

ASSISTIVE TECHNOLOGY AS THE THEME OF FINAL PAPERS AT THE UFPA FACULTY OF EDUCATION BETWEEN 2018 AND 2022

TECNOLOGÍA ASISTIVA COMO TEMA DEL TRABAJO DE FINALIZACIÓN DE CURSO EN
LA FACULTAD DE EDUCACIÓN DE LA UFPA ENTRE 2018 Y 2022

A TECNOLOGIA ASSISTIVA COMO TEMA DOS TRABALHOS DE CONCLUSÃO DE
CURSO DA FACULDADE DE EDUCAÇÃO DA UFPA ENTRE OS ANOS DE 2018 E 2022

Mateus Paulo Silva Lopes ¹

Robson Gabriel dos Santos Silva ²

Marcelo Wilson Ferreira Pacheco ³

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Abstract

This article seeks to identify the productions of Final Papers (FPs), on the theme Assistive Technology, in the Pedagogy Course of Instituto de Ciências da Educação, of Universidade Federal do Pará (UFPA), as well as to update previous researches on the topic in question. This study was developed from a bibliographic, documentary and exploratory survey, whose research focus remained on the texts written between the years 2018 and 2022, deposited in the institutional repository of monographs of the University. In this consultation, the presence of two FPs was identified that talk about Assistive Technology resources, however, one indirectly. The analysis of the works was based on the understanding of authors such as Galvão Filho (2009; 2011) and Bersch (2017) and Laws and Decrees sanctioned at the national level. With the survey, it could be concluded that in the aforementioned Higher Course there are still few researches focused on this area of knowledge, which is reflected in the low production of FPs within the investigated time frame and that, as a result, the debate on the subject needs to be deepened and more widespread in Faculdade de Educação, given the insurgent need for new pedagogical practices for an innovative and inclusive education.

Keywords: Assistive Technology; Final Papers; Pedagogy Course.

¹ Graduating in Pedagogy from the Federal University of Pará. Member of the Curriculum Studies and Research Center.

ORCID: <https://orcid.org/0000-0002-8572-9591> Contact: mateus.lopes@iced.ufpa.br

² Graduating in Pedagogy from the Federal University of Pará. Participant in the Study and Research Group on Education and Social Justice.

ORCID: <https://orcid.org/0000-0003-0966-9328> Contato: robson.silva@iced.ufpa.br

³ Master in Teaching from the Federal University of Pará. Professor at the Federal University of Pará and at the Municipal Education Network of Belém. Member of the Study and Research Group on State and Education in the Amazon.

ORCID: <https://orcid.org/0000-0001-5681-9670> Contato: celopacheco@hotmail.com

Resumen

Este artículo busca identificar las producciones de Trabajos de Finalización de Curso (TFCs), sobre el tema Tecnología Auxiliar, en el Curso de Pedagogía del Instituto de Ciencias de la Educación, de la Universidad Federal de Pará (UFPA), así como actualizar investigaciones anteriores sobre el tema en cuestión. Este estudio se desarrolló a partir de un levantamiento bibliográfico, documental y exploratorio, cuyo foco de investigación quedó en los textos escritos entre los años 2018 y 2022, depositados en el repositorio institucional de monografías de la Universidad. En esta consulta se identificó la presencia de dos TFCs que hablan de recursos de Tecnología Asistiva, sin embargo, uno de manera indirecta. El análisis de los trabajos se basó en la comprensión de autores como Galvão Filho (2009; 2011) y Bersch (2017) y Leyes y Decretos sancionados a nivel nacional. Con la encuesta se pudo concluir que en el mencionado Curso de Educación Superior aún existe poca investigación enfocada en esta área del conocimiento, lo que se refleja en la baja producción de TFCs dentro del marco temporal investigado y que, en consecuencia, el debate sobre el tema necesita ser profundizado y más difundido en la Facultad de Educación, dada la insurgente necesidad de nuevas prácticas pedagógicas para una Educación innovadora e inclusiva.

Palabras clave: Tecnología Asistiva; Trabajos de Finalización de Curso; Curso de Pedagogía.

