

ASSISTIVE TECHNOLOGIES AND SPECIFIC EDUCATIONAL NEEDS: THE OFFERING OF SOFTWARE RESOURCES TO THE TARGET AUDIENCE

TECNOLOGIAS ASSISTIVAS E NECESSIDADES EDUCACIONAIS ESPECÍFICAS: DA OFERTA DE RECURSOS DE SOFTWARE AO PÚBLICO-ALVO

TECNOLOGÍAS ASISTIVAS Y NECESIDADES EDUCATIVAS ESPECÍFICAS: DESDE OFRECER RECURSOS DE SOFTWARE AL PÚBLICO OBJETIVO

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ABSTRACT: This study investigates which are the main types of Assistive Technologies (ATs) and Specific Educational Needs (SENs) in the educational context. The literature adopted is supported in the area of Inclusive Education and official legislation. In this qualitative research, 42 student records were analyzed to identify the SENs, followed by the cataloging of the ATs through visits to the institution. The study addresses ATs such as help and software resources, especially those of the software type. The result of the data analysis pointed to 41 ATs, being 16 hardware ATs and 25 software ATs, divided into ten different categories. In addition, it was found that there is a greater offer of ATs for students with visual disabilities and not for students with ADHD, SENs that predominates in the institution.

KEYWORDS: Assistive technologies. Specific educational needs. Inclusive education. Software resources.

RESUMO: Este estudo investiga quais são os principais tipos de Tecnologias Assistivas (TAs) e Necessidades Educacionais Específicas (NEEs) no contexto educacional. A literatura adotada apoia-se na área da Educação Inclusiva e legislações oficiais. Nesta pesquisa qualitativa e documental foram analisadas 42 fichas cadastrais de alunos para a identificação das NEEs, seguida do levantamento das TAs por meio de visita guiada. O estudo aborda as

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TAs como recursos de Auxílio e principalmente as do tipo software. O resultado da análise de dados apontou para 16 NEEs. Quanto às TAs, identificou-se 41 tipos, sendo 16 TAs Auxílio e 25 TAs software. Para, além disso, constatou-se que há uma maior oferta de TAs destinada aos alunos com deficiência visual e não para alunos com TDAH, NEE que predomina na Instituição.

PALAVRAS-CHAVE: *Tecnologias assistivas. Necessidades educacionais específicas. Educação inclusiva. Recursos de software.*

RESUMEN: *Este estudio investiga los principales tipos de Tecnologías Asistivas (TA) y necesidades educativas específicas (NEE) en el contexto educativo. La literatura adoptada se apoya en la área de Educación Inclusiva y la legislación oficial. En esta investigación cualitativa y documental, se analiza 42 registros de estudiantes para identificación de NEE, seguida de la encuesta de TA a través de una visita guiada. El estudio aborda las TA como recursos de ayuda y principalmente los del tipo de software. El resultado del análisis de datos apuntó a 16 NEEs. Quanto a las TA, se identificaron 41 tipos, 16 TA de ayuda y 25 TA de software. Además, se encontró que hay una mayor oferta de asistencia técnica para estudiantes con discapacidad visual y no para estudiantes con TDAH, NEE que predomina en la Institución.*

PALABRAS CLAVE: *Tecnologías asistivas. Necesidades educativas específicas. Educación inclusiva. Recursos de software.*

Introduction

This article originates from a study developed at the Federal Institute of Science, Education and Technology of Rio Grande do Sul (IFRS), Campus Caxias do Sul and will seek to analyze data related to Specific Educational Needs (SENs) and the types of Technologies Assistive devices (ATs) present in the educational routine. Allied to this, it is intended to identify whether there is a coherent supply of ATs (CAT, 2009) in relation to the type(s) of SEN. In this horizon, it is inferred that the conduct of this research is justified, insofar as it is possible, from the data analysis, to point to the institutional management issues that involve the organization of these resources to discuss the need for acquisition, renewal or replacement of ATs.

