).
>
> [...]
>
> In our library, we have no problem, because they already come wanting to talk to (name of the professional) because she knows sign language, so everyone who is deaf looks for her. I cannot say how they get to her before we warn them, but it seems that one ends up indicating her to the other (P24, 2022).

Certainly, having a librarian who uses the Brazilian Sign Language is an important aspect to improve communication with deaf students. This data is also pointed out in the research by Branco and Almeida (2019), who used the Attitudes to Disability Scale, pointing out that there is dissatisfaction about the lack of sign language interpreter in the library.

In discussions with the group, there were also suggestions regarding people with disabilities involved in the purchasing process.

> From the moment someone with a disability is involved in the purchase process, for example, a piece of equipment can be better evaluated before arriving at the library. Perhaps this could help in the acquisition of more usable equipment, more specific materials […]. Sometimes we have very expensive equipment that is not used (P7, 2022).

Another suggestion referred to the loan of equipment from some libraries, that may be idle that year, to other campuses with students with disabilities who were enrolled.

> And if they are not used, they do not generate statistics for the library report. So how are we going to get more investment or even keep this equipment? There are libraries that need equipment and, as we do not have usage statistics, we need to lend, but wouldn't it be correct for everyone to have it and not be dependent on a loan? And we still need policies that define these issues, without having to depend on whether the management is "sympathetic" or not to the subject of inclusion (P23, 2022).

Through the reports presented, the participants clearly map the difficulties in relation to the demand, present criticisms and suggest ideas to address the problem.

Conclusions

Among the various thematic categories identified and discussed, it can be concluded, from the participants' testimonials, that:

1) In relation to the criteria for selection and acquisition of equipment, the demands were based on the disability categories of the students enrolled in each faculty, but there are criticisms in relation to the eligibility criteria for the purchase of assistive technology equipment for libraries, emphasizing the need for a deeper survey of the real needs of each *campus*;

2) In the thematic category "modernization of the library", the participants indicated that it does not refer properly to assistive technology equipment, but to the environmental context of the library, according to specific needs, such as installation of automatic doors, adequate furniture, collection of accessible books and installation of tactile paving in various sectors.

3) When analyzing the thematic category "learning of equipment by librarians and attendants", participants stated that they had undergone the training, which was one of the positive aspects listed by all supervisors and attendants.

4) In the data on the thematic category "demand of university students with disabilities in libraries", a concern was identified, expressed by the participants, related to the idleness of the demand of students using assistive technology equipment and one of the suggestions was the loan of this equipment to other libraries of other campuses that need this type of service.

Particularly, on this subject, the lack of publicize and the performance of services with the equipment can also contribute to this idleness. Perhaps, better knowing the equipment and its functions, it would be possible to generate more services and generate a greater demand.

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Prof. Dr. Eduardo José Manzini
Universidade Estadual Paulista "Júlio de Mesquita Filho" (Marília-Brasil)
Programa de Pós-Graduação em Educação
Líder do Grupo de Pesquisa Deficiências Físicas e Sensoriais
Pesquisador do CNPq-1A
Orcid id: https://orcid.org/0000-0002-7157-8227
E-mail: eduardo.manzini@unesp.br

Prof.ª Dr.ª Danielle da Silva Pinheiro Wellichan
Rede de Ensino Municipal e Estadual de Bauru (São Paulo-Brasil)
Grupo de Trabalho em Acessibilidade em Bibliotecas da Federação Brasileira das Associações de Bibliotecários
Orcid id: https://orcid.org/0000-0002-6978-7361
E-mail: dany_unesp@yahoo.com.br

Translator's name and email
Affonso Henriques Nunes
affonsohnunes@gmail.com

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