Resumo

O presente artigo busca identificar as produções de Trabalhos de Conclusão de Curso (TCCs), acerca do tema Tecnologia Assistiva, no Curso de Pedagogia do Instituto de Ciências da Educação, da Universidade Federal do Pará (UFPA), bem como atualizar pesquisas anteriores sobre a temática em questão. Este estudo foi desenvolvido a partir de um levantamento bibliográfico, documental e exploratório, cujo foco de investigação manteve-se sobre os textos escritos entre os anos de 2018 e 2022, depositados no repositório institucional de monografias da Universidade. Nessa consulta identificou-se a presença de dois TCCs que dissertam sobre os recursos de Tecnologia Assistiva, porém, um de forma indireta. A análise dos trabalhos deu-se a partir das compreensões de autores como Galvão Filho (2009; 2011) e Bersch (2017) e de Leis e Decretos sancionados em nível nacional. Com o levantamento, pôde-se concluir que no referido Curso Superior ainda existem poucas pesquisas voltadas para essa área do conhecimento, o que se reflete na baixa produção de TCCs dentro do recorte temporal investigado e que, em função disso, o debate acerca do assunto precisa ser aprofundado e mais difundido na Faculdade de Educação, visto a necessidade insurgente de novas práticas pedagógicas para uma Educação inovadora e inclusiva.

Palavras-chave: Tecnologia Assistiva; Trabalhos de Conclusão de Curso; Curso de Pedagogia.

Introduction

In today's world, it is essential to understand the meaning and use of Assistive Technology (AT) resources in promoting inclusive education, given the significant inclusion of People with Disabilities (PWDs) in classrooms at various educational levels, including Basic Education, throughout the country⁴.

⁴ According to Censo da Educação Básica, conducted by Instituto Nacional de Estudos e Pesquisas Educacionais Anísio Teixeira, in its 2021 edition, "The number of enrollments in special education reached 1.4 million in 2021, an increase of 26.7% compared to 2017" (BRASIL, 2022, p. 13).

Although the debate on this topic has intensified in recent years, little was previously said about this subject, because of the historical process of exclusion, segregation, prejudice, and ableism faced by people with disabilities (RODRIGUES; LIMA, 2017). Fortunately, today, more and more research and public policies are being discussed and implemented in this regard, resulting in the recognition of AT as an important and fundamental field of knowledge and pedagogical work for the inclusion of students with disabilities in regular education systems.

Galvão Filho (2011) understands AT as a relevant area of research, knowledge production, and solutions for the problems that mainly affect people with some type of disability, whether in the cognitive or mobility aspect. In the words of this author,

Assistive Technology, therefore, is understood as any resource, product, or service that promotes the autonomy, communication, activity, and participation of people with disabilities, impairments, or reduced mobility. Nowadays, it has made it possible for students, including those with severe impairments, to start being able to carry out activities or perform tasks that were previously unattainable for them (GALVÃO FILHO, 2011, p. 75).

AT is, therefore, essential to ensure the inclusion of people with disabilities in society, as it helps promote equal opportunities and enables the full participation of these individuals in various social contexts. It facilitates access to education, employment, leisure, and any other activities that would otherwise be unattainable without these resources.

Schirmer and Nunes (2020), in their attempt to understand the importance of initial teacher training regarding AT, identified important points that need to be considered in the graduation process of future educators: the flexibility with which curricula should be approached, the use of active methodologies that address the diversity of the served audience, a planning focused on inclusion, and the adoption of educational and assistive technologies that provide trainee teachers with meaningful learning experiences aligned with the reality of the students and the context of Special and Inclusive Education in Brazil. That said,

When we talk about human resources training to work with AT, we need to think not only about the specialized teacher's training but also about the education professionals in general, as well as the healthcare professionals who provide fundamental support in the inclusion process of students with disabilities and ASD. However, even today, there are few higher education institutions that offer specific mandatory and/or elective courses in their curricula that discuss topics related to Special Education, and even fewer in the area of Assistive Technology and Alternative Communication (SCHIRMER; NUNES, 2020, p. 3).

It is evident that the training for the development and use of AT resources in educational settings encompasses a much broader body than just the areas of teacher education. Furthermore, there is a recognized need for and importance of the inclusion of curriculum courses in undergraduate programs that address this topic. Taking the Pedagogy Course at Universidade Federal do Pará (UFPA) as an example, up until the time of this research, only one course, Technologies and Education, had addressed this field in a theoretical manner.

Nascimento and Plese (2021) highlight that one of the most relevant issues related to AT is the lack of mastery of specific techniques for its production by some professionals. As a result, they agree that initial teacher training fails to encompass the dimension of the knowledge area related to the study and design of these resources. From this perspective,

It is relevant to highlight that, within the context of the regular classroom, inclusive teaching requires the teacher to possess knowledge that enables them to flexibly and diversify their pedagogical actions in order to accommodate the diversity present in their class. On the other hand, teachers who work in Specialized Educational Assistance (SEA) also face numerous challenges related to their assigned responsibilities [...], ranging from identifying and producing pedagogical and accessibility resources, considering the specific needs of students, to evaluating the functionality and applicability of such resources, as well as providing guidance to families and teachers in the regular classroom on how to use them (PIMENTEL; RIBEIRO, 2021, p. 9).