The theoretical framework adopted encompasses the literature on Disabilities and Special Needs (SN) (DINIZ; BARBOSA; SANTOS, 2009; BRASIL, 2014) to conceptualize the proposed theme, as well as supported by the current legislation, in relation to Inclusive Education (BRASIL, 2004; 2008; 2011; 2015b; 2016). Therefore, the concept of Disability is presented, from the perspectives of the medical and social model (DINIZ; BARBOSA; SANTOS, 2009; BISOL; PEGORINI; VALENTINI, 2017), under the premise of a

contemporary education that must, in other words, instigate and trigger educational processes that foster autonomy and integral development of students with SEN, aiming at inserting them in a more equitable society from a sociocultural point of view (BERSCH, 2017).

Then, regarding ATs, two categories are presented: Aid and Computer Accessibility of the Software type (SONZA *et al.*, 2015b; BERSCH, 2017), in an attempt to verify whether these two types of ATs are offered in IFRS-Caxias do Sul. The inclusive educational approach of IFRS is discussed as an educational institution and, later, IFRS-Caxias do Sul is characterized as the locus of data collection. The definition of this Institution as a field of research is due to the fact that it implemented Law No. 13,409 (BRASIL, 2016, our translation), which provides for the “reservation of vacancies for people with disabilities in technical courses at high school and higher education levels of federal educational institutions” and also because it is the context of a doctoral thesis research by one of the authors.

This is a qualitative and exploratory research (SAMPIERI; COLLADO; LUCIO, 2013) that uses documentary analysis (CELLARD, 2008) to develop a systematization about the SENs and ATs available by the Institution. From this, the analysis was divided into two stages: (i) in the first, the mapping of the types of SENs (Disabilities and SNs) - based on data from 42 registration forms of students with SEN, during the period of 2015 to 2019, which were classified into categories, based on the current Brazilian legislation (BRASIL, 2004; 2008; 2011); (ii) in the second stage, the types of ATs offered at the Institution were raised, these were cataloged from a guided visit; the investigative bias focused on detailing the ATs of accessibility to the software type computer. Next, the concepts of Disability and Inclusive Education are discussed.

Inclusive education: from disability to specific needs to the concept of specific educational needs

To define what is meant by disability, it is necessary to consider the specifications of several documents (BRASIL, 2004; 2008; 2011; 2015b; 2016), organizations and investigations, which study the subject. Current studies point to at least two perspectives of conceptions about disability: the medical model and the social model (BISOL; PEGORINI; VALENTINI, 2017). The medical model takes disability as an individual problem, which causes disadvantages and limitations, seeking solutions so that the “sick” body approaches the condition considered normal (DINIZ; BARBOSA; SANTOS, 2009). The social model:

[...] goes from the idea that bodily, sensory and intellectual differences are not anomalies or diseases, but different ways of functioning, in such a way that the existence of a norm cannot be predicted for all human beings (BISOL; PEGORINI; VALENTINI, 2017, p. 94).

This second perspective points to the attitudinal barriers built by society, which has triggered contributions to policies, the legitimation of rights, accessibility, and the deconstruction of prejudice and social discrimination. However, the concept of disability in this study is based on the medical model, given that government policies aimed at people with disabilities are based on the concept of the disease as a limiting factor.

In the Brazilian context there are several laws and decrees (BRASIL, 2004; 2008; 2011; 2015b; 2016) that establish a path on social and school inclusion, accessibility and Inclusive Education, not only for the person with disabilities, but of people with Special Needs (SNs). In the area of Education, when it comes to educational approaches, disabilities and SNs are generally unified in the nomenclature Specific Educational Needs (SENs), although the specifics of each must be considered. This nomenclature is also adopted by the Institution, in which this research was carried out, which led the authors of this study to adopt the concept of SEN, based on the literature in the area (SONZA *et al.*, 2015).