Given the importance of the topic, especially in the context of teacher education - which is the case in this article, originating from an academic investigation undertaken in the Technologies and Education course of the Pedagogy program - the present study sought to analyze the Final Papers (FPs) produced by the graduates of this undergraduate program at Instituto de Ciências da Educação of UFPA between the years 2018 and 2022, focusing on the research object of AT.

This study emerges as an update to the previous research conducted by Maués et al. (2018), which analyzed the final papers produced in the same context but between the years 2007 and 2017. The focus of this new investigation was to identify the quantity of papers produced from that date until the year 2022, as well as to analyze the concepts and approaches adopted to discuss AT within the scope of teacher education, in order to reveal how this topic has been discussed and highlighted within the Faculdade de Educação at UFPA.

Methodological approach

Starting from a predominantly qualitative approach, as it became evident that it was necessary to combine the quantity of final papers found in the survey with thematic and critical analysis of the collected data, the present study focused on a bibliographic and documentary research in Digital Library of Monographs (DLM) of UFPA, as well as the reading of laws, decrees, ordinances, and other legal documents established in Brazil and within the institution regarding the researched topic. This methodological approach is based on the understanding that

Researchers who use qualitative methods seek to explain the why of things, expressing what should be done, but they do not quantify values and symbolic exchanges, nor do they subject themselves to the test of facts, as the analyzed data are non-metric (emerging and interactive) and rely on different approaches (SILVEIRA; CORDOVA, 2009, p. 32).

According to Gil (2002), there are two classifications regarding the nature of research: basic and applied, and this study falls into the first category. As stated by the author, the objective of basic research is to produce new knowledge, aiming to advance and innovate science, but without a practical application in the investigation.

Thereby, this study conducted a survey of the FPs produced by students in the Pedagogy program at UFPA, through consultation of UFPA's DLM, between the years 2018 and 2022, with the aim of identifying, among these productions, those whose research object was AT, and analyzing them based on a theoretical framework composed of reference authors in the field in Brazil.

The chosen time frame is justified by the previous research conducted by Maués et al. (2018) on the FPs developed by students in the Pedagogy program at UFPA regarding AT, covering the period from 2007 to 2017⁵. Therefore, this study aimed to provide an update and verification of the papers produced after that period.

In addition to the work developed by Maués et al. (2018), it is worth emphasizing that in the year 2019, Decree No. 10.094 was approved on November 6th, creating the Interministerial Committee on Assistive Technology (ICAT). Furthermore, on March 11th, 2021, Decree No. 10.645 was sanctioned, which establishes the objectives, guidelines, and axes of National Assistive Technology Plan (NATP). These developments highlight the importance and relevance of addressing this issue, considering the advancements in the legal framework concerning assistive technology resources.

The survey, therefore, was conducted in the UFPA's DLM between August and October 2022, focusing on the FPs produced between the years 2018 and 2022, using the keyword "Tecnologia Assistiva" for the search. A total of 45 FPs from the Pedagogy program were found. However, in an initial inclusion/exclusion exercise, it was noticed that although some of the indicated papers appeared in the search results, they did not essentially discuss the theme. Thus, as a research procedure, these texts were filtered to discard those that did not include the specified term in their title or explicitly mentioned it in their abstract. Based on this filtering, the following papers were found, as presented in Chart 1.

Chart 1: List of Final Papers Found in the UFPA Monograph Database:

AVAILABLE FINAL PAPERS (TCCs) IN THE BDM		
TITLE	AUTHOR	YEAR
Pedagogical Work in the Multifunctional Resource Room of Vilhena Alves School.	Waléria Augusta Araújo Costa	2019
Assistive Technology in the Publications of Congresso Brasileiro de Educação Especial (2016-2018) and UFPA TCCs (2011-2016).	Heytor Victor Nascimento Cruz	2019

Source: developed by the authors.

⁵ In the research conducted by Maués et al. (2018), four undergraduate theses were found that specifically addressed the theme of Assistive Technology during the ten-year period defined by the authors, from 2007 to 2017.