In 2014, the National Education Plan (PNE, Portuguese initials) was established, which it addressed in Goal 04 on Special Education (BRASIL, 2015a; 2016), so that it was aimed at people with disabilities (BRASIL, 2004), whether they originate from physical, auditory (low hearing and deafness), visual (low vision or blindness) or intellectual disabilities, as well as SNs (BRASIL, 2008; 2011) such as High Skills, Giftedness, among others. The PNE has in its text the objective of building an Education that would serve everyone, with access and quality to public education (BRASIL, 2008b; 2015a), on the premise of Inclusive Education. From this, other laws and decrees emerge that provide legal support for Inclusive Education in the national context, such as: Decrees no. 5,296 (BRASIL, 2004), Decree no 6,571 (BRASIL, 2008) and Decree no. 7,611 (BRASIL, 2011), Law no. 13,146 (BRASIL, 2015b), Law no. 13,409 (BRASIL, 2016) with the aim of promoting equity, uniformity (through the categorization of deficiencies and SNs), rights and justice, understanding that everyone is equal before the Law.

In the inclusive horizon, Beyer (2015) postulates that the concept of Inclusive Education is characterized as a new educational principle, which defends heterogeneity in the school class, as a situation that provokes interactions between children with SNs. Carvalho (2016), in turn, mentions that one should educate, according to individual differences and needs, without other conditions, be they economic or even geographic, causing impediments to learning. Thus, even

according to the author, Inclusive Education is understood as good quality education for all, looking for ways to remove barriers to learning and student participation. One way to remove barriers is to use assistive technologies, so in the next section a brief contextualization on the topic is presented.

Assistive technology

This section is dedicated to technologies (GARCIA *et al.*, 2012) which, in general, provide transformations in people's lives, mainly in the execution of tasks, which, according to Sonza *et al.* (2015), allow to make life more practical. When it comes to people with disabilities or with SNs, this is no different, since technologies, especially digital technologies (GARCIA *et al.*, 2012), also allow people to help people with their demands. In relation to the educational context, technology can help in the processes of human development, so that there is a movement of the subject's knowledge from one development zone⁶ to another, this movement comprises the development of cognitive capacities, through relationships with the other, allowing the learning of new knowledge or the improvement of an existing process (VIGOTSKI, 1991).

Assistive Technology (AT) involves a range of resources that contribute to providing or expanding the functional skills of people with SEN (SONZA *et al.*, 2015; 2015; RODRIGUES, 2017). The concept of AT is proposed by the Technical Assistance Committee (CAT, 2009), which presents a clear definition for this area of interdisciplinary design that provides “[...] products, resources, methodologies, strategies, practices and services that aim to promote the functionality, related to activity and participation, of people with disabilities, inabilities or reduced mobility” (CAT, 2009, p. 14, our translation).

The aforementioned committee also states that the use of ATs is intended to promote “autonomy, independence, quality of life and social inclusion” (CAT, 2009, p. 14, our translation) of its users in a more equitable society. It can also be said that AT helps to identify all the resources and services that contribute to expanding the functional skills of people with SEN, promoting inclusion and reducing the problems encountered by individuals (BERSCH, 2017). The purpose of AT is to “expand communication, mobility, control of the environment, the possibilities of learning, working and integrating into family life, with friends and in society in general” (SONZA, 2013, p. 200, our translation).

⁶ To deepen the concepts of Development, Real and Proximal Zone, see concepts by Vigotski (1991).

ATs can be classified into services and resources (ORLANDO FILHO, 2006). The services assist the person with SEN in the selection, acquisition or use of AT or even, for example, the interpretation performed by interpreters of Libras. Resources are equipment, components, products or systems that are used to increase or improve the functional capabilities of people with SEN. Resources are subdivided into: (a) Aid for daily and practical life; (b) Augmentative and Alternative Communication (CAA); (c) Computer Accessibility Features; (d) Environmental Control Systems; (e) Architectural Projects for Accessibility; (f) Orthoses and Prostheses; (g) Postural Adequacy; (h) Mobility Aid; (i) Aid for the Blind or with Low Vision; (j) Aid for people with deafness or hearing loss; (l) Vehicle adaptations; and (m) Sports and leisure (SONZA *et al.*, 2015; BERSCH, 2017).

In this study, resources that are not classified as computer accessibility (software) are referred to as Aid resources, as they are configured as ATs aimed at promoting accessibility and facilitating daily actions, such as the magnifying glass, pencil thickener, Braille board or Braille labeler, on other purposes of helping people with disabilities or SN.

The software are resources idealized to make the use of the computer accessible for people who have some kind of deprivation, be it sensory (auditory or visual), intellectual or motor. The devices can be input, virtual keyboards and mouse, and output, screen readers, color adjustments, magnifiers, among others. The importance of making software available to help the student and the teacher in the teaching-learning process is perceived (ORLANDO FILHO, 2006), as is the case, for example, with the use of free software. This software can be copied and distributed free of charge, without the possibility of modifying the source code (MAIA, 2011). It should be noted that they can be installed on the computers of public education institutions, thus representing access and a variety of tools in the learning process of people with SEN. In the next section, the research methodology of this study is presented.

Methodology

This is a qualitative and exploratory research (SAMPIERI; COLLADO; LUCIO, 2013) that sought through documentary analysis (CELLARD, 2008) to systematize a survey of the specificities served and the available resources. To this end, we sought to organize and divide the analysis into two stages, namely: mapping the types of SEN and cataloging the AT offered at the Institution.

The first involved the mapping of the types of Specific Educational Needs (SEN), which cover deficiencies and SN, present in the IFRS-Caxias do Sul. SENs were classified into

categories, based on the current Brazilian legislation (BRASIL, 2004; 2008; 2011) as will be seen in the data analysis section. The mapping of SENs covered the period from 2015 to 2019 and refers to technical secondary education (integrated and subsequent) and higher education.

The second consisted of cataloging the ATs offered at the Institution, referring only to the year 2019 and took place through a guided visit to IFRS-Caxias do Sul, as on-site exploration, which was accompanied by a Technician in Specialized Educational Assistance (SEA). For the cataloging of ATs, a tablet was used and, *a posteriori*, a Microsoft Excel spreadsheet was used, for the purposes of recording, categorizing and storing the analyzed data. ATs were cataloged and classified as Aid resources and Software ATs, according to the literature based on Souza *et al.* (2015) and Bersch (2017).

Since the research is focused on the relationship between software ATs and the target audience, it was decided to present them classified in thematic categories by functionality, namely: (a) Screen Readers; (b) Screen magnifiers; (c) Changing Colors; (d) Alternative Augmentative Communication (CAA); (e) Virtual Mouse Alternatives and (f) Virtual Keyboard Alternatives.

For this purpose, the text shows the name of the AT and its electronic address, so that the reader can locate them on the Internet, as well as the association of this with the type of SEN for which it was intended in IFRS-Caxias do Sul. Nevertheless, it was understood as relevant, in an attempt to analyze the offer of software ATs versus target audience, to investigate the frequency of use of the ATs in question, during 2019, from the caption of use (i) daily; (ii) weekly; (iii) fortnightly; (iv) monthly or (v) unused. All data that made up the research corpus were obtained from the Center for Assistance to People with Specific Educational Needs (NAPNE). In the next section, the findings of this research are presented.

Data Analysis

Regarding data analysis, in the first stage 42 registration forms of students with different SENs were analyzed, from 2015 to 2019, which allowed data extraction, which when analyzed and tabulated showed the occurrence of 16 types of SENs. These were divided between students with disabilities and students with SNs. Thus, in the first modality, it was subdivided into 4 categories: Physical Disability; Hearing deficiency; Visual impairment; Intellectual Disability which, based on Decree no. 5,296 (BRASIL, 2004), is composed of 11 types of deficiencies identified in the Institution. The second modality is formed by 1 category called 'Other SNs', which is composed of 5 types of SNs, respecting Decree no. 6,571 (BRASIL, 2008) and Decree

no. 7,611 (BRASIL, 2011), as these are presented in a dissociated way from the definition of disability (see table 1).