After reading and analyzing these two works, in light of references such as Galvão Filho (2009; 2011) and Bersch (2017), as well as laws established in Brazil regarding AT resources, it was possible to identify the concept and specificities presented in both documents, in order to support the interpretation of how this theme has been addressed within Faculdade de Educação at UFPA in teacher education. In addition, the Pedagogy Course's Pedagogical Project of the Course (PPC) was analyzed to understand what the Course offers regarding AT and which disciplines specifically explore the subject. The results of this methodological research movement can be found in a relevant section later in this article.

Theoretical framework

Currently, there are many debates regarding the existing definitions of AT (Assistive Technology). There are many factors directly involved in the work on this conceptualization, and one of them, it can be said, is the gap between a concept expressed in legislation and one that researchers in the field agree upon. Therefore, the analysis starts from the works of Galvão Filho (2009; 2011) and Bersch (2017), two theorists who focus their research on this subject, to present the conception that these authors defend.

The Pedagogy Course's PPC was also taken as a reference, providing theoretical support for the analysis of how the subject of AT is addressed in the legal documents of the undergraduate program and how it is addressed in teacher education.

- Universidade Federal Pará and the bachelor's degree in Pedagogy

UFPA was established in 1957 through the unification of existing Higher Education schools in Belém, the capital of the state, and the creation of faculties such as Law, Philosophy, Sciences and Arts, Pharmacy, among others that emerged in the following years (UNIVERSIDADE FEDERAL DO PARÁ, 2010). However, it was only in 1965, with Law No. 4,759, that the institution became officially recognized as a university, being understood as

[...] a federal public institution of education and research, linked to the Ministério da Educação (MEC), located in a region that holds extremely strategic natural and cultural resources for the development of the economy and global society in this new century (UNIVERSIDADE FEDERAL DO PARÁ, 2010, p. 10).

Located in the Northern region of the country, within the Amazon Rainforest, UFPA has sought to develop, through teaching, research, and extension, minimum scientific capabilities to meet the demands that arise in society (UNIVERSIDADE FEDERAL DO PARÁ, 2010).

Initially linked to the now-defunct Faculdade de Filosofia, Ciências e Letras, the Pedagogy Course was created in 1954, even before the establishment of UFPA, and is currently affiliated with Faculdade de Educação, which is a subunit of Instituto de Ciências da Educação. Its principles emphasize the formation of ethical and humanistic professionals capable of developing citizenship and their profession in a reflective and critical manner, always seeking to improve society through science, culture, and technology (UNIVERSIDADE FEDERAL DO PARÁ, 2010). The Pedagogy PPC highlights that the function of the mentioned undergraduate course is to

Train education professionals, based on a **commitment to the valorization of teaching work** and the construction of **innovative educational practices** that promote and **emancipate human** beings with a view to **social transformation**, through regular undergraduate courses, observing the inseparability between teaching, research, and extension, in accordance with the General Statute, UFPA's Bylaws, and ICED's Bylaws (FACULDADE DE EDUCAÇÃO, 2009, p. 3 apud UNIVERSIDADE FEDERAL DO PARÁ, 2010, p. 60, our griffins).

Furthermore, the guiding document of UFPA's Pedagogy Course reinforces "[...] the commitment to the social and educational inclusion of historically excluded individuals" (UNIVERSIDADE FEDERAL DO PARÁ, 2010, p. 60).

Although the Pedagogy Course assumes the role of training professionals capable of articulating technical and didactic skills in the process of Inclusive Education, according to its curriculum, only one subject (Technologies and Education) is identified that specifically and directly addresses the concept of Assistive Technology in its syllabus and planning⁶.

⁶ It is worth mentioning that in the curriculum of the Pedagogy course at UFPA (Universidade Federal do Pará, 2010), there are also subjects such as LIBRAS (Brazilian Sign Language) and Inclusive Education. However, until the moment of the mentioned research and the writing of this article, it was

Considering the reality of Digital Information and Communication Technologies (DICTs) and the digital era in today's society, it is valid to emphasize the need for an education professional to be able to develop learning techniques using such resources and, consequently, Assistive Technology for Inclusive Education.

- Assistive Technology: a brief conceptualization of the term

According to Bersch (2017, p. 2), Assistive Technology should be understood as "[...] an aid that promotes the enhancement of a deficient functional ability or enables the performance of a desired function that is hindered by disability or aging circumstances".

In this way, the author asserts that this term should be understood as a resource whose objective is to provide people with disabilities with a better quality of life, social inclusion, and access to various types of knowledge and the world of work (BERSCH, 2017).

Thus, the researcher highlights the existence of categories of AT, which are: (a) aids for daily living; (b) augmentative and alternative communication; (c) computer accessibility resources; (d) environmental control systems; (e) architectural projects for accessibility; (f) orthoses and prostheses; (g) postural support; (h) mobility aids; (i) aids for visual function enhancement and resources that translate visual content into audio or tactile information; (j) aids for improving auditory function and resources used to translate audio content into images, text, and sign language; (k) vehicle mobility; (l) sports and leisure (BERSCH, 2017).

It is worth emphasizing that the categories presented by the author highlight the resources of AT and their presence in all aspects of human life. Furthermore, it is understood that these resources should be used with the perspective of inclusion and providing access for individuals in all spheres of life.

The analyses by Bersch (2017) become fundamental and foundational for the debate on AT resources in Brazil. In this sense, the researcher poses a question: what

only in the Technologies and Education subject, in the fifth semester of the course, that the concept of Assistive Technology was addressed.

is and what is not Assistive Technology? This inquiry generates various debates about the use and the very conceptualization of the term.

In this context, the theorist highlights that AT "[...] serves the person with disabilities who needs to perform everyday functions independently" (BERSCH, 2017, p. 11). In the educational field, the author highlights that it should be considered that a Technology will be called Assistive Technology when

[...] it is used by a student with disabilities and aims to overcome sensory, motor, or cognitive barriers that limit/prevent their access to information or limit/prevent their ability to record and express their acquired knowledge; when it facilitates their access and active and autonomous participation in pedagogical projects; when it enables the manipulation of study materials; when we realize that without this technological resource, the student's active participation in the learning process would be restricted or nonexistent (BERSCH, 2017, p. 12).

According to Galvão Filho (2009), the concept of AT is relatively new in Brazil and is still associated with the use of "Technical Aids" and "Supportive Technology" (GALVÃO FILHO, 2009, p. 10). According to this theorist, the use of these terms as synonyms poses a problem in terms of material production, research, and the formulation of public policies, as this association reduces the concept of TA solely to tools and devices.

Furthermore, this author emphasizes the importance of understanding Universal Design⁷ in discussing AT, as it "[...] brings with it the idea that all realities, environments, resources, etc., in human society should be conceived, designed, with a view to the participation, use, and access of all people" (GALVÃO FILHO, 2009, p. 12), adopting a perspective of inclusion of these individuals in the society in which they are included.

Later on, the researcher states that the term Assistive Technology (AT) is more commonly used in academic spaces and should therefore be used in the singular form, which is the way it is employed in this article. Finally, he defines AT as: "[...] resources or personal procedures that meet the direct needs of the end user, aiming for their independence and autonomy" (GALVÃO FILHO, 2009, p. 12).

⁷ Universal Design "is a set of strategies, techniques, and/or flexible learning materials that aim for education for all and the guarantee of universal learning. [...] The purpose of universal design is to create accessible environments, products, services, programs, and technologies to meet the needs of the greatest number of people [...]" (MENDONZA, 2018, p. 154).

It is worth noting that both Galvão Filho (2009; 2011) and Bersch (2017) complement each other in certain aspects concerning the field of knowledge of Assistive Technology. Building upon the ideas proposed by these authors, a national document titled "Tecnologia Assistiva" (BRASIL, 2009) was created by Technical Aids Committee (TAC) of Special Secretariat for Human Rights. This document provides a review of the concept of Assistive Technology and the terminologies that led to its creation. In this document, it is stated that Assistive Technology, Technical Aids, and Supportive Technologies are still considered synonymous but encompass different fields of research and practice.

Furthermore, the document also states that these comparisons and the use of these terms with the same meanings should no longer be employed in this manner, as synonymous concepts and purposes. Therefore, the TAC proposed that the terminologies be differentiated within legal documents and that Assistive Technology should be included correctly, in order to encompass its field of knowledge, conceptualizing it as

[...] an interdisciplinary field of knowledge that encompasses products, resources, methodologies, strategies, practices, and services aimed at promoting functionality, related to the activity and participation, of individuals with disabilities, impairments, or reduced mobility, with the goal of achieving their autonomy, independence, quality of life, and social inclusion (BRASIL, 2007 apud BRASIL, 2009, p. 9).

Indeed, based on the studies and formulations presented by theorists discussing AT resources and the official documents created in Brazil, several laws and decrees have been enacted to address this issue.

The Law No. 13,146, enacted on July 6, 2015, known as the Brazilian Law for Inclusion of Persons with Disabilities, devotes an entire chapter to address Assistive Technology. It emphasizes Article 75, which states: "The government will develop a specific plan of measures, to be renewed every 4 (four) years [...]" (BRASIL, 2015, n.p.).