Table 1 – Categorization of SENs

CATEGORY	TYPE	PERCENTAGE OF STUDENTS
Physical Disability	Cerebral palsy (4 students); Physical disability in the upper limbs (3); Fibular Hemimelia (1), Charcot Marie Tooth Neuropathy (1); Vocal Fold Paralysis (1); Reduction of Body Balance (1);	26,4%
Hearing Impairment	Deafness (4); Low hearing (3);	16,6%
Visual impairment	Low vision (4);	9,5%
Intellectual Disability	Neurological Deficit (3); Down's syndrome (1);	9,5%
Other SNs	Tourette's syndrome (1); Global Development Disorder (GDD) (1); High Skills/Giftedness (HS/G) (1); Autistic Spectrum Disorder (3); Attention Deficit Hyperactivity Disorder (ADHD) (9).	38%

Source: Devised by the authors

In the second stage, the ATs offered by IFRS-Caxias do Sul were cataloged, only in 2019, as a form of on-site exploration. For this survey, a guided visit was made to the Institution's premises, in order to carry out the survey. Therefore, 41 ATs were listed, which were divided from CAT (2009), Sonza et al. (2015) and Bersch (2017) in 16 ATs of the Aid type and 25 ATs of Software, these were subdivided into 10 subcategories as shown in Table 2.

Table 2 – Survey of Software and Aid ATs

AT - SOFTWARE	TOTAL	AT - AID	TOTAL
Screen Readers	5	Reading Resources	4
Screen Magnifiers	6	Writing Resources	4
Changing Colors	4	Mobility	2
Augmentative and Alternative Communication	4	Teaching materials	6
Virtual Mouse Alternatives	4		
Virtual Keyboard Alternative	2		

Source: Devised by the authors

The offer of ATs for Software and Support was understood in accordance with Art. 3, Law No. 13,146 (BRASIL, 2015), which provides for the use of TAs, as pedagogical resources, in the teaching of Basic or Higher Education, considering that ATs have been made available in a significant number and, relatively, according to the Institution's target audience. It is

understood that the use of an AT can enable the autonomy and independence of the student, as well as it can be used for the purpose of learning or consolidating the student's pre-existing knowledge (BRASIL, 2015; VIGOTSKI, 1991).

Thus, the Aid resources were identified, which include: Reading Resources (Magnifying Glass, Digital File Reader, Keyboard for the Visually Impaired (hive), Autonomous Reader with Integrated Voice Digitizer); Writing Resources (Pencil Thickener, Reglete; Plank and Punch, Braille Labeler); Mobility (Crutches, Canes); Teaching Materials (Multiplane, Geoplane, Soroban, Notebook, Chess for the Visually Impaired; Braille Alphabet).

The focus of the research was directed to the list of Software ATs and their relationship with the target audience, so they were classified into categories according to their functionality: (a) Screen Readers; (b) Screen magnifiers; (c) Changing Colors; (d) Alternative Augmentative Communication (CAA); (e) Virtual Mouse Alternatives and (f) Virtual Keyboard Alternatives. In Table 3, the software ATs, SENs and the frequency of requesting the elements were listed, as announced in the methodology, the name of the AT, its electronic address, was tabulated so that the reader of this article could locate them on the Internet and its association with the type of SEN for which it was destined in IFRS-Caxias do Sul. Also, the frequency of use of Software ATs was listed based on a caption of (i) daily, (ii) weekly use; (iii) fortnightly; (iv) monthly or (v) not used during 2019.