The Decree No. 10,094, enacted on November 6, 2019, establishes the ICAT and its purpose is to

[...] assist in the structuring, formulation, coordination, implementation, and monitoring of an assistive technology plan, aiming to ensure that people with disabilities have access to products, resources, strategies, practices, processes, and services that maximize their autonomy, personal mobility, and quality of life, in accordance with the provisions of Law No. 13,146, enacted on July 6, 2015 - the Statute of Persons with Disabilities (BRASIL, 2019, s.p.).

Furthermore, in Article 3, where it mentions the competencies, the decree stipulates, in items II and III, respectively: "[...] approving the specific assistive technology plan by an absolute majority; proposing strategies for the implementation of the specific assistive technology plan" (BRASIL, 2019, n.p.).

Moving forward, Decree No. 10,645, dated March 11, 2021, was approved, which regulates Article 75 of Law No. 13,146/2015 and establishes the objectives, guidelines, and axes of the NATP. In this document, the term "Assistive Technology" is employed as a legal basis. In Article 2, item I of the decree, it states

Assistive technology or technical aid - products, equipment, devices, resources, methodologies, strategies, practices, and services aimed at promoting functionality related to the activity and participation of people with disabilities or reduced mobility, with a view to their autonomy, independence, quality of life, and social inclusion; (BRASIL, 2021, n.p.).

It can be observed that this field of knowledge is becoming increasingly consolidated, both in legal documents and in the research and studies being conducted on AT resources.

- The undergraduate thesis productions of the Pedagogy course at ICED/UFGA: what was produced about Assistive Technology?

When conducting a search in the UFGA thesis database, only a few undergraduate theses directly addressing the topic of AT were found. However, indirectly, this theme was present in other available productions in the repository, which allowed for the analysis described in this article.

One of these research works was conducted by Costa (2019) titled "O Trabalho Pedagógico na Sala de Recurso Multifuncional da Escola Vilhena Alves". The guiding question of this undergraduate thesis was: "How does the pedagogical work in the Multifunctional Resource Room of Vilhena Alves School take place?" (COSTA, 2019, p. 21). Based on this question, the author discusses, problematizes, and reflects on the functionality of the Multifunctional Resource Room (MRR) and its utilization in Vilhena Alves State Elementary and High School located in Belém, Pará state (PA).

In her research, the author analyzes the activities, materials, and methodologies employed in the mentioned space with students who are part of the Inclusive Education target audience. In her survey, she identifies the existing resources in the school and used in the MRR, which include a honeycomb keyboard, three Braille machines, a Braille printer, and an electronic magnifier, referring to them as "[...] pedagogical resources, furniture suitable for the tasks [...]" (COSTA, 2019, p. 42).

Bersch (2017), on the other hand, refers to these same materials as Assistive Technology resources and emphasizes that all of them fit into one of the classifications she points out in her reference texts.

Therefore, it is possible to observe that although Costa's (2019) research is not directly focused on understanding the term and concept of AT, the author presents several of these resources and provides information about their functionalities, as well as how they are used in planning and providing support to children with disabilities at Vilhena Alves State School.

In this sense, it is important to emphasize that understanding the existence and use of these resources within regular classrooms and MRRs, as well as understanding the meaning of each of them, is essential to make a school more inclusive and productive in terms of AT.

The second FP found was the research by Cruz (2019), titled "Tecnologia Assistiva nas Publicações do Congresso Brasileiro de Educação Especial (2016-2018) E Dos TCC's UFPA (2011-2016)". In this study, the author analyzes the theme of AT in the FPs of UFPA between the years 2011 and 2016, as well as in the proceedings of Brazilian Congress of Special Education (BCSE).

This author aims to review the established concepts and theorists that directly discuss Assistive Technology, especially Bersch (2017), while also referring to the historical context, legal support, and understanding of the TAC to identify the predominant trends regarding the application of these resources with students in "Special Education". Throughout his work, Cruz (2019) provides the context of Special Education in Brazil, including its transition towards inclusive education policies and, consequently, the Specialized Educational Assistance (SEA) program.

Regarding the analyzed FPs in his research, Cruz (2019) observed that in teacher education, AT is still poorly researched, revealing that this can be one of the main obstacles to the inclusion of students with disabilities in regular education. According to him,

In the process of initial education in the Pedagogy course, this subject was scarcely addressed. There is little discussion on how to work with AT, and when it is addressed, it is done in a very superficial manner, with the exception of the course "Technologies and Education," which extensively covered this theme and presented various types of AT that can be used with this target audience. However, due to time constraints, it was not possible to delve deeper into the topic (CRUZ, 2019, p. 8).

Just like the research conducted by Maués et al. (2018), the study conducted by Cruz (2019) on AT in the Pedagogy Course at UFPA confirmed that there is little emphasis on this field of knowledge in teacher education. In fact, the scarce production on this content reflects how little the concept of AT is addressed in the Pedagogy undergraduate program, as it is only mentioned in the syllabus of the course "Technologies and Education," offered in the fifth semester of the aforementioned degree program.

Final considerations

The documentary and bibliographic research, as well as the analysis of the data presented in this article, revealed the importance of discussing and debating AT resources, as well as their necessity for inclusive and innovative teaching practices.

When analyzing the FPs of the Pedagogy course at UFPA between 2018 and 2022, it was identified that few texts directly addressed AT resources. Furthermore, the UFPA's digital library, which was the main locus of this research, was found to be outdated regarding the FPs defended in Faculdade de Educação from 2020 to 2022, as at least one work (produced on the topic and defended in November 2020) was not found in the repository search, authored by the then Pedagogy student Paulo Vitor Moreira Maués, the same author of the article used as a basis and chronological milestone for this study.

From the FPs identified and analyzed in this research, it can be concluded that both rely on similar theoretical frameworks, although they approach the topic of AT in different ways. While one focuses on describing the work carried out in a MRR in a public school without detailing the use of resources, the other, with a more theoretical approach, provides a deeper understanding of the concepts and foundations of AT, along with an analysis of available scientific productions on the subject.

In summary, it is concluded that despite the direct or indirect treatment of AT in the analyzed works, there is still a need for a more in-depth study of these resources within the scope of the Pedagogy course at UFPA. Given its importance, this topic should be further explored throughout the undergraduate program, especially in disciplines that focus on teacher training for inclusive education.

Being a fertile field for the work of pedagogues, considering the increasing access of students with different disabilities in various levels of education, it is necessary for professionals working in these inclusive spaces to be qualified for the task and specialized educational support. Knowledge about AT is fundamental in this context, considering its production, implementation, and use with the target audience of this service.

On one hand, identifying that few FPs have been written on this topic at UFPA reveals that further discussions and teaching, research, and extension activities need to be fostered, both in classroom practices and institutional proposals. On the other hand, it also reveals a field of knowledge that can (and should) be further explored by undergraduate students, generating new insights on the subject, bringing

innovative perspectives to the inclusion debate, and providing practical and meaningful learning experiences for future educators.

It is expected that research such as this article and those conducted by Maués et al. (2018), Costa (2019), and Cruz (2019) will reinforce the need for further investigation and motivate the university and other researchers to produce and disseminate knowledge on the topic at hand.

Referências

BERSCH, R. **Introdução à tecnologia assistiva**. Porto Alegre, 2017. Disponível em: https://www.assistiva.com.br/Introducao_Tecnologia_Assistiva.pdf.

BRASIL. Subsecretaria Nacional de Promoção dos Direitos da Pessoa com Deficiência. Comitê de Ajudas Técnicas. **Tecnologia Assistiva**. Brasília: CORDE, 2009.

BRASIL. **Lei Brasileira de Inclusão da Pessoa com Deficiência (Estatuto da Pessoa com Deficiência)**. Lei nº 13.146, de 06 de julho de 2015. Disponível em: http://www.planalto.gov.br/ccivil_03/_ato2015-2018/2015/lei/l13146.htm.

BRASIL. **Comitê Interministerial de Tecnologia Assistiva**. Decreto nº 10.094, de 6 de novembro de 2019. Brasília, DF. Disponível em: http://www.planalto.gov.br/ccivil_03/_ato20192022/2019/decreto/D10094.htm.

BRASIL. **Objetivos e os Eixos do Plano Nacional de Tecnologia Assistiva**. Decreto nº 10.645, de 11 de março de 2021. Disponível em: http://www.planalto.gov.br/ccivil_03/_Ato2019-2022/2021/Decreto/D10645.htm#art1.

BRASIL, Instituto Nacional de Estudos e Pesquisas Educacionais Anísio Teixeira (Inep). **Censo da Educação Básica 2021**: notas estatísticas. Brasília, DF: Inep, 2022. Disponível em: https://download.inep.gov.br/publicacoes/institucionais/estatisticas_e_indicadores/notas_e_statisticas_censo_escolar_2021.pdf.