Table 3 – Cataloging of Software ATs

RESOURCES	ELETRONIC ADRESS	SEN	FREQUENCY OF REQUEST
SCREEN READERS			
<i>NonVisual desktop Access (NVDA)</i>	https://rb.gy/mntei7	Low vision	Monthly
<i>Orca</i>	https://rb.gy/oxavwq	Low vision	No use
<i>VoiceOver</i>	Mac devices	Low vision	No use
<i>TalkBack</i>	Microsoft devices	Low vision	No use
<i>DosVox</i>	https://rb.gy/sigaoq	Low vision	Fortnightly
SCREEN MAGNIFIERS			
<i>Windows Magnifier</i>	Microsoft devices	Low Vision, Cerebral Palsy	Weekly
<i>LentePro</i>	https://rb.gy/t2wcds	Low Vision, Cerebral Palsy	No use
<i>Virtual Magnifying Glass</i>	https://rb.gy/zbb0fu	Low Vision, Cerebral Palsy	No use
<i>Lightning 3</i>	Official page disabled	Low Vision, Cerebral Palsy	No use
<i>Magnifixer</i>	https://rb.gy/schlmu	Low Vision, Cerebral Palsy	No use
<i>ZoomIt</i>	https://rb.gy/j1woum	Low Vision, Cerebral Palsy	No use
CHANGING OF COLORS			
<i>High Contrast</i>	https://rb.gy/hz1bt3	Low vision	No use
<i>Dark Reader</i>	https://rb.gy/zepme7	Low vision	No use

Dark Background and Light Text	https://rb.gy/ibscgs	Low vision	No use
Blank Your Monitor + Easy Reading	https://rb.gy/5guh2r	Low vision	No use
AUGMENTATIVE AND ALTERNATIVE COMMUNICATION (CAA)			
AraBoard	https://rb.gy/gpcir	Cerebral Palsy, Low Hearing, Vocal Fold Paralysis	No use
Prancha Fácil	https://rb.gy/0k8mg5	Cerebral Palsy, Low Hearing, Vocal Fold Paralysis	Monthly
Plaphoons	https://rb.gy/zsqqwf	Cerebral Palsy, Low Hearing, Vocal Fold Paralysis	No use
Scala	https://rb.gy/p66bc9	Cerebral Palsy, Low Hearing, Vocal Fold Paralysis, ADHD	Monthly
VIRTUAL MOUSE ALTERNATIVES			
Câmera Mousem	https://rb.gy/t0xsab	Cerebral Palsy, Physical Disability Upper Limbs	No use
eViacam	https://eviacam.crea-si.com/	Cerebral Palsy, Physical Disability Upper Limbs	No use
HeadDev	https://rb.gy/zxlut8	Cerebral Palsy, Physical Disability Upper Limbs	No use
Headmouse	https://rb.gy/mkvdkj	Cerebral Palsy, Physical Disability Upper Limbs	No use
VIRTUAL KEYBOARD ALTERNATIVES			
Windows Virtual Keyboard	https://rb.gy/fllo2k	Cerebral Palsy, Physical Disability Upper Limbs, Low Vision	Daily
MouseKey	https://rb.gy/rppu04	Cerebral Palsy, Physical Disability Upper Limbs, Low vision	Daily

Source: Devised by the authors

Based on the details presented in Table 03, regarding Software ATs, it was possible to verify that there is a greater offer of ATs for students with visual impairments, which is not consistent with the number of students with ADHD, SEN that predominates in the Institution. Regarding the Screen Readers category, it was found that only two software (NonVisual desktop Access (NVDA); DosVox) have been used, which represents 4.9% of the total resources made available by IFRS-Caxias do Sul.

Regarding the Screen Magnifiers category, it was found that only the Windows Magnifier is used, representing 2.4% of all ATs. The Augmentative and Alternative Communication (CAA) feature presented two software, which are used (Prancha Fácil and Scala), representing 4.9% of the total resources. Regarding the Virtual Keyboard Alternatives resource, it was observed that the two instruments used by the Institution (Windows Virtual

Keyboard and Mouse Key) are used, showing 4.9% of the total ATs. As for the Color Change and Alternatives for Virtual Mouse features, there was no use for these tools.