COSTA, W. A. A. **O trabalho pedagógico na sala de recurso multifuncional da escola Vilhena Alves**. Orientadora: Amélia Maria Araújo Mesquita. 2019. 69f. Trabalho de Conclusão de Curso (Licenciatura em Pedagogia) – Faculdade de Educação, Instituto de Ciências da Educação, Universidade Federal do Pará, Belém, 2019. Disponível em: <https://bdm.ufpa.br:8443/jspui/handle/prefix/3181>.

CRUZ, H. V. N. **Tecnologia assistiva nas publicações do congresso brasileiro de educação especial (2016- 2018) e dos TCC'S UFPA (2011-2016)**. Orientadora: Sônia Eli Cabral Rodrigues. 2019. 48f. Trabalho de Conclusão de Curso (Licenciatura em Pedagogia) – Faculdade de Educação, Instituto de Ciências da Educação, Universidade Federal do Pará, 2019. Disponível em: <https://bdm.ufpa.br:8443/jspui/handle/prefix/3213>.

GALVÃO FILHO, T. A Tecnologia Assistiva: de que se trata? In: MACHADO, G. J. C.; SOBRAL, M. N. (Org.). **Conexões: educação, comunicação, inclusão e interculturalidade**. Porto Alegre: Redes Editora, 2009. p.207-235. Disponível em: <http://www.galvaofilho.net/assistiva.pdf>.

GALVÃO FILHO, T. Favorecendo práticas pedagógicas inclusivas por meio da Tecnologia Assistiva. In: NUNES, L. R. O. P.; PELOSI, M. B.; WALTER, C. C. F. (Org.). **Compartilhando experiências: ampliando a comunicação alternativa**. Marília: ABPEE, p.71-82, 2011. Disponível em: http://www.galvaofilho.net/ta_inclusiva.pdf.

GIL, A. C. **Como elaborar projetos de pesquisa**. 4 ed. São Paulo: Atlas, 2002.

MAUÉS, P. V. M. et al. O Curso de Pedagogia da UFPA e sua Produção Acadêmica sobre Tecnologia Assistiva de 2007 - 2017. **Anais do VIII Congresso Brasileiro de Educação Especial**, São Carlos: Galoá, 2018. Disponível em: <https://proceedings.science/cbee/cbee-2018/papers/o-curso-de-pedagogia-da-ufpa-e-sua-producao-academica-sobre-tecnologia-assistiva-de-2007---2017>.

MENDONZA, B. de A. P. Desenho Universal da Aprendizagem. In: MILL, D. (Org.). **Dicionário Crítico de Educação e Tecnologias e de Educação a Distância**. Campinas: Papyrus, 2018. p.154-158.

NASCIMENTO, F. H. do; PLESE, L. P. de M. A formação inicial de professores numa perspectiva inclusiva com tecnologia assistiva: pesquisas sobre o tema. **Brazilian Journal of Development**, v.7, n.5, p.49057-49077, 2021. Disponível em: <https://ojs.brazilianjournals.com.br/ojs/index.php/BRJD/article/view/29855>.

PIMENTEL, S. C.; RIBEIRO, S. L. Política de Formação de Professores para Educação Inclusiva: reflexões a partir do plano nacional de educação. **Cenas educacionais**, v.4, n.e11763, 2021. Disponível em: <https://revistas.uneb.br/index.php/cenaseducacionais/article/view/11763/8032>.

RODRIGUES, A. P. N.; LIMA, C. A. A História da Pessoa com Deficiência e da Educação Especial em Tempos de Inclusão. **Revista Interterritórios**, v.3, n.5, p.21-33, 2017. Disponível em: <https://periodicos.ufpe.br/revistas/interterritorios/article/view/234432/27604>.

SCHIRMER, C. R.; NUNES, L. R. d'O. de P. Efeitos da Formação Inicial de Professores em Tecnologia Assistiva através de Metodologia Problematizadora. **Revista Educação Especial**, v. 3, p.1-22, 2020. Disponível em: <https://periodicos.ufsm.br/educacaoespecial/article/view/36505>.

SILVEIRA, D. T.; CÓRDOVA, F. P. A Pesquisa Científica. In: GERHARDT, T. E.; SILVEIRA, D. T. (Org.). **Métodos de Pesquisa**. Porto Alegre: Editora da UFRGS, 2009. p.31-42.

UNIVERSIDADE FEDERAL DO PARÁ. **Projeto Pedagógico do Curso de Pedagogia**. Belém: ICED, 2010. Disponível em: https://iced.ufpa.br/images/Documentos/faed/ppp_pedagogia_2010_atual.pdf.