From this survey, the visit to the Institution and the information pointed out by NAPNE, it is also possible to infer about the frequency of requesting software resources. Thus, it emerged that among the 25 software resources provided by the Institution, the frequency of use was: 72% unused; 12% monthly; 4% fortnightly; 4% weekly and 8% daily. As verified, the majority of Software ATs are not used, an aspect that points to the non-adherence of the ATs, perhaps due to the lack of teachers' knowledge, regarding the use of these computational resources related to teaching and learning.

Thus, it can be seen that the software offered by IFRS-Caxias do Sul are mostly aimed at students with visual impairments (4 students) and Cerebral Palsy (4 students), these represent 19% of the total students with SENs. It is believed that students with hearing impairment did not use ATs because they had access to Libras Interpreters. The other students with SENs were not provided with resources from Software ATs, because there was no demand or because there was no need for software assistance.

IFRS-Caxias do Sul has free software, which is easily accessible for the Institution to be able to install and make available to students and teachers. This type of software has the possibility of being installed, for example, by a family member, on the equipment used at home by students with SENs, which allows students to become even more familiar with the use of a given computational resource for learning purposes. So, the student can use the same ATs at home, which can facilitate their school development.

Final considerations

This article mapped, based on Decrees no. 5,296 (BRASIL, 2004), no. 6,571 (BRASIL, 2008) and no. 7,611 (BRASIL, 2011), the SENs of the students of IFRS-Caxias do Sul, as well as the resources of Assistance ATs, especially Software. It was found that the largest number of students with SENs are those with ADHD, followed by deafness, low vision and cerebral palsy. Regarding the cataloging of ATs, it was possible to list the resources of Assistance and software existing in the Institution, which allowed to identify a greater number of ATs focused on computational accessibility of the software type.

Thus, the study sought to focus on this type of resource, which was categorized according to its type and its relationship with the target audience. Throughout this process, it was inferred that the Institution has made free tools available to students and teachers.

Institutional management has adopted as a principle the promotion of the use of free tools, understanding the political and social meaning of defending the development of free software and the role they can play in the effective inclusion of schoolchildren in need and with SENs. Despite this, it became evident the need for actions aimed at formation teachers and educational technicians in order to discuss and present ways of using ATs.

In addition, there was a need for an intervention coordinated by the management team in order to ensure the availability of ATs, which meet the different SENs. In view, a greater offer of ATs was identified for students with visual impairment or cerebral palsy and not students with ADHD, who are in greater numbers at IFRS-Caxias do Sul. In this sense, perhaps the lack of specific resources for students with ADHD is due to the fact that there are no specific ATs for this SEN, which requires a specific understanding of this SN so that the use of accessible technology can be attributed, if necessary. However, during on-site observation, it was possible to notice that there is a concern on the part of NAPNE, teachers and management to build a coordinated action with the aim of qualifying the monitoring and instrumentalization of the care of students with ADHD.

From this research it was possible to realize that it is still necessary to consolidate a work of articulation between pedagogical sectors and NAPNE in a movement that seeks to identify the target audience tools that encompass the largest portion of NEEs, since 72% of resources of software were not used by students and teachers in the year 2019. It is still worth pointing out the need to purchase or replace software-type ATs, as as verified there is a low movement of adhesion on the part of teachers in relation to the use of ATs in question, even though the offered ATs include students with: Cerebral Palsy, physical disability of upper limbs and low vision. Thus, it appears that it is necessary that other ATs be acquired, in order to contemplate students with SENs such as: deafness, intellectual disability, etc.

Finally, it was found that the Institution has a significant range of ATs, especially for accessibility to computational resources of the software type, but those need to be properly distributed in relation to the types of SENs of the Institution's students. In this perspective, the monitoring of the use of ATs and their coherent offer can promote the strengthening of the teaching and learning processes of students with SEN, contributing to the constitution of a powerful instrument for reframing and transforming teachers' pedagogical practices. In order to continue this, future studies will be carried out, in which it is intended to deepen the characterization and use of Aid resources and the types of SENs of students who use these in the IFRS-Campus Caxias do Sul.